The use of the innovation action research approach in the preparation of a regulation on a costing standard

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Abstract

The article analyzes the applicability of the innovation action research method for activities related to the preparation of a concept of a costing standard for healthcare providers which is subject to legal regulation. This legislation regulates the way providers, reporting data for the purpose of the regulated pricing of health services, identify and calculate costs. A 39-month long research project was carried out in accordance with the innovation action research approach, which resulted in the creation of a novel concept of a costing model. The generation of new knowledge occurred as a result of a collaboration between researchers and practitioners, which is a basic assumption of action research. The consecutive steps of the research have been characterized in order to present the influence of the research method on the development and modification of the initial concept.

Keywords: regulation on a costing standard, innovation action research, pricing health services.
Introduction

Due to its social importance, the unreliability of market mechanisms and a high proportion of public expenditure, healthcare is regulated by the state. Currently, the role of the state is focused on regulating the principles of the healthcare system and its control (Ryć, Skrzypczak (eds), 2011, p. 169). Examples of areas subject to regulation include the functioning of public health insurance, the level of healthcare spending, healthcare availability and quality. Consistent with the approach of evidence-based policy making, activities are carried out on the basis of objective information of various kinds (Walshe, Smith, 2006, pp. 479–496). Among others, these include cost data of service providers.

The information from cost accounting is used for activities such as: the pricing of health services, the benchmarking of providers or efficiency control (Busse et al., 2006, pp. 211–2013; Busse et al., 2011). The use of cost information in health policy requires the implementation of uniform principles of its collection and processing to interpret the results.

A particular research model gaining in importance also in the area of management accounting is action research (e.g. Szychta, 2011; Suomala et al., 2014). This is a set of research methods which assume the interventionism of the researcher in relation to the studied phenomenon and which are aimed at the development of applied research, useful both from the theoretical and practical points of view. Adaptations of this research model are commonly used in the development of new tools of management accounting, both around the world (Kaplan, 1984; Kaplan, Norton, 1992; Labro, Tuomela, 2003; Liu, Pan, 2007) and in Poland (Świderska et al., 2002).

The research problem presented in the article is whether the „innovation action research” method (a form of action research which is particularly aimed at developing and disseminating an innovative concept in the field of management sciences) can be applied to the process of preparing a regulation on cost accounting. The initial need to develop the concept of a costing framework for healthcare institutions, useful for healthcare management at the micro and macro level, was indicated by the government. The original theoretical concept was developed by a team of researchers based on their knowledge of cost accounting. Innovation action research was used in order to allow it to be confronted with the opinions of practitioners, disseminate the knowledge on the concept, implement the solution, examine the scope of its applicability as well documenting the connections between the theory and the research contribution of the final costing model.

Therefore, the aim of the article is to analyze the applicability of innovation action research for actions related to the preparation of a regulation on a costing standard for healthcare providers. In the authors’ opinion, the literature on using innovation action research is still scarce, particularly in relation to how new knowledge is generated, which is the answer to practical problems and makes theoretical contribution too. The paper specifically focuses on the interactions between the researchers and practitioners.
and their impact on the final result of the research – the construction of the costing model. The consecutive steps of the research have been characterized in order to present the influence of the research method on the development and modification of the initial concept.

1. The current state of knowledge

The action research approach was introduced in the 1940s by the work of Lewin (1946). It is the origin of all interventionist research in the social sciences, the research area which developed and includes numerous research approaches, in which the researcher makes an impact on the world in order to gain knowledge. The original definition of action research refers to „a comparative research on the conditions and effects of various forms of social action, and research leading to social action”. The main distinguishing feature of „action research” is its cyclical nature. The basic steps of the study are (Dickens, Watkins, 1993, p. 133):

- analysis, fact-finding and reconceptualization,
- planning,
- acting,
- observing and more fact-finding,
- reflecting and acting again.

The research should be useful both for scientific and cognitive knowledge – „research that produces nothing but books will not suffice” (Lewin, 1947, p. 150). With the development of action research, several definitions have been formulated, with a focus on its various stages. Selected definitions are summarized in Table 1.

<table>
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<tr>
<th>Author</th>
<th>Definition</th>
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<tr>
<td>C. Argyris, D.A. Schön, 1991, [in:] L. Dickens, K. Watkins, 1999</td>
<td>Action research takes its cues from the perceptions of practitioners within particular, local practice contexts. It builds descriptions and theories within the practice context itself, and tests them through intervention experiments.</td>
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<td>J.B. Cunningham, 1993</td>
<td>A spectrum of activities that focus on research, planning, theorizing, learning and development. A continuous process of research and learning in the researcher’s long-term relationship with a problem.</td>
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<tr>
<td>J.H. Walls et al., 1992</td>
<td>A process of iterative hypothesis development and testing.</td>
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1 S. Jönsson and K. Lukka (2005) point to clinical research, action science, design science, constructive research, and innovation action research all as concepts developed from the initial action research, all of which they refer to as interventionist research methods.
Table 1. Definitions of action research (continued)

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<tr>
<td>N. Sanford, 1970</td>
<td>A process of analysis, fact-finding, conceptualization, planning, execution and then more fact-finding or evaluation, all followed by a repetition of the same pattern.</td>
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<tr>
<td>O. Zuber-Skerritt, 1992</td>
<td>A collaborative critical enquiry by academics themselves into their own teaching practice, into the problems of student learning and into curriculum problems.</td>
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<tr>
<td>R. Gleich, 2002</td>
<td>A research method in which a researcher is involved in the research and development process and works together with the practitioners on solving the problem.</td>
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<tr>
<td>R. O’Brien, 1998</td>
<td>Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously.</td>
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<tr>
<td>W.L. French, C.H. Bell, 1984</td>
<td>A process of systematically collecting research data about an existing system, taking action by altering selected variables with the system based on the data and on hypotheses, and evaluating the impact of actions by collecting more data on the outcomes.</td>
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Source: author’s elaboration.

The above definitions emphasize different elements of the research process, but two primary objectives of the action research arise from them – involvement and improvement. The first one comprises the active involvement of both the researcher and the research subject in solving a given problem and formulating the resulting theory. The second one relates to solving the problem through the development of changes that improve the tested action. Developing the direction of changes is a consequence of taking actions in the real environment and confronting their results with the original hypotheses. The validity of the theory is confirmed by the following criteria: whether it leads to changes and improvements in the tested area and simultaneously solves a practical problem and creates universal knowledge useful beyond the subject of the study (Dickens, Watkins, 1999).

Conducting research at the intersection of science and practice raises a lot of controversy. Basic criticisms concerning action research refer to a lack of rigor appropriate for a true scientific study, restricted internal and external control, as well as a limited contribution to the development of science and no strict distinction between a scientific study and expertise.

Cooper and McAllister stress that the study in the area of applied sciences can be considered scientific if it is possible to generalize its results to other areas and if it affects changes both in the current state of knowledge and practice (Kaplan, 1998, p. 96).
Hatchuel (2001, p. S38) stresses that „research is not simply ‘doing better’ and requires theoretical and empirical control”. He indicates that the basic conditions for the implementation of research in the field of management are (Hatchuel, 2001, p. S34):
– „the need for a clear scientific identity of management research differentiating it from social or economic studies,
– the necessity for a set of principles and rules for the design of research-oriented partnerships”.

Kasanen et al. (1993) make similar arguments in their methodological studies. They argue that traditional research methods in accounting have been adapted from the natural and social sciences, neglecting the methods typical for technical or medical sciences—which have close connections to applied problem solving. On the basis of their experience with action research, they formulate a method which involves establishing a new organizational structure for solving the problem – defined as constructive research.

Van Aken in his numerous publications (2004; 2005) proves the validity of research in the field of management accounting based on the paradigm of design science, which is traditionally used in areas such as medicine, engineering sciences and psychotherapy. The aim of the design science is to create knowledge for creating new concepts or improving the efficiency of existing institutions. Knowledge is used for designing and implementing actions, and „the nature of thinking is normative and synthetic” (Georges, Romme, 2003, p. 562).

One of the concepts emphasizing the role of the research process in generating new knowledge is the innovation action research method developed by Kaplan (1998). Its popularity stems from the fact that it has been used for studies that produced such groundbreaking tools of management accounting as activity based costing (ABC) and the Balanced Scorecard (BSC). The essence of this approach is the involvement of researchers in the creation and development of new management practices, which they believe can be implemented in many organizations. At this level, the researchers closely cooperate with a few companies used for field research. The further aim is to verify the possibility of the implementation of a new theory in other organizations. The experience of researchers from cooperating with the organizations under study leads to the development and improvement of both the theory and methods of its implementation. A practical limitation of this research method lies in the fact that access to a variety of companies is needed, which makes the research program immense and might be a challenge for most researchers (Labro, Tuomela, 2003). However, the widespread dissemination of a new theory allows it to be tested in various conditions with a positive effect on the modification process and the final result.

2. The methodology of research

Innovation action research assumes the realization of research under a strictly defined research cycle, as presented in Picture 1.
The research starts with the elaboration of a possible solution to the problem identified. The solution may result both from the previous experiences of the researcher and observed practice. It is characteristic that, in the first step, a generalized and detailed formula of the proposed solution is not required.

The next step is to present the created solution to practitioners with experience related to the analyzed issue. The innovative concept can be presented in the form of case studies illustrating the key points. As a result of this step, the concept is verified and generalized. The innovative idea is disseminated to a wider audience through publications whose aim is to arouse interest and open a debate on the innovative idea.

The fourth stage of research is to implement the concept in new organizations. The purpose of this step is to:

- validate the innovation’s potential for wider application and analyze its value to other organizations,
- create opportunities for learning about the concept,
- gain knowledge about the process of implementation by the researcher.

A series of these steps may be repeated depending on the complexity of the problem under study. Kaplan writes about two cycles of studies that were conducted in the development of ABC and BSC. The result is a ready innovative concept, the implementation of which should lead to practical changes in organizations.
3. The research process

The research was conducted within the project „Modern management in healthcare institutions” implemented by the Ministry of Health and the Warsaw School of Economics. One of its main aims was to develop the concept of a costing framework for healthcare institutions useful for healthcare management at the micro and macro level. At the stage of planning the research project, it was decided that the generation of the new concept would involve the cooperation between researchers and practitioners.

It was a 39-month long (October 2009 to December 2013) collaborative study involving almost 7000 representatives of healthcare providers, mainly managers of different levels, and 400 representatives of public funding institutions. Workshops and training sessions were attended by representatives of the inpatient sector, which receives the largest portion of public spending on healthcare in Poland (OECD, 2013, p. 159). The research team consisted of a group of scientists from the Department of Management Accounting of the Warsaw School of Economics under the direction of Professor Gertruda Krystyna Świderska. The project was co-financed by the European Union. To avoid any potential conflicts, the participation of all healthcare providers was voluntary and unpaid.

Data collection methods included interviews, the observation and documentation of cost accounting practices, an examination of organizational documents, and a discussion during numerous workshops held over several years. The use of this range of sources permitted data triangulation. Table 2 shows the organization of the research project.

<table>
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<th>Stage</th>
<th>Description</th>
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<tr>
<td><strong>The first research cycle</strong></td>
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| Observe and Document Innovative Practices | – Identification of the problem associated with the limited use of management information for decision-making by the healthcare providers and lack of uniform tools for the creation of such information  
– The use of previous research and practical experience related to cost accounting concepts  
– Development of the draft of the costing concept for healthcare institutions  
– Development of training materials presenting the concept (including case studies) |
| Teach and Speak About the Innovation | A 6-month series of workshops with a group of 60 representatives of the healthcare providers (880 hours of workshops within 32 3-day meetings) |
| Write Journal Articles and Books | Preparation of publications that illustrate the concept: textbook, user manual, standard chart of accounts |
### Table 2. Research project organization (continued)

<table>
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<tr>
<th>Stage</th>
<th>Description</th>
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<tr>
<td>Implement the Concept in New Organizations</td>
<td>45 4-day training sessions on modern cost accounting for 1290 representatives of 150 healthcare providers</td>
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*The second research cycle*

- Observe and Document Innovative Practices
  - Identification of the problem of adapting the cost accounting model to the specifics of cost-based pricing of health services
  - Development of the draft of the reporting methodology for pricing purposes
  - Development of the training materials presenting the concept

- Teach and Speak About the Innovation
  - 3 2-day workshop sessions conducted with a group of 78 participants from 36 hospitals performed over 3 months

- Write Journal Articles and Books
  - Preparation of a publication on the collection and presentation of information about the cost of health services for the purpose of their pricing

- Implement the Concept in New Organizations
  - Preparation of the regulation on a costing standard for service providers

Source: author’s elaboration.

The research was organized in two cycles. They differed slightly in relation to the research problem. The first cycle of research focused on developing and sharing the concept of a costing model for healthcare institutions among healthcare managers as well as raising awareness about the importance of cost information for management.

The main stage of refining and generalizing the concept was a series of costing workshops that ran for 6 months and included a series of meetings with representatives of healthcare providers. After the initial presentation of the proposed concept, and illustrating it with real examples from several providers, their remarks were collected and discussed. They focused primarily on three areas:

- the method of defining resources, collecting cost data and allocating costs to resources, as well as the calculation of the unit cost of resources (and determining the availability of resources),
- the method of defining the indirect cost objects and allocating resources to them,
- the method of defining and calculating the final cost objects, as well as the proceedings with respect to unused resources – in particular the extraction of so-called standby costs.

After reworking the collected remarks, a complete set of publications was prepared to enable the dissemination of the concept during the training sessions. In addition to three publications containing several case studies describing various aspects of implementation, an educational computer program was created to illustrate how to apply the concept.
The use of the innovation action research approach in the preparation of a regulation…

The second cycle focused on the possibility of using the developed costing model for a particular purpose, which is the regulated pricing of health services. A draft methodology was presented to the workshop participants from 36 healthcare providers, who were asked to implement it in selected areas of their institutions. The applicability of the costing model was tested for selected services in the area of obstetrics, pulmonology and urology. The difficulties at the implementation stage reported by the participants were documented and included in the final version of the costing model. The final step was to develop the regulation on a costing standard addressed to all providers reporting data for the purpose of regulated the pricing of health services as well as using it for internal purposes.

4. The results of the research

The original concept was prepared by the team of researchers who used their previous experience of studying costing models based on the Activity-Based Costing concept and presented it during the workshops. It included seven stages of cost accounting:
1. Collecting cost data in cost centers.
2. Allocating costs to resources.
3. Calculating the cost of ancillary services.
4. Allocating resources to indirect cost objects – medical procedures, days of stay and standby.
5. Calculating the cost of final cost objects.
6. Allocating costs of ancillary activities to the final cost objects.
7. Adding general and administrative expenses to the final cost objects.

During the costing workshops in the first research cycle, this concept was thoroughly discussed and underwent substantial modifications. After a detailed presentation of the workshops’ aims and the participants’ role in it, the initial model was presented and illustrated using case studies. Afterwards, the participants were divided into 12 small groups of 4 people, each led by one researcher, and they discussed each step, taking into consideration one of three perspectives:
- accounting – to make it possible to perform a calculation process using the present information systems,
- medical – to include all significant information and accurately reflect the treatment process,
- reporting – to provide the level of detail necessary to use the information for making most common decisions.

Every perspective was analyzed by practitioners with appropriate experience – accountants, managers or doctors/nurses, who were carefully recruited for the study based on their previous experience in healthcare. Small groups and the right choice of people helped to liven up the discussions. The role of the researchers during that stage of the workshops, as well as the level of intervention, was relatively significant – the
researchers actively moderated the discussions, as well as participating in them, and reported the conclusions as well as collected all external documents brought by the participants to document their arguments.

An important part of this stage was the internal meetings of the researchers that occurred between consecutive workshops with the practitioners. During those meetings, the researchers confronted the ideas that were formulated at the workshops with the current state of theory on cost accounting and making conclusions. Those conclusions were then presented to the participants for further discussion. This approach helped keep the relationship between practice and theory during the whole process of developing the concept.

As a result of the practitioners’ engagement, several changes were made to the costing framework. The final shape of the model is shown in Picture 2.

**Picture 2.** Cost accounting model for healthcare providers

Firstly, an additional level for cost identification was introduced – cost categories. This change resulted mainly from discussions with accountants, who drew attention to the fact that presenting costs by type (in accordance with the Accounting Act, 1994) does not include the specifics of healthcare organizations. Cost categories allow
for a comparison of the costs of various healthcare providers at the level of financial system and can be used for any external reporting.

Additionally, using the researchers’ previous experience in accounting (Świderska (ed.), 2009), as well as other publications in this area (Hass-Symotiuk (ed.), 2003), and with the help of the participants who were accountants, a detailed list of the possible cost items was developed and cross-referenced both with cost categories and resources.

The discussions with managers lead to the conclusion that the usefulness of the model for planning and management purposes would be highest if the calculation of the planned costs of resources and other cost objects were introduced. The information about the real costs would be obtained by computing the variances. That was an approach that had never been used in Polish healthcare institutions and met with considerable resistance from some participants. Based on previous experiences with applying costing models for other industries, and the range of information obtained (for further details see Świderska et al., 2004, 2005), the researchers decided to incorporate the planned costs in the model. Contradictory opinions of participants were confronted with the theory available and final decisions were made by the researchers.

Finally, in the final framework a greater emphasis was placed on the calculation of the full cost of resources – including, inter alia, the costs of ancillary activities as well as costs of different categories. The model example is the operating room. Its costs include every item needed to obtain a resource ready to be used for performing surgery – including the cost of depreciation, utilities, wages of the personnel cleaning it, as well as costs of all ancillary cost centers involved in maintaining it. Highlighting such an understanding of resources was the result of confronting the views of medical personnel with managers’ needs. It was consistent with previous research on costing information (see Świderska et al., 2005), which has been somewhat neglected in other publications on Activity-Based Costing. The resource-based approach to the costing model has proven to be particularly significant for healthcare, where information is generated with the prominent participation of medical personnel, who views resources through the prism of their participation in medical treatment and not through the way costs are recognized.

The second research cycle focused on providing common costing solutions for different healthcare providers for the purpose of reporting uniform information for cost-based pricing. The costing model was described in a more detailed way so as to provide uniformity in (Świderska (ed.), 2013):

- the use of key concepts,
- collecting historical cost information as well as determining planned costs,
- identifying resources and measuring their practical availability,
- determining costs of resources, medical procedures, days of stay, medicines, standby, patients and the cost of unused resources.

The research team designed uniform sheets for collecting and calculating information. In the course of the research within the 3-month period of the workshops, the
applicability of cost accounting was verified. Two-person teams – including one person with medical experience and one with economic – from 36 different hospitals who had previously participated in the training sessions in the first cycle of research were asked to implement the solutions developed in selected areas of their activity – for costing selected services in obstetrics, pulmonology or urology.

The first two workshops were used for determining hypotheses about variables that are significant for grouping the cost objects into homogeneous sets as well as agreeing on the level of simplifications during the stages of data collection and cost calculation without a significant effect on the final results. The researchers moderated the discussion and documented remarks. The period between the workshops was used by the participants to test the applicability of the model. At that stage, the researchers answered any questions arising as well as asking additional questions regarding the data provided. The level of intervention was moderate – the researchers served as external experts, communicating with participants via e-mails, and during the workshops that were used for presenting the results obtained at that point, and not working „on site”.

The third workshop was devoted to presenting the final calculations as well as variables that tested to be significant for determining cost objects, as well as the final versions of the sheets used for reporting data. A final discussion was held on the shape of the uniform costing model.

The effects of the research have been included in the form of a regulation, which covered areas related both to the collection of historical costs as well as the calculation of cost of healthcare services. The regulation includes the standard chart of cost accounts, as well as costs items grouped into categories and resources.

**Conclusion**

The aim of the paper was to test the applicability of innovation action research for the process of developing a new costing framework for healthcare providers. An initial theoretical concept was confronted with practitioners who had experience in different areas of healthcare organizations – i.e. accountants, managers, nurses and doctors. Their involvement was aimed at making the final concept complete, accurate and practically applicable. The internal meetings of the research team held between the consecutive meetings with practitioners helped to produce a solution that is not only practically grounded but also makes theoretical contributions.

Innovation action research has proven to be effective for producing a new management accounting tool adapted to the specifics of healthcare. Costing health services is particularly difficult due to the complexity of the treatment process, the wide use of medical information systems, the diverse needs of internal and external stakeholders, as well as the heterogeneity of accounting systems. Involving participants with proven experience in different areas of healthcare organizations helped to combine...
the financial, medical and managerial points of view and analyze the initial model from many perspectives. A variety of data sources was used at this stage, which allowed the results to be verified and the data triangulated – in addition to numerous interviews and discussions, the workshop participants provided documents and conducted simulations of selected stages of the cost accounting in their own settings.

This was further conducted during the training sessions as well as in the second stage of the research cycle. Over 1,350 hours of training with nearly 1,300 practitioners representing more than 15% of all providers in the inpatient sector were held for the purpose of disseminating new knowledge and inviting remarks. The second stage of the research involved the implementation of the concept in selected areas of the organizations’ activity, which resulted in e.g. practical conclusions regarding the costing and pricing of selected services (Raulinajtys-Grzybek, Świderska, 2014).

The main criticism of action research, or any other interventionist research, is the emphasis on practice at the cost of theoretical contribution (see e.g. Jönsson, Lukka, 2005; Suomala, Lyly-Yrjänäinen, 2010; Szychta, 2011). The research team tried to minimize this risk by organizing regular meetings of the academics that occurred between the workshops with practitioners and involved confronting the ideas with the current state of theory. Much attention was also paid to the scientific publications based on the results of the project. So far, over 10 peer-reviewed articles have been published, which are based on the knowledge generated in the research.

The other potential risk of action research is that the researcher’s interaction with the research subject might influence its behavior – and that the researcher will not facilitate the subject but manipulate it. Such a risk was identified in the project due to the fact that the researchers stayed in the position of external experts and some behavior of the participants might have been distorted by this form of relationship – e.g. criticism of solutions proposed might not occur due to participants’ anxiety to express it. In both research cycles, some actions were taken to minimize this risk. In the first part of the research, having small groups of participants as well as a high number of meeting hours aimed to limit this distance. In the second part of the research, the involvement of the researchers was limited to e-mail contact and several meetings during the workshops, with the implementation being conducted by the participants.

Despite the threats connected with the innovation action research presented above, we believe that this form of research enabled the researchers to collect a more thorough viewpoint of the problem and many significant insights than would have been obtained by using more traditional research methods.

**Literature**


Legal acts


Internet sources
