

Planning model supporting information and service agency in meat chains designing services in chain oriented health management

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Problem Statement

In the future health management for livestock farming will become increasingly important at company level, but above all at inter-company level (PETERSEN et al., 2007). Therefore two reasons are to be appointed for the German meat sector:

- Structural change in production chains (increasing size of farm units and decreasing number of farms as well number of trade organisations and slaughtering companies)
- Increasing requirements regarding the health and hygiene status of animals and companies

For an efficient production of high quality meat products the coordination of quality management tasks in value added chains is becoming extremely important for all partners (LAMBERT and COOPER, 2000; TRINIKENS et al., 2006). PETERSEN and others (2002) note to monitor and regulate the biological, technical and organisational process steadily but principally timely. This results in reduction and avoidance of undesirable developments in all production stages. Products which differ from nominal value can be traded or brought into other purpose. On the one hand to achieve a defined high quality of products requires the willingness of all partners in the production chain to exchange systematically process parameters and information up- and down-streams. On the other product and process standards consequently converted support standardised product quality. Accompanied by the “new” legal requirements (e.g. European Hygiene Package) is this the basal framework for the communication networks. It means that traditional information and communication technology (ICT) providers have to adopt and expand their service portfolios to take this into account.

The trade of breeding and slaughter animals is mainly assumed by specialised livestock trades in Germany. They trade livestock between the primary production level and the slaughter level. Based on increasing sizes of stocks per farm there is a certain risk of disintermediation (SCHULZE et al., 2007). This means that farming companies and slaughter houses themselves take over the buying and selling of animals without any middlemen. Therefore the livestock trade is examining ways of expanding its fields of activities.

Objectives

There are two main objectives from livestock trader expand services:

- Increase of efficiency of trade processes including logistic and transport
- Contemplating measures to increase customer-connectively

For adapted or new services the two objectives give a scope for development. Therefore decision makers of these trade companies need support to analyse the customer requirements systematically and their own service potential, too. But there are no instruments for collection, evaluation and planning services especially for the quality and health management. In this article a planning model adapted on the needs of livestock traders and the meat sector will be presented.

Procedures

The planning model was developed in seven successive steps. The first three steps:

1. Analysis of service requirements
2. Design of information and communication systems for fulfilling requirements
3. Calculation of benefit of the system functionalities

have been conducted to develop the consumer oriented elements. There were service data available from twelve sub-studies with a total of 681 interviews. The target groups of the empirical studies were pig producers, fatteners, production advisors, fodder advisors, veterinarians, slaughtering companies and livestock traders. The prime focus of the survey was determined on what kind of data and information were required for decision situations in health management. It also was focussed on what kind of information was provided for the different groups of users. The sub-surveys were executed by using four surveying techniques: standardised questionnaires, expert interviews, combination of expert interviews and concept mapping as well as rounds of debate. Expert interviews were also the basis for the process analyses (4th step) by livestock traders, which formed the basis for a set of methods for calculating the benefit of system functionalities (3rd step) and the efficiency of the service complexity and intensity (5th step). The method of blueprinting (SHOSTAK, 1987) was used for visualising all service processes in the temporal progression. Criteria for selecting service typologies were defined in the 6th step. The aim of the standardised oral interviews was to determine the questions which stipulate the attractiveness of a business segment and the attractiveness of the business segment in this sector. For the three steps of the service oriented analysis there were a total of 19 organisations available from the sectors livestock trade (15), fodder production (1) veterinarians supervising stocks (3). As a last step for the definition of elements for the planning model, all results of the first six steps were integrated.

Results

The study results into a planning model which considers costumers and service providers (Fig. 1). Users of the model are organisations that would like to rework or expand the services in health and quality management in meat chains as well consultants. For each step of the planning process five elements for analysing and evaluating tasks in health management support the decision-making of service providers.

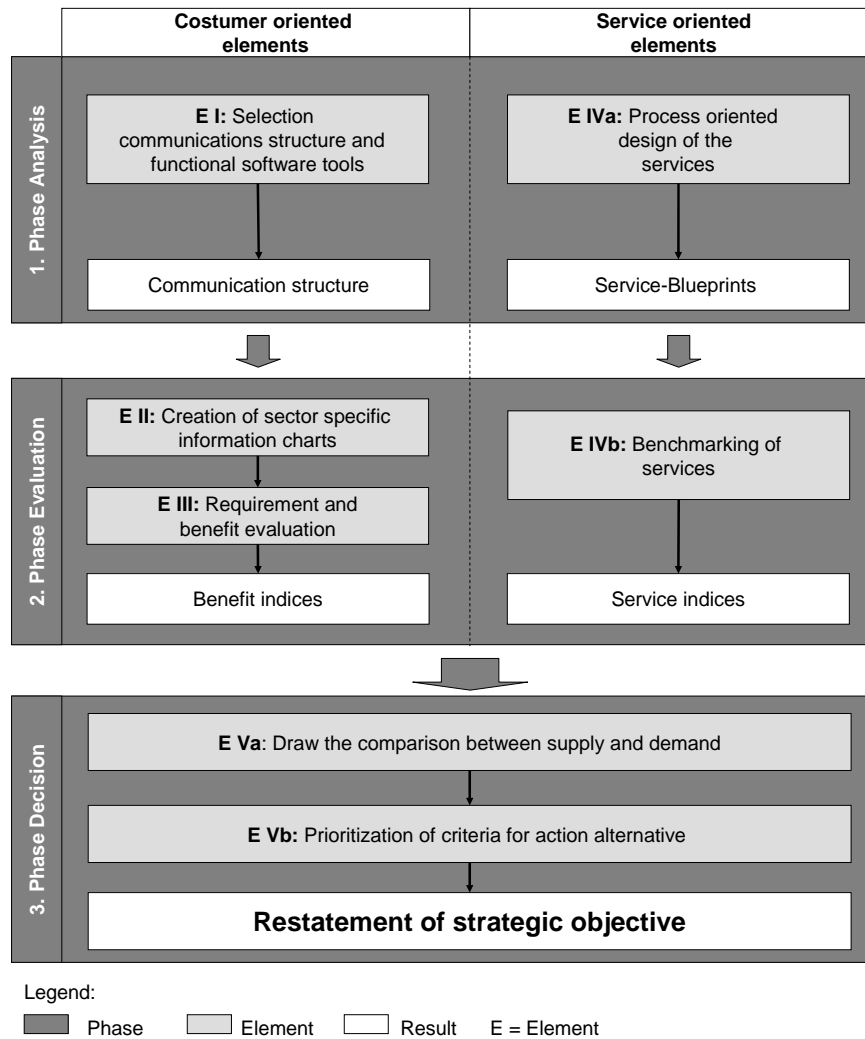


Figure 1: Planning model for information and service agency

The elements are allocated to three phases within one systematic approach, **analysis**, **evaluation** and **decision** steps (AED-Model). With element E1 the service provider first of all stipulates the future communication structure. That implies the definition of all potential participants of new information communication technologies supporting the four quality management areas, supplier, crisis, audit and document management. The communication structure forms the basis for Element E2. It is a pre-structured selection matrix for evaluating the technical and organisational benefit. Here a number of sector-typical decision situations on the market are taken into consideration and also system functionalities that should be developed. Three to five different functional software tools can be allocated to each area of activity. These are software tools adapted to the special requirements of users, which are based on one to four basic tools. The basic tools include database, audit management and document management systems and analysis tools. A selection field for four quality management areas of activity and 16 functional software tools make it easier to draw up surveys of potential customers. The pre-structured information map is a supporting instrument for the customer survey. During interviews with the customers outlines are the actual situation and the target situation of the required data and communication structures. As well an evaluation according to priority through the following six criteria: time saving, increased information, time schedule for decisions, degree of willingness to exchange information, degree of trace-

ability, degree of benefit expectation (E3). These parameters can be supported by two algorithms for calculating index values, which enable the ranking of the respective technical and organisational benefit for identified system functionalities. The templates and software tools for analysing the complex interrelationships in meat chains enable this planning step to be reduced to an interview lasting approximately 1.5 hours for each potential customer. Furthermore, the interviewer and interviewee require hardly any computer skills. The target of imaging inhomogeneous user groups' requirements for services can be realised in short time.

The reflection of the service provider's own processes is also supported by matrixes. They help to stipulate the respective roles of participants in inter-company health management (E4a). Besides they allocate the existing processes to the 13 predefined service typologies of health management. The intensity of a service is graduated according to how often it is used and how many documents are produced for this purpose. The selection list ranks 29 different activities and 44 different types of documents. The evaluation not only takes into account service intensity but also the comparative criteria service complexity. Here parameters such as the number of service providers and the frequency with which the services are repeated per year and per customer are taken into account. For benchmarking a software tool developed for this purpose works out comparative values using stored algorithms based on the parameter employee figures. The algorithms take into account company sizes based on the number of employees. This enables different sized companies to be compared.

The last phase of the AED-Model primarily focuses on the decision-making process regarding which alternatives for action a service provider has for reorganising or expanding service potential. Here the companies can use a list of tasks specially drawn up for the meat production industry, which are implemented there in quality and health management. It takes into consideration the aspects of finances, personnel and strategic company objectives, and valued on a scale of ten (E5). The evaluations can then be finally summarised into three types: expansion, specialisation and outsourcing. In principle for implementing expanded and new services aimed at pursuing food safety and quality as a joint policy within supply chains three approaches of B-to-B and B-to-C cooperation are possible (Fig. 2):

- Full-Service-Approach
- Joint-Operating-Company-Approach
- Outsourcing-Approach

In all three approaches a differentiation is made between services that are provided in the form of Business-to-Business services or Business-to-Customer services. In the B-to-B situation e.g. veterinarians or consultants, who in turn are themselves service providers, rely on services of a coordinating organisation. In the case B-to-C the customer is e.g. pig producer or fattener. They require the available data and information for their decision making, like transport or not in animal epidemics.

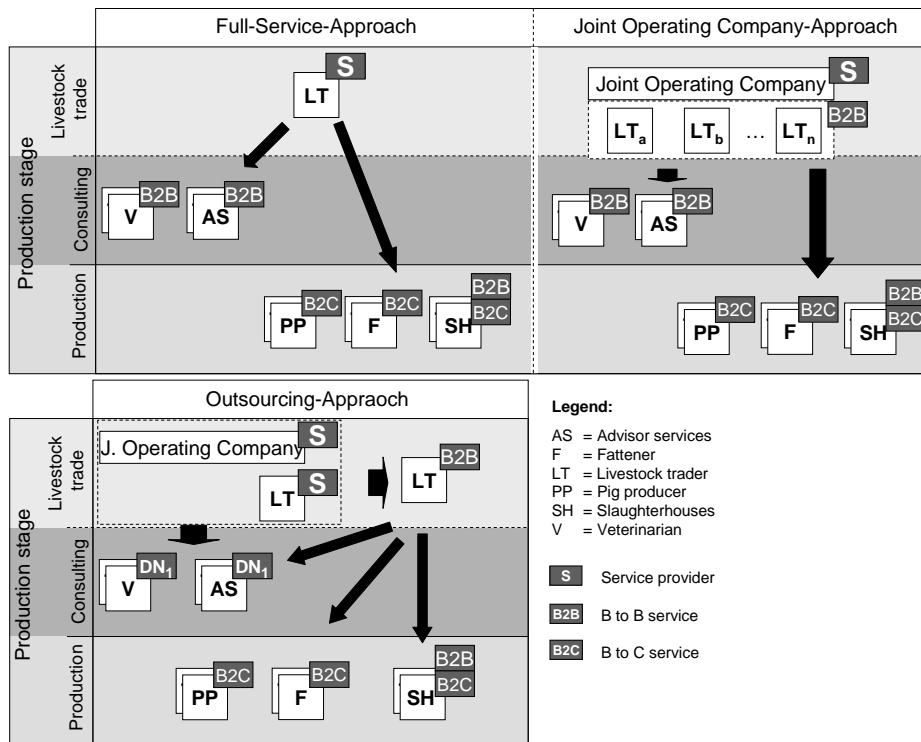


Figure 2: Organisation models for livestock trader

For livestock traders with a large service portfolio the Full-Service-Approach is proposed as a future company development strategy. This means that they take over the full spectrum of services for all participants in the meat chain. For several traditional livestock traders a Joint-Operating-Company is a suitable approach. In this Joint-Operating Company two or more livestock traders cooperate in order to be able to offer specific services in the future. Organisation implanting the Full-Service-Approach or Joint-Operating-Company-Approach take over responsibility for the tasks and functions for further developing of technical information and communication instruments, the financial processing, the controlling and the marketing, etc.. For this purpose organisational structures have to be set up for creating and selling such services. For organisations that can not provide the necessary personnel and financial resources for this the Outsourcing-Approach would represent a possible path of development. With this approach the organisation only fulfils the role of a mediator between the consulting and production levels.

Conclusions

The developed AED-Model combines methods for comparing and evaluating service profiles in order to make the systematic planning of future sector-specific activities easier. Here special attention is devoted to tasks in individual and inter-company health management of meat producing chains which are absolutely essential for ensuring high quality food. For implementing new services, which in each case represent both a combination of information and communication services and personal consultation, the three approaches are suitable for a cross-level organisation. The Joint-Operating-Company-Approach represents a future-oriented organisational form for livestock traders. The financial risk for investment is spread in one offer for information, communication and personnel services so that the financial risk

for the individual company is reduced. At the same time there is a codetermination possibility for companies raising livestock and slaughterhouses in their capacity as customers for the further development of the service profile.

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References

LAMBERT, D. M. and M. C. COOPER (2000)

Issues in Supply Chain Management, In: Industrial Marketing Management, 29, p. 65 - 83

PETERSEN, B., S. KNURA-DESCZKA, E. PÖNSGEN-SCHMIDT and S. GYMNICH (2002)

Computerised Food Safety Monitoring in Animal Production, In: Livestock Production Science, Vol. 76; 2002 p. 207 – 213

PETERSEN, B., A. MACK, V. SCHÜTZ und G. SCHULZE ALTHOFF (2007)

Nahtstelle als neuralgischer Punkt - 3-Ebenen-Modell zur Weiterentwicklung überbetrieblicher Qualitätsmanagement-Systeme, In: Fleischwirtschaft, H. 4/2007, p. 89 - 94

SCHULZE, B., A. SPILLER and L. THEUVSEN (2007)

A Broader View on Vertical Coordination: Lessons from the German Pork Sector, In: Journal of Chain and Network Science 7/1, p. 35 - 53.

SHOSTACK, G. (1987)

Service Positioning Through Structural Change, In: Journal of Marketing, Vol. 51, January 1987, p. 34 - 43

Trienekens, J. and J. Vorst, van der (2006):

Traceability in food supply chains In: Luning, P. A., F. Devlighere and R. Verhé, Safety in the agri-food chain, Wageningen Academic Publishers, p. 439 - 470