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Innovation processes in Cooperative Organizations: Results from a Case Study Research^{*}

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Summary. One of the main problems of cooperative decision-making, when it comes to the implementation of innovations, is the involvement of multiple levels – the cooperative's and member's level. This throws up the question of how the formulation and dissemination of innovations within a cooperative enterprise works. In our case study we took a closer look at a cooperative of bakers. During our study, we developed an idealised model of innovation processes for cooperatives. Three practical examples of past innovations illustrate this model. We conclude our analysis with a knowledge communication scheme for cooperative businesses.

Key words: innovation processes, cooperative organization, knowledge communication, case study research

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1 Introduction

Developing new products and implementing them in the internal structure of a cooperative requires knowledge communication and decisionmaking on different levels of the cooperative network.

In the context of cooperative organisations, we want to emphasise two aspects of decision-making: first, the aspect of creating and transferring knowledge while taking into consideration entrepreneurial activities and second, the implementation of theses measures within the cooperative network. Both processes take place within the cooperative enterprise (board of directors and supervisory board) but also at the member level. The scope of entrepreneurial decisions is therefore no longer limited to a single firm but spreads into all parts of the cooperative network. The divided entrepreneurship can cause friction and create additional conflicts within the innovation process. To analyze and decipher the resulting problems of this form of entrepreneurship is the aim of our study, while at the same time we try to elucidate how decision processes take place in practice.

In our paper we address the question of how the required knowledge about the market can be sifted out and incorporated in the complex structures of cooperatives. Furthermore, we intend to illustrate the consequences of the underlying decision process by using the method of case study research. We also intend to analyse various innovation processes within a cooperative of bakers. This paper is based on the findings of the evolutionary economics literature (for an overview see (Nelson, 1995; Nelson and Winter, 2002; Witt, 2007)). From the extensive range of evolutionary economic literature we, in particular, refer to the papers which focus upon undetermined results of competition processes. In an uncertain economic environment the importance of entrepreneurship grows, as each entrepreneur strives to gain an advantage over his or her competitors by distinguishing themselves through individual commercial efforts. The entrepreneur who is capable to create novelty will win the competition. After an innovation has been introduced to the public it disseminates in the market system through imitation. Competition can, therefore, be characterised by the first mover advantage and the following imitation activities (Fehl et al, 2007; Fehl, 2005). Evolutionary economics can be seen as the process of endogenous development of a new product and its subsequent dissemination. Recent researches in the field of entrepreneurship and cooperatives upon which we base our study (Fehl et al, 2007; Brunner, 2006) emphasise the importance of systematic communication between the cooperative and its members to avoid frictions in the process of decision making. This leads us to our first hypothesis.

Hypothesis 1 The processes of knowledge transfer and in particular the participation of the members within the process of decision-making plays a central role for entrepreneurial impulses.

This paper is organized as follows: In section 2 we introduce the cooperative we visited. In section 3 we propose a modified process of innovation, which is followed by a section on our methods and data (4). In section 5 we present the results of our case study. The last section (6) contains some conclusions and theoretical implications.

2 The BÄKO

In our case study we looked into the workings of a cooperative of bakers, the so called "Bäckerei- und Konditorengenossenschaft", in short BAKO. The market for bakeries in Germany is characterized by a low level of technical innovation and strong competition due to large food retail companies, which offer bakery products, and discount bakeries. Industrial bakeries play a prominent role, as well. Some of them sell their products through a franchise system. The BAKO itself is located in Southern Germany and has about 550 member bakeries. Their annual revenues amount to approximately 70 million Euro. The cooperative serves as a supply cooperative for their members (Barton, 1989, p. 5). All members own their own bakeries and use the cooperative mainly as a supplier for preliminary products like flour, fruits, vegetables, fat, dairy products, convenience goods, machinery, trading goods, beverages, packaging materials, as well as financial and consulting services. As a whole, the BAKO offers 12,000 different articles. Consequently, it is each baker's own responsibility to decide on his or her range of products, type of production and marketing activities.

Our aim was to find out how the process of communication and decision-making works within a cooperative. For the present analysis we took a closer look at the formal and informal institutions of the cooperative: The BÄKO is a member of a regional BÄKO centre of operations ("BÄKO Zentrale") which is responsible for the brand management, serves as a central warehouse and organises communication processes between the individual BÄKO's working committees on specific topics. Beside the formal institutions, like the managing board, supervisory board and general assembly, the BÄKO's sales representatives play an important role in the communication between the

cooperative and its members. During their nearly weekly visits to the bakeries, they help to communicate the cooperative's strategy. An informal institution, which has to be mentioned and that substantially contributes to the communication between the staff and the bakers, is the friendly get-together after the regular formal meetings. The BÄKO kindly provides the local crafts union with a room for their weekly meetings and allows them to use it, after the formal part is over, for the informal gathering.

3 The Idealised Innovation Process

The majority of phase-oriented explanations for innovation processes focus on product innovation and can be found in the literature of new product development. Brown and Eisenhardt (1995) gave a detailed and elaborated overview over this topic by differentiating three strands of product developments: product development as a rational plan, product development as a communication web and product development as disciplined problem solving (Brown and Eisenhardt, 1995). Most of the studies in this field of research deal with empirical analysis of factors of success and statements on the best practices (Cooper and Kleinschmidt, 1987, 1995; Hughes and Chafin, 1996), whereas recent studies focus on emerging markets in Eastern Asia.

Most of the mainstream-oriented models for innovation processes can be divided into three parts: formulation, acceptance and realisation of ideas, (Thom, 1992). In these models innovation processes are often seen as linear-sequential processes. In contrast to this traditional view, we would like to point out that regular innovation processes do not follow a strict linear pattern. Quite often feedback processes take place as the Kline and Rosenberg's classical chain-linked model illustrates (Kline and Rosenberg, 1986).

We used these thoughts as a starting point for our analytical framework which tries to incorporate the fact that not only one enterprise is involved in the innovation process, but also a number of member enterprises, beside the cooperative. On the one hand, the members serve as source of innovation (due to feedback and impulses they give). On the other hand, they can be seen as the recipients of the innovation as they have to implement the innovations in their local market. Due to the fact that within cooperative networks innovations do not represent a one-shot-game, the members are able to feed back their experiences into the cooperative institutions. Thus, a circulation of (new) knowledge emerges. As a result we state our second hypothesis:

Hypothesis 2 he popular view of innovation processes should be modified in order to emphasise the cooperatives' environment as source and recipient of innovation.

Following the above mentioned argument we want to introduce a modified version of the standard innovation process featuring six idealised phases:

- 1. *Market Observation*. During this phase, either the cooperative or the member enterprises themselves perform an extensive market research or hire specialized research companies to collect the necessary information. In addition, internal controlling instruments are also used to detect trends.
- 2. *Identification*. An extensive observation of the enterprise's environment characterises the second phase and leads to the discovery of new knowledge about the market. The above mentioned internal controlling instruments may be used for this as well. During this phase the cooperative primarily develops most of the ideas.
- 3. *Idea.* The decision process begins in the third phase. It is initiated by either the cooperative or the members. Now, both sides work on the coming about of a new product and a limited exchange of ideas takes place.
- 4. *Product Design*. Together, cooperative and pilot members often create the product design. During this phase the knowledge exchange between the two groups is the most intense.
- 5. *Concept Design.* When the product design is completed, the cooperative, alone, usually develops the concept design, which consists of marketing instruments, prices, and financial plan etc.
- 6. *Market Launch.* During the last phase the innovation process is completed with the market launch, which means that the innovation is realised by the member bakeries in their local market.

Figure 1 is a schematic representation of the above described process.

The phases 1 to 3 correspond to the development of ideas, phases 4 and 6 to the acceptance of ideas and phase 6 to the realisation of ideas. The above presented process does not separate the development and design phase (only at the enterprise level) from the diffusion process (only at market level). Instead, the process is geared towards an interdependent relation between business environment and cooperative.

The two criteria for our analysis (impulses for the creation of novelty and the dissemination of knowledge) on which the idealised innovation process is based underpin our contemplations when dealing with the



Fig. 1. Idealized innovation process

processes in Figure 2. We assume that these impulses can come from the cooperative as well as the members. Furthermore, the impulses for the dissemination of knowledge can be driven forward by the cooperative (pushed) or demanded by the members (pulled). This premise entails four different forms of knowledge communication (cp. figure 2). We consider the members as the source of innovation (2), when the decisive innovation impulses originate in their midst and are taken up by the cooperative and are pushed. In this case of knowledge communication the active members assume a leading role. In contrast to that form of communication, the passive members can also contribute to the communication of knowledge within the cooperative network, if they act as the recipients of the innovation (3). In this case, the innovation receives its decisive impulse from the cooperation but these were demanded and stipulated by the members (pulled by the members). If the impulses for the creation of novelty as well as the dissemination of knowledge are emanated by the cooperative, we can say that the cooperative functions as a promoter of the innovation (1). We assume that the cooperative's efforts to convince its members of the innovation are the more successful the more homogenous the member composition is.

When different members act, at the same time, as the source and recipient of the innovation the central feedback processes take place (4). This feedback process can only take place when the member composition features a certain degree of heterogeneity. The idealised innovation process as well as the four forms of the dissemination of knowledge constitute the analytical framework for the results of our case study.

Dissemination of knowledge... Impulses for creation of ... pushed by ... pulled by novelty by the... cooperative members ... cooperative promotor (1)recipient (3) \ldots members source (2)feedback process (4)

Fig. 2. Four cases of communication of knowledge

4 Methods and Data

The main objective of this study is to provide a revised and improved understanding of the conditions of knowledge formation and the meaning of knowledge communication in cooperative entrepreneurship. The methodical approach of the paper corresponds to the idea of developing theories through the means of case study research (Eisenhardt, 1989; Yin, 2003), which is supposed to capture the dynamic and the complexity of the object of investigation. Case study research allows explorative insights into a new field of research. Thus, we state the following hypothesis:

Hypothesis 3 The methodology of case study research provides an appropriate analytical framework for processes of knowledge communication and decision-making processes.

For these purposes we visited a cooperative of bakers as well as three member bakeries. In addition to these four interviews, we consulted another baker who is a member of a different cooperative. We interviewed the BAKO's managing director and the member bakeries of the BAKO. The interviews lasted between 1.5 and 4 hours and took place in September 2006.

The member bakeries can be divided into two groups: the first group consists of active members who experiment with new products, keep an eye on the market developments and often serve as pilot bakers. The

second group is made up of passive members who often have to take advice about which market trends to follow and what new products to include in their range. These two groups represent the classification which can be found within the evolutionary economics. In evolutionary economics two groups exist one featuring entrepreneurs who take the initiative and another group which imitates the first group's ideas, (Heuß, 1965, p. 9).

5 Results of the Case Study

In the following, we will connect the theoretical idea of innovation processes with some results of our case study research. We intend to illustrate the phased development of the process with three practical examples that illustrate three different types of innovation. We have chosen snack bakery products as an example for a product innovation as it features some typical characteristics of this type of innovation. The introduction of commercial coffee machines is associated with the innovation of the production process of the beverage, since the main product was not altered; only improved as "coffee to go" is of higher quality than the traditional filter coffee. Nevertheless, a new product has emerged. Both innovations are already in the phase of realisation. We understand that the shift towards organic bakery products has the character of a comprehensive systemic innovation.

5.1 Product Innovation: Snack

The category "snack" consists of half-finished bakery products. Besides those half-finished products, stuffed rolls, sandwiches and similar products are also included in the snack category. Those products can be finished or crisped up by the bakers themselves.

Market Observation

From the cooperative's perspective the area of frozen bakery food is considered an important addition, especially for small and mediumsized bakeries, since it gives them opportunity to round off their range of products. The cooperative gathers information about the market by conducting their own market surveys as well as through working committees of the BÄKO centre of operations. In this particular case the information was gathered through the extensive analysis of consumption studies which examined general consumer trends rather than one particular snack product. The subject of research was therefore consumer trends and also the preferences of the members' customers. In this early stage of the innovation process, the members were only informed about these trends and were advised to act accordingly; therefore, they did not play an active role in the market observation but were merely recipients.

Identification

Taking into consideration these general consumer trends, the members monitor their local markets while paying special attention to variations and alterations in the snack division. If the assortment of snack products is popular or successful strongly depends on the structure of the customer base. Therefore, the objective of every baker is to find their individual mixture of snack products from their range of products that is the most successful with their local customers. In the context of identifying market potentials we found a significant difference between active members (pilot bakers) and those benefiting from a new idea simply as recipients (passive members). The first category is obviously involved in the early stages of product development, whereas, the latter only profits from the innovation and subsequently tests its popularity in practice (i. e. when the cooperative includes the new product in their product range).

Idea

From the preceding phases (by means of direct observation, inquiry, information issued by the BÄKO centre of operations, gathering and analysing information) the members gain new insights and attain knowledge, while taking into account their technical restrictions and the applicability of the innovation for their own purposes.

Design

The fourth phase can be divided into two parts: product design and concept design. In our snack example the latter does not play an important role as its main characteristic is its novelty and therefore requires no particular financing or marketing strategy. The bakery's choice of products is a very individual matter and depends on two different production methods; first the home-made pastries that the bakers produce themselves and second, frozen products which are ordered from the cooperative and can only be slightly refined by the members themselves.

Market Launch

In the snack example the last stage is very simple. Normally, new products are produced in small quantities and offered as new creations to the customers. If successful, the new articles are added to the cooperative's product range.

Feedback Processes

Formal organisational institution, like the sales staff, but also by informal institutions inform the cooperative about the performance of the snack innovation. If a snack is particularly successful, the members have the choice of either including the cooperatives' new article in their individual assortment or to learn the underlying production method from the cooperative. As part of a feedback process, the bakers' experiences will be reported back to the BÄKO centre of operations, where the individual baker's expertise will be discussed in different working committees. The further development and improvement of the snack division strongly depends on the continuous effort by the members to offer a great variety of products and keep a vigilant eye on the customer's wishes and demands.

5.2 Process Innovation: Coffee

The second practical example and subject of our case study is the relatively new phenomenon of bakeries selling coffee for consumption at the shop as well as "coffee to go". Innovative about the coffee offer is the fact that commercial coffee machines brew the coffee, instead of conventional coffee makers. This means a considerable investment for small and medium sized bakeries and is a characteristic feature of an innovative processing method.

Market Observation

As a first result of their market research the cooperative detected a general trend towards convenience and ready-to-go food and in particular towards "coffee to go". Simultaneously, we noticed that on the member level an active observation of the competition in the local vicinity took place, for example bakers noticed that nearby coffee roasters were becoming quite popular.

Identification

Both the cooperative and several pilot bakers identified high quality coffee products as attractive extension for their range of products.

Idea

How to introduce high quality coffee into the member's bakeries (especially in rural areas) has been discussed through internal communication organs between the cooperation and the members. The members of the managing board as well as the sales representatives drove the debate about the introduction of coffee forward. The internal exchange about the issue mainly took place during the regular visits of the sales representatives in the local bakeries and through informal institutions.

Design

The design was basically limited to the concept rather dealing with the design of the product. In detail, the concept design consisted of the appropriate selection of coffee automats, financing, consulting, marketing and instruction classes.

Market Launch

The exchange of knowledge is mutually stimulated. A mutual enrichment of knowledge took place The internal implementation, was heavily promoted by the cooperative. For this purpose, sales representatives underwent great efforts in order to spread and popularize the idea among the members through product placements and sales-promotions. Additionally, members of the board used the informal institutional frame of the organization to convince the members of their idea. Today the market launch stage of this process innovation is almost completed and a commercial coffee machine can be regarded as standard equipment of a modern bakery.

Feedback Processes

All participating members reported that they are very satisfied with the commercial coffee makers and earned extra profit.

5.3 System Innovation: Organic

In contrast to the two aforementioned examples, the third case does not deal with an innovative restructuring process of a single product (product innovation) or the conversion to a different processing procedure (production method innovation), but rather with an innovation process of a more general character. The inclusion of pastries with organically certified ingredients into the range of products or even complete the

conversion to organic products entails far-reaching changes in the production process (our understanding of the notion of system innovation). The changes are so profound because each supplier in the value chain has to ensure and certify the organic origin of their product. Due to the fact that organic products must meet specific requirements in respect to their processing methods this process is very elaborate and costly.

Market Observation

A general market observation and the identification of general and longterm trends mark the early phases of the innovation process. In contrast to the snack example, we found that no important innovation impulses came from the members. Instead, the impulses came from the higher levels of the cooperative who were keen to ponder the question of how to make the bakeries part of the organic food boom.

Identification

By the means of analysing the market potential and identifying market impulses the cooperative and the working committees of the regional centres of operations identified organic products as a interesting addition to their bakers' product range. Despite the positive assessment of organic food, the cooperative and the committees concluded that organic food would only be a valuable gain for some of the bakers. They did not expect bakers to change their whole production from conventional to organic.

Idea

The introduction of organic products was discussed using through internal communication channels. Formal institutions like the supervisory board played a major role in the debate.

Design

Members are only involved in the development process in so far as they are part of the official decision body of the cooperative (members of the executive and the supervisory board). In this example a couple of conflicts arose between the members and the cooperative, because several bakers feared that customers would regard the quality of their home-made products as inferior to the organic ones. The product design was created by the BÄKO and the working committees of the regional centres of operations, whereas the concept design was created by the BÄKO. Their strategy included several special services like classes, fairs, workshops.

Market Launch

The market launch stage just began. Therefore, only a few experiences were made when we conducted our case study.

Feedback Processes

Some bakers reported that they were planning to produce only a small number of products (mainly breads) with organically certified ingredients. The bakers' intended production scale for organic products concurs with the management's expectations.

5.4 Interpretation of the results

The decisive advantage of an embedded cases study design (Yin, 2003) lies in the ability to compare the results of the different examples of the study and to reach a broader level of explanatory power. The previous sections we illustrated three innovation projects with the model of the idealised innovation process. In addition we are going to discuss these projects with special attention to the four forms of knowledge communication presented in section 3. In general, we can assume that case (2) is more likely to occur in the early stages of the process, whereas case (3) seems to be typical for the late phases. The degree of heterogeneity of the members as well as the proportion between active and passive members affects and determines the creation of knowledge and its dissemination and is therefore a crucial factor in the overall process. A clear temporal distinction is not possible in case (4); during all the stages of the innovation process members can be the source of innovation as well as the recipient of innovation. In this case we observed the aforementioned feed back processes in terms of of Kline and Rosenberg. In some phases the cooperative assumes the role of a promoter for the innovation (case 4).

If the members are the recipient of innovations, then the question arises of who will gain the upper-hand in the internal decision-processes. In this case, the cooperative plays the part of the promoter and advertiser of a new idea. Sometimes, the cooperative even has to persuade the member of the idea.

Figure 3 contains a summarized overview of all practical examples while paying special attention to the four forms of knowledge communication in the individual phases of our idealised innovation process.

Our assumptions were only partially confirmed: in the first three stages of our snack example the members function as the source of

			Phase of the process						
* * *			Ι	II	III	IV	V	VI	Ħ
* * *		type of	observation	identification	ideas via	product design	concept design	market launch	
* *		innovation	of the	by	communication	by	by		•••
source recipient * feedback	promotor				between				မ
		product			customers +	\dots cooperative +		tasting,	H
		innovation	customers	local units	members	pilot members	—	communication	മ ഇ
		(snack)	**	**	**	****		with customers	ble
ok ut		process		\dots cooperative +	members +			placement	0
р		innovation	competitors	pilot members	cooperative (sales	_	cooperative	and sales-	fı
rocess		(coffe)	***	****	rep., informal inst.) $*$		***	promotion)	es
		systemic		analysis of	\dots cooperative +	BÄKO centre	BÄKO services		Ë.
š		innovation	general market	the market potential	BÄKO centre of operations	of operations +	(classes, fairs)	not completed	\mathbf{ts}
		(organic)	***	***	(formal inst.) $****$	working comm. ***	*		_

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innovation, only in the third and fourth phase the important knowledge exchange takes place. Only in the fourth phase feedback loops become discernible (member base = source = recipient), when the new snack products become available to the passive members through the cooperative's frozen food offers. Here the cooperative does not act as the promoter of the innovation, since the innovation process and the associated decision process is limited, to the greatest possible extent, to the member level. In the example of the innovation of the production process, the members were regarded, from the very beginning on, as the recipients of the innovation. The important communication between pilot members and the cooperative takes place in the second phase. In the fourth phase, the cooperative acts as the promoter of the innovation thus trying to convince the passive members, in particular, of the new product. From the fifth phase onwards the members are again only recipients of the innovation and play no active part. In the snack-example, no stage can be identified were the members function as the source of innovation. In the beginning and in the middle of the innovation process the members are perceived as the mere recipients of innovation. The important communication processes happen in the third phase and include members, only in so far, as they a part of the official decision-making body and are thus used as a source of innovation. In the fifth phase, the cooperative again acts as a promoter of the innovation, in a similar way as in the coffee-example, but by using different channels.

6 Theoretical Implications and Conclusion

In short, the main results of our case study are the following: The presented examples illustrate that the idealised innovation process which we developed already exists in practice. It became evident that communication processes, through formal and informal channels, are crucial for the success of innovation processes. The complexity and scope of innovations can lead to frictions or conflicts as we have seen in the case of the introduction of organic products; this example demonstrates the complexity of system innovations. Therefore, cooperatives should work out measures and guidelines that will help to solve these conflicts. Our results can be summarized in three hypotheses:

Hypothesis 4 The processes of knowledge communication are variable and institutionally flexible depending on the characteristics of the object of innovation.

Hypothesis 5 Decision-making does not underlie a fixed hierarchical pattern within the cooperative but depends on the type of innovation and the distribution of entrepreneurial qualifications.

Hypothesis 6 The institutions responsible for resolving conflicts between the members and the management are well prepared when dealing with differences in the area of product and process innovations. Unfortunately, they are less prepared to defuse conflicts when it comes to systemic innovations.

The case study helped us to gain a deeper insight into innovation processes within cooperative organizations. We think that further researches should include the following points: knowledge communication can take place through *three channels*: 1. he cooperative can attain the necessary knowledge about their member's market by *direct market observation*, 2. by monitoring the *exchange patterns* (i.e. monitoring which products the bakeries order), 3. by directly communicating with the members. Having established these three channels one could inquire on which factors the use of the three channels depends and what factors would be important for an efficient employment. Executive organs with adequate authority should settle arising conflicts. In our practical examples we observed a wide range of different utilisations of the channels e.g. more direct market observation in the organic example, intense direct communication in the coffee example. Based on these examples the following hypothesis can be stated:

Hypothesis 7 The selection of the appropriate channel is primarily driven by the dynamics of the concerned markets.

In other words, the dynamic of the involved markets is the driving force behind the usage of the three channels and determines how they are used.

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