

# **Action Research in Academic Research Commercialisation: Case KnoPro Project**

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## **Abstract**

Action research is widely disputed research method. It has been accused to be consultant like and not a real method for conducting scientific research. However, an action research has strengths, too. It has a close connection to a real life phenomena and problems. At its best, an action research provides mutual benefits both for practitioners and academics: it helps to solve a real life problem and uncovers the process behind this problem solving.

In this paper, I will start developing the methodological framework for my Ph.D. thesis. I will briefly outline the action research methodology and explore its advantages and challenges. Then, I draw an example from my empirical data about KnoPro project to illustrate how action research can be conducted in an academic study. The KnoPro project happens at the Faculty of Pharmacy in the Kuopio University. It aims to establish procedures to commercialise research results of the faculty. The KnoPro project is still going on, so the final implications of interventions cannot be traced yet.

## **Keywords**

Action research, research commercialisation, university-industry interaction.

## **Introduction**

Many scholars have tried to provide comprehensive definition of action research because definitions help researchers to communicate when they do not have a shared meaning of something (Altrichter et al. 2002). Altrichter et al. (2002) claim that problems in defining action research stem from the conflict between its developmental orientation and intellectual clarity that is required. Thus, they warn researchers to establish too restrictive definitions because they may inhibit the constructive conceptual development. Grønhaug and Olson (1999) identify several reasons why there does not exist consensus about action research. They claim that there is a fuzzy set of researches that are labelled under undefined label of action research (see also Blichfeldt & Andersen 2006). The main reasons, however, stem from different perspectives on what is scientific research and knowledge. Often knowledge refers to what is a posteriori "true" but also the socially constructed theory of knowledge has been acknowledged by some researchers. For example, Schultze and Stabell called constructivist discourse of knowledge the view that emphasises a relation between action and knowledge.

Knowledge cannot be separated from practice or from individuals who interdependently signify it through action. Knowledge has a dual nature because it both contributes situated action and is an outcome of this action. (Schultze & Stabell 2004; Weick & Roberts 1993) Thus, knowledge and its truth is socially constructed.

Grønhaug and Olson (1999) quote Calder et al. (1981, 136) in defining scientific knowledge that is developed under rigorous empirical testing, i.e. in scientific research process. Authors also note that not all researchers agree with Calder et al. but adopt a more interpretative view on scientific knowledge. Because of these differences in ontology, epistemology and human nature, as Grønhaug and Olson (1999) put it, the action research among others is not mutually accepted as an scientific method to acquire knowledge. Action research is questioned because it is difficult to re-conduct and verify the research results that are interpretations instead of statistically tested hypotheses.

The knowledge creation is not about solving the problem in action research. In that case, the knowledge is only valuable for practical reasons but cannot be called scientific. Academic contribution of action research derives from researcher's self reflection before and after his interventions (McKay & Marshall 2001).

Blichfeldt and Andersen (2006) argue that the scientific recognition of action research can be encouraged by discussing and articulating about the theoretical framework or themes brought into the study and providing transparent chain from findings to analytical generalisations instead of leaving reasoning to the reader. This does not mean that the advantage of action research, i.e. theoretical flexibility, is reduced. The action research is seldom a grounded theory because researcher's own understanding and prior conceptions guide the research process. Thus, declaring the researcher's prior conceptions in advance helps him to understand better his own work during the research process. Moreover, the transparency in analytical generalisations of findings enables researcher to abstract local theories into a broader settings. (Blichfeldt and Andersen 2006)

### **Action research in action**

Action research is situational. To some extent, every action research project is unique and thus there cannot exist any general instructions for action research. (Avison et al. 2001) Whilst conducting an action research, the researcher seeks to gain as deep as possible understanding of a certain phenomena in a real life setting. (Blichfeldt & Andersen 2006) In other words, the researcher is involved in solving a practical problem but he also aims to generate new knowledge about a particular issue (McKay & Marshall 2001). The action research is a social research where a team of a professional researcher and members of the organisation is seeking to improve their current situation. Research, collaboration, action, contextuality and gradual improvements or longitudinal learning are its crucial elements (Greenwood & Levin 1998, 3-8; Grønhaug & Olson 1999; Avison, Baskerville & Myers 2001). In other words, stakeholders are seen as coresearchers who together with a professional researcher produce knowledge for taking an action to solve a real-life problem or to promote change. (e.g. Greenwood & Levin 1998, 3-8; Grønhaug & Olson 1999) The degree of participation by clients varies a lot and an active involvement is sometimes highlighted by calling the research participatory action research (e.g. Brown & Tandon 1983, 279 in Grønhaug & Olson 1999)

In any case, researcher is involved in as a facilitator who encourages the participants to share knowledge, take actions based on what they have learned and reflect on their work (Hampshire 2000). Why both parties are involved even though with varying participation degree is that they both have different knowledge about the issue in question. Clients have knowledge that is based on their own experience and researchers have theory-based knowledge (Grønhaug & Olson 1999).

As McKay and Marshall (2001) claim, action research has a dual nature of generating new knowledge in parallel to problem solving. Thus, the authors suggest that the action research has two cycles of research that are, however, taken at the same time. The first one emphasises problem solving. It starts from the problem identification that is followed by context describing, action planning, implementation and finally, evaluation about the effects of action on problem. The second cycle of research emphasises research interests and responsibilities. In the beginning, the researcher identifies his interests and poses a research question. Then he designs a research project, implements it, monitors the effects of interventions in terms of research question and if satisfied, exists the setting. Otherwise, the study is re-designed and conducted. (McKay & Marshall 2001).

According to Avison et al. (2001), in what they call "research-driven" action research the problem is identified by the researcher himself. The researcher discovers the problem from or a gap in literature and explores the real life setting to study that. In "problem-driven" initiation, the researcher is asked to help those who identified the problem. In that, researcher interprets the findings and draws conclusions that are further developed into theories. The action research may also evolve from the interaction of researcher and stakeholders, and thus can be called collaborative initiation. No matter who recognises the problem at first, both cycles necessitate that researcher and stakeholders share a mutual interest in solving that. (Avison et al. 2001)

Avison et al. (2001) note the role of the theory in action research. Either the problem for action research is derived from theory or at least theoretical foundation is developed after problem identification. Interestingly, the authors stress theoretical foundation before the research is taken even though they also stress that action research is a qualitative research. In qualitative researches, however, the theoretical foundation as well as research questions maybe set later during the data acquiring (Eriksson & Kovalainen 2005, 19). Avison et al. (2001) seem to prefer deductive qualitative research whereas Eriksson and Kovalainen (2005) prioritise inductive approach.

### **Advantages and challenges**

Avison, Baskerville and Myers (2001) even claim that action research has a "double challenge" while containing both theory and practice. By identifying and describing two cycles of research, McKay and Marshall (2001) concretise the importance of reflection throughout the action research. Researcher should deliberate both his research interests and interests to solve problems. Especially, the self reflection about his interventions and how they affect the issue in question are important. McKay and Marshall (2001) stress that two-cyclical research process is what separates action research from consultancy.

Moreover, the dual nature of action research or as involves to different methods for research. The more practical oriented or operational methods are used in problem solving but the research interest cycle of action research necessitates more sophisticated methods. Thus, a broad range of methods are used in action research but they are not action research as such. (McKay & Marshall 2001)

Even though the researcher helps clients to solve their real-life problem or improve the current situation, it is them who are active in problem solving; It is not the researcher who gives the answer. In other words, clients themselves own the problem, and researcher only tries to alleviate it. (McKay & Marshall 2001)

Also the power distribution may vary from client dominated through staged dominated to identity dominated research (Avison et al. 2001). In client dominated, the researchers only provides advices and recommendations but all the proposals must authorised by organisational managers.

Both the challenges and advantages of the action research are related to its democratic inclusion of subjects in the research. As Krimerman (2001) claims, the action research may provide an insider advantage to the facts when researcher and clients are not seen as separate entities. However, the action research is criticised because of the threat of blurred role both as a scientist conducting a research and as a consultant helping to solve a real-life problem (e.g. Schein 1995).

Grønhaug and Olson (1999) bring up the challenge to determine if the identified relationships are true and the threat of reactivity as a result of interaction between researcher and his clients. Thus, scholars conducting action research should report all the steps they took during the study to convince the reader about the validity of the interpretations and conclusions (Grønhaug & Olson 1999).

## **Commercialisation of academic research**

Traditionally, universities have focused on teaching and research. The interaction with the rest of the society and enhancement of the impact of research results was included as the third task for the Finnish universities in 2004 (University law 715/2004, 4§). One illustration of this "second academic revolution" (Etzkowitz 2001) is a growing interest to the commercial exploitation of the research based knowledge. To accomplish the third task, universities have established boundary-spanning activities to cross the line between universities and industries as well as between the disciplines (Etzkowitz 2001). Within and between the universities it is established new structures to increase the mobility of knowledge such as technology transfer offices. Co-operation is encouraged through the strategic alliances and joint research programmes and forced by the intensive rival for research funding. (Etzkowitz 2001; Etzkowitz et al. 2000) Notwithstanding the co-operation, the commercialisation of research has proven to be a problematic issue. The Finnish research in many fields has been evaluated top-quality but the commercial breakthroughs are seldom realised.

The academic research commercialisation process often involves several actors with very different backgrounds (e.g. Hage & Hollingsworth 2000). Namely, partnering companies have

business skills, researchers have substance skills, and intermediating organisations (Stähle et al. 2004, 24-25) as well as the university based technology transfer offices have skills to join the researchers with the industrial partners. But who has skills, resources and knowledge that enable commercialisation that may rise from the very specific research field? Cross-functional teams of a variety of actors may help to overcome the problem (e.g. Song et al. 1997). Then, however, different members view commercialisation from their own perspective. Acting towards the research commercialisation turns as a problem of making sense what commercialisation is about.

Existing literature discusses commercialisation often as a linear process where task is finalised before turning towards the next one (e.g. Cooper 1990; 1999; Cooper & Kleinschmidt 1993; Cooper et al. 1999). Jolly (1997, 15), on the other hand, has pointed that commercialisation does not proceed straightforward at least when technology is in question. Jolly (1997, 15-18) as Nevens, Summe, and Uttal (1990) claims that commercialisation process progress through simultaneous task. As the process progresses, the value incorporated to the innovation increases. Commercialisation is studied as integrative action between several business units or departments of the same company (e.g. Jolly 1997; Song et al. 1997) but also co-operation between organisations is emphasised (e.g. Rosenzweig et al. 2003; Corso 2002). However, research of commercialisation in the interface of research organisation and industrial partners has started go grow only recently (e.g. Zhao 2004; Bercovitz & Feldman 2006; Wong 2007).

Bercovitz and Feldman (2006) identified that there are several routes that the knowledge and research results are moved or transferred from the university to industry. Labour mobility and social interaction between scientists and entrepreneurs were obvious transfer mechanisms. Moreover, sponsored research, consulting, licensing, spin-offs and student hiring are common ways to commercialise academic research.

## **Action research in Case KnoPro**

The problem of commercialising the pharmaceutical research was also identified in the University of Kuopio. To solve the problem, it was established a two-year "From knowledge to products" (KnoPro) project that involves actors from the Finnish Funding Agency for Technology and Innovation (Tekes), local drug development companies, university's business school, university's innovation service unit and the Faculty of Pharmacy. The main object is to construct a commercialisation model that can be applied to research commercialisation and enhancement of the co-operation between the business partners and the Faculty of Pharmacy.

KnoPro project includes several pharmaceutical product-specific innovation projects that are managed simultaneously. Some of these have already led to the letters of intent with partnering companies. In addition, one of the innovation projects has led to the university spin-off company. It is hoped that the lessons from these pioneering innovation projects benefit other innovation projects that are not yet developed further.

The KnoPro project serves as a case for a dissertation study where I study commercialisation of academic research. The study is an action research. I have been involved in the project from the beginning as an observer and as an active participant of the project.

Hampshire (2000) emphasised the facilitator role of the researcher. He or she must encourage shareholders to share knowledge, take actions based on their learning and finally reflect their own work, i.e. researcher facilitates shareholders to act as co-researchers. These characteristics embody in KnoPro project. The industrial partners, the experts from the intermediating organisations and from the university, and drug researchers together define the problem, generate knowledge, learn, take actions and interpret the results.

KnoPro as an action research

Initiation to KnoPro project evolved from the Faculty of Pharmacy at the University of Kuopio. Key people of a certain commercialisation oriented project organisation were interested in to include some experts from the Department of Business and Management, University of Kuopio into their forthcoming KnoPro project. My tutor was asked to join the board and she introduced me to a planning team. Originally I was interested in to study commercialisation within biotech companies but this opportunity to study commercialisation phenomenon in the university-industry interface brought me round to focus specifically on drug research. Even though the original idea came from the clients themselves, I would claim that my study has a collaborative initiation. The reason for this arise from the several negotiations where my role as a researcher and as a member of development group was discussed. It is this dialogue between my tutor, key persons of KnoPro project and me where the real action research was initiated.

### **Initiation and planning**

During KnoPro project there are several interventions taken. One of these interventions occurred when I was asked to prepare an outline for commercialisation plans. These plans were written for some product ideas that were tried to commercialise during KnoPro project. In this certain step of action research, I was asked for help by clients. Thus, even in the same KnoPro project the initiation action may be taken by different shareholders.

Real life problem was to build up an outline to help researchers to commercialise their research. My own research problem was to study how academic research results are commercialised.

I formed a simple model for commercialisation by combining my basic know-how of marketing with the drug industry specific issues that emerged from the interviews which I did in the beginning of KnoPro project among industrial experts. The main idea for commercialisation outline was to help researchers without any business knowledge to understand the basic equation of product, customers and marketing actions. I had noticed in previous interviews and during other meetings with KnoPro team members that many people were informed about certain points but they did not necessary perceive the full-scale commercialisation problem from an idea to successful product launch.

In the outline there were several questions dealing with product concept, customer, competitors, competitive environment, budgets and pricing, and finally, with schedules and responsibilities. I planned that these questions would channel researchers to notice that commercialisation is not always straightforward process but includes many aspects that have

to be taken into account. I hoped that they will realise that if some parts have been nailed down they have inevitable consequences for some other things. For example if it is planned to follow differentiation strategy of Porter's (1985, 17-18) generic competitive strategies, the products cannot be priced low.

Afterwards, I have noticed that there were some important parts missing. For example I did not consider management and leadership at all in my commercialisation outline. Moreover, ethical and social aspects of drug business were not included.

In this planning phase, there was not any members of the KnoPro team involved except for my tutor who accepted the outline before taking it into practice. Thus, there were not actually differences in planning phase between problem solving task and my action research. However, the outline as a physical artefact was a plan to help to solve real life problem but it was also an intervention of action research.

### **Implementation**

I sent the commercialisation outline for the leader of the KnoPro project as an email attachment. He then forwarded it for product-specific leaders or used it himself as a tool for product-specific commercialisation plans.

Every now and then I was asked to join some planning sessions but mostly it was used independently by product-specific teams. Once, I was asked to join the meeting where a certain set of services were planned. The product-specific team had been negotiated with a partner who is already active in business. This partner was nibbled at including some services produced by the University of Kuopio in their own product portfolio. However, there were problems to identify these services.

There were three stakeholders and I discussing the problem. The leader of the KnoPro project with a research director had already fulfilled some of the outline but there were still some points unsolved. There was also a researcher from the research group whose product idea was in question. He explained several times what kind of needs there might be in the market. Finally, we managed to identify a few service packages that were later offered for the partner.

In this phase my role was to remind other people about the consequences of their previous acts. They had for example agreed that they will focus on only a few services but all the time I had to ask them to limit the number of their offerings. For the project leader this was clear but the other were not keen on limitations. The commercialisation outline was not fulfilled during the meeting but I noticed that it had already directed project leader's attention to certain issues. He, for example, wanted to focus only on some ideas instead of producing a great variety of offerings.

Research director: They [a company] have several variations of a certain method.

Project leader: It would be wiser to select a few really specific [service] and then start pushing forward with them. --- It would be better if we design three for example.

In addition, project leader utilised the scheduling and resourcing tasks of commercialisation outline and proposed that some services would be excluded because they were too difficult to produce or they were already provided by some other players in the market.

Project leader: If [a service in question] is already available from FinDrug<sup>1</sup>, then it could be left off the list.

### **Monitoring and evaluation**

I monitored the use of commercialisation outline, i.e. my intervention into process, by discussing project-specific team every now and then. Even though I was not asked to join the process where the actual partnering took place, I met both parties after half a year. They had established a skeletal agreement to commercialise the service packages that were planned in the meeting described earlier.

Both parties were content with the agreement. Even though commercialisation actions were thoroughly planned, the amount of work had surprised the faculty members. Thus, they were about to re-focus and narrow the service variety.

Contractual partnering with an existing company is one of the commercialisation routes for academic research results (Bercovitz & Feldman, 2006). Thus, my intervention was a success because it helped the researchers to commercialise their research results. It helped them to solve the real life problem.

However, partnering is only one of many ways to commercialise research results. In this project other routes were not even considered. This case illustrates what can happen if the researchers know in the beginning the potential partner who is happy to bring products or services in the markets by using its own brand.

This time the real life problem was solved. However, this was only the first step to commercialise wide range of academic research, so the commercialisation actions will go on. Thus, also the research process continues.

### **Reflection**

My intervention was carefully planned by using empirical findings from interviews among industrial experts together with marketing literature. However, there are still some points that I must redesign. Ethical issues and management should be included into commercialisation outline. Ethical issues are not important in every case but they must not forget from the general commercialisation outline. Especially, when designed services and products involve animal experiments they may become crucial. And management of the commercialisation process is always important question. In my first commercialisation outline management was not expressed in details. Management was only expressed in questions that dealt with liability distribution.

Because of the lack of management issues, nobody has thought about management of the commercialisation process. The researchers thought that the technology transfer office would take a full responsibility of making an agreement with a partner. However, in the technology transfer office there was not this kind of knowledge available. It was the management of the

faculty who had dealt with this kinds of issues before so help was finally received from the dean. The management, however, was still not planned.

As an intervention, the commercialisation outline was a success because it helped especially the project leader to understand the subtle commercialisation process. Commercialisation is not straightforward but involves several tasks that must be taken into account at the same time. So the consequences of my intervention embodied as an increased understanding what commercialisation is about.

My action affected that product-specific team started to think about some issues that they were not previously familiar with. For example they had not been thinking about what kind of services is there available at the moment. Now one of the team members searched potential competitors and their offerings from the Internet.

However, the commercialisation outline was somewhat misunderstood because some of the product-specific team thought that they must fulfil all the questions given in the outline. So I must be careful next time when giving instructions.

It is important to reflect my own role during the process. When I constructed the commercialisation outline, I did take an active role while planning commercialisation actions. Still, my role was more like an facilitator who set up a thinking process among shareholders. After the intervention I participated only on few meetings so my role was to observe how things are going on but not to participate into actions actively. This helped me not to get too closely involved in the process. In other words, I did not give instructions all the time acting like a consultant but let shareholders to plan their own actions and learn from them.

In general, I am active action researcher in product-specific innovation projects but inactive observer in overall KnoPro project. In overall KnoPro project I have only observed meetings and interviewed experts and members of a management team. These observations and interviews, however, enabled me to construct the commercialisation outline, i.e. intervention for sub project level.

## **Conclusions**

My study is only in its beginning. I have already taken some interventions that have had consequences but the process is still going on. Yet, it is obvious that at least in some parts my dissertation study is an action research even though in overall KnoPro project I have a role as an observer and interviewer.

At the moment it can be seen that interventions guide stakeholders to act in a certain way. I have facilitated product-specific teams to think about commercialisation thoroughly, not only as an obvious straightforward process from university to industry. Thus, action research seems to be valuable research method to study interaction of university and industry in commercialising academic research.

<sup>1</sup> Pseudonym for ensuring anonymity.

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