INFRASTRUCTURE OF INFORMATION-PORTALS FOR THE AGRI-FOOD SECTOR – INFORMATION DEDUCTION AND PORTAL MANAGEMENT

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ABSTRACT

Due to the increasing importance of information, agri-food sector businesses require an infrastructure to provide information, adapted to their needs. Information portals enable such provisions technologically. Confronted with sector-specific demands, our intention is to create an information infrastructure, which suits the needs and environment of both the portal’s provider and user. Therefore information and knowledge management, sector-specific interaction processes, and the aspects of portal management are taken into account. The paper discusses the relationships between the different aspects and the design of the portal using its elements. The following illustrations concentrate on the derivation of the portal’s information content according to sector-specific interaction processes. In addition to the aspects of portal management, the information need, the derived tasks of the provider, and the success factors for portal provision determine alternatives of portal ownership models.

KEYWORDS: Information Portal, Agri-Food

1. Introduction

The supply of decision makers with the right information and knowledge at the right time and place has become a very critical success factor also for the agri-food sector with its sector-specific characteristics. The attempt to implement a management information system for the agri-food sector confronts us with the following problem areas:

- Information processes are unstructured and not demand-oriented
- The small and medium sized enterprises (SMEs) of the agri-food sector demand a common (sector) solution.
- The aimed sector solution and the different forms of relations of the SMEs require an analysis of their interaction processes and the impact on information needs in this regard.

With the advent of the Internet and its portal technology information, from a wide variety of sources can be managed from a single point of access. Referring to the demanded sector solution mentioned above, portal technology resolves the problem of providing common information interests using technology. By means of its shared information workspace, the portal facilitates information access, communication, and collaboration between different portal users (Detlor, 2000).

Our assignment is to develop a reference model for information portals. This model serves as guideline for developing an information portal suited to the special needs and situation the user(s) resp. user groups and the provider are confronted with. One key module of the information portal is the information offered within the portal. The information is derived from the sector-specific business relations. Together with the portal management, its success factors and tasks the module information and the information access constitutes
several portal ownership alternatives. The major objective of this paper is to discuss the relationships between the different elements and their influencing and determining factors. Figure 1 drafts the discussion of the elements and their relationships in the order of their appearance in this paper.

![Figure 1: Order and relationship of the portal elements](image)

2. Portal Infrastructure

The term infrastructure refers to technical bases, methods, models, and tools, the information converting processes, organizational concepts and roles, and the concerned persons. In this context, different factors and needs (driving forces) affecting and completing the infrastructure have to be concerned. According to Kreuder (2002), these driving forces are:

- **Information management**: The methods and procedures that are formulated and codified within the information management approach define the method of the development of the infrastructure.

- **Knowledge management**: Regarding the rising importance of knowledge, the theories and principles of knowledge management have strong influence on the portals design.

- **Analysis of the sector-specific characteristics and interaction processes**: Ignoring these factors excludes the identification and the illustration of the information needs of potential information portal users. This again leads to the failure of information portals in most cases. The analysis enables the illustration of different information needs and communication flows with regard to the sector-specific interaction processes.

- **Management of information portals**: In contradiction to the analysis of sector-specific characteristics, which focuses the dimension user, the aspect management regards the dimension provider.

The information portal itself consists of a set of modules, which are summarized in two groups design and strategy. The modules of the latter group are (1) different revenue models (e.g., fee for services, fee for information) and (2) special types of ownership linked to various business models. Modules associated to the group design are (1) technology (basic portal technology resp. software), (2) various functions and functionalities used during the interaction with the portal, (3) ergonomics (guidance of the user through the site structure of the portal), and (4) data, information, and knowledge the portal user interacts with. Figure 2 illustrates the infrastructure of the reference model for information portals.
The following explanations focus on the module information. Information, as the key element of the information portal infrastructure, is mainly influenced by the sector-specific characteristics and interaction processes between two or more business participants and the aligned information needs. According to the demands on efficiency, in regards to the information provision, all structures and derived information needs have to be considered.

3. Sector specific characteristics

Several forms of business relations and other interaction processes characterize the structure of the agri-food sector. Against the background of the ongoing changes of the structure of the sector, crises and the arising legal requirements and restraints cause ongoing changing and growing demands on the production, processing, and trade of goods. Business relationships resp. interaction processes offer alternatives that could meet the demands and modifications sufficiently (e.g. supply chain). The actually existing sector-specific relations in the agri-food sector are illustrated in figure 3. We refrain from describing the single business relation resp. interaction processes in detail. The following discussion of information needs refers to these five relations.

The interaction process competition features no shared information interest in traditional sense. However, the case of competition determines business decisions sustainable. According to this, business information about competition by scanning the competitive environment is of importance Fritz/Schiefer (2002).

The loosely coupled buyer-seller-relationship is the simplest structure of vertical arranged business relations resp. interaction processes. This loosely alliance describes the
contrast to the supply chain. Contrary to the supply chain, the network encompasses more than one chain and one stage of production chains.

In literature, the need for internal and external information of one enterprise has been analyzed by using the ‘critical success factors’ method based on Rockhard (Kuron, 1993) and Porter’s ‘fives forces for industry analysis’ (v. Spiegel, 1994). However, the identification of information needs beyond the background of special business relations is still missing. Therefore, we have to identify and differentiate the information complexes and, accordingly, the content, which is of common interest for user(s) or user groups involved in specified business relations (Schiefer/Kreuder 2001). Table 1 gives an outline of the business-relations resp. interaction processes and the information complexes they concentrate on.

**Table 1**

<table>
<thead>
<tr>
<th>Business-relation resp. interaction processes</th>
<th>Special information complexes (Keywords)</th>
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<tbody>
<tr>
<td>Competition</td>
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<td></td>
<td>- Competitor’s activities</td>
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<tr>
<td>Cooperation</td>
<td>- Product quality</td>
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<td></td>
<td>- Quality of the production process</td>
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<tr>
<td>Business-Seller-Relationship</td>
<td>- Market-oriented (e.g. price)</td>
</tr>
<tr>
<td>Supply-chain</td>
<td>- Product quality</td>
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<td>- Politics-oriented (acts, orders, legal stipulations, political intentions)</td>
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<td></td>
<td>- Consumer-oriented (product and quality demands)</td>
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<td></td>
<td>- Changes within other chains/branches/sectors</td>
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<td>- Structural data</td>
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<tr>
<td>Network</td>
<td>- Market-oriented (e.g. price)</td>
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In addition to the illustration of common information needs related to one of the five business relations resp. interaction processes, table 1 also illustrates the common needs of several business relations resp. interaction processes. These combined demands indicative potentials of efficiency for the information portal provider and his management strategy. The potentials are so much higher, the more user(s) and user-groups in the sense of enterprises involved in business relations and interaction processes one information portal provider has.

Considering the different information complexes and their provision, there is a need for discussion with regard to the potentials of the portal’s provider and his resources. This consideration leads over to the discussion of the element ownership and its development and design. Therefore, it is necessary to discuss the portal management and to adjust this to the determining success factors and tasks.
4. Portal management

The element portal management consists of all procedures and activities to create competitive advantage for the portal provider. Considering the discussion of portal ownership, factors for successful portal provision have to be identified. This success factors have to be related to the provider’s tasks. The identification of the processes serves as a basis for the formulation of the provider's tasks.

In contradiction to Porter’s model of the value chain as a framework for diagnosing and enhancing competitive advantage, additional models have to be created to include the usage of the portal, it’s functionalities, and the provided information. Therefore, it is necessary to distinguish between (1) processes of service and content provision, (2) management processes, and (3) supporting processes. Concentrating on the former processes, several core processes are identified: (a) create original information content, (b) bundle and (c) distribute information content, provide (d) communication and (e) community infrastructure. The following figure 4 illustrates the portal provision processes in a simplified way.

![Figure 4: Service and Content Provision Processes](image_url)

Complementary to the statements mentioned above and in figure 4, it has to be recommended that all actors involved in the portal provision processes can change their roles. However, the user can act like an author and portal provider, and the provider can be a user simultaneously. The described processes depict the portal providers main tasks: (1) provision of technology, (2) trade with information via the portal by bundling and distributing information, and (3) creating own information content.

The following statements concentrate on the success factors resp. facts to consider for providing content and services successfully. The different success factors consist of both the market based view (Porter, 1989) and the resource based view (Wernerfelt, 1995). Derived from their considerations, several facts have to be taken into account: (1) the provider’s resources, (2) his reputation and (3) connections, (4) the industry knowledge, and (5) the information access. Focusing the aspects of content and services providing the last to facts are described in detail:
Industry knowledge: Industry knowledge describes both the portal provider’s and the user’s industry. Considering the latter industry knowledge simplifies the illustration of the user’s interaction and communication processes and in addition the reproduction inside the portal’s infrastructure. Industry knowledge facilitates the analysis of the information needs of potential portal user(s) resp. user groups.

Information access: Information access is related to industry knowledge. Either the portal provider creates and distributes his own information or he acts like an information trader. Both alternatives benefit from direct information access for technical and financial reasons. Information access also deals with the already mentioned provider’s reputation. The aspect of information access points out the importance of the different business relations resp. interaction processes and the information complexes they concentrate on.

These named facts influence the decisions concerning the ownership of the information portal in various ways. The facts manipulate both the market entry of the portal provider and the long-term corporate success. The evaluation of the portal provider’s faculties and potentials based on the drafted facts above leads to the discussion of different portal ownership alternatives.

5. Portal ownership

The term portal ownership alternatives describes the different models of providing an information portal for the agri-food sector based on the industry membership. The different industry memberships are: (1) enterprises of agri-food sector as there are the (a) producer, (b) trader, (c) wholesaler (d) food industry, (2) service enterprises belonging to the agri-food sector, (3) input industry, (4) research institutes, (5) public institutions, (6) associations, (7) publishing industry, (8) pure internet enterprises.

Derived from these comments several recommendations can be made. The singular aspects have to be taken into account and need to be discussed. The linking between the aspects business relations resp. interaction processes and the needed information, the portal providing processes and the provider’s tasks, the facts concerning portal providing successfully and the different portal ownership alternatives enables the development of a rule type according to the various needs of both the provider and the user. This rule type acts as an additional element for the portal infrastructure and in relation to this as a main part of the reference model.

Based on these statements, the conclusions of the discussion of the rule type will be presented during the conference. At this time, the actual research results will be included.

6. Summary

Information portals as an technological instrument for providing common interest concerning information access, communication and collaboration require an infrastructure to fit the needs of the enterprises of the agri-food sectors. This infrastructure, with its elements and modules, is characterized by various dependencies and mutual impacts. The module information is derived by the information needs of potential portal user’s and the user’s business relations. In addition information together with the portal management constitutes several portal ownership alternatives. The analysis and the discussion of these relationships enables the development of a rule type, which contributes to the discussion of the whole infrastructure for information portals.
LITERATURE


