

Vertical and horizontal information portals: cooperation models for sector and chain information services

Gerhard Schiefer and Anne Catharina Kreuder
University of Bonn, Business and Information Management
schiefer@uni-bonn.de
a.kreuder@uni-bonn.de

Abstract

Information portals are means for the delivery of information services to interested groups. The complexity of the agrifood sectors requires a differentiated infrastructure of information portals which serves different categories of information interests. Enterprises information needs build on enterprise-specific information and on information with interest for groups of enterprises which are on the same stage of the food production process or which cooperate within a vertical production chain. The paper discusses various information delivery alternatives and outlines models for the design of an information delivery infrastructure for sectors of the agrifood production chain.

Keywords: Information Portals, Production Chains, Agrifood.

1. Introduction

If there is a common information interest among businesses (farms) in a sector or among businesses within agrifood production chains, then there is a need for common initiatives. In this respect, sectors/chains have two problems: They need to identify

- (a) common information interest and
- (b) appropriate common initiatives to serve those interests.

In the view of this paper, ‘sectors’ represent groups of enterprises on the same stage of the food production process (horizontal view) which are linked to a certain agricultural or consumer food product category whereas ‘chains’ describe enterprises which are involved in supplier-customer relationships along the production and trading process directed towards the delivery of a certain food product. In this view, farms with their diversity in production may belong to different sectors (e.g., grain production, pig fattening, etc.) as well as to different vertical production chains.

With the advent of the internet and the development of advanced internet portal technology (see, e.g., Detlor, 2000), the design of internet-based information systems which could serve common sector/chain information interests seems to be within reach. As a consequence, in many countries different groups with public or private background are trying to establish appropriate information portals for enterprises of agrifood sectors or chains. However, these initiatives are rarely based on a thorough analysis of common information interests of sectors or chains. They remind of trial and error processes which capture short term interests measured by visitor traffic but lack the

conceptual basis for the development of an information service which could meet common information interests in the medium and long term.

Common information interests have an organizational component which defines the focus of an information portal and the boundaries in which common information interests are being identified (focus organization). The organizational focus component is closely linked with

- (a) the management organization of information portals which includes the involvement of individuals and groups in the collection, provision, and maintenance of information and
- (b) the content organization which evaluates information needs and specifies the information content within the pre-set focus boundaries.

It is the objective of the paper to identify principal organizational alternatives in focus, management and content for information portals which aim at serving common information interests of enterprises in sectors or chains and to formulate models and development paths for their realization. The information interests of enterprises may involve information services for management and personnel within enterprises as well as services for suppliers and customers.

2. Information portals

Information portals could, in principle, provide information which serves

- (a) enterprise specific interests,
- (b) common interests of a group of enterprises or
- (c) specific and common interests together (one-stop information service).

Furthermore, the information could be provided through individual user enterprises, through groups of user enterprises or through non-user public or commercial initiatives.

Portal initiatives for the comprehensive provision of information with common interest are beyond the capability of individual user enterprises in sectors with an infrastructure dominated by small and medium-sized firms as is common in the farming sector and the sectors of their immediate business partners.

In such situations, portal initiatives which could serve common interests require public initiatives, the engagement of commercial interests from outside the sector or the establishment of cooperative initiatives by interested groups as, e.g., groups of user enterprises.

However, whatever the organizational basis, the provision of information requires a portal infrastructure which delivers (see figure 1)

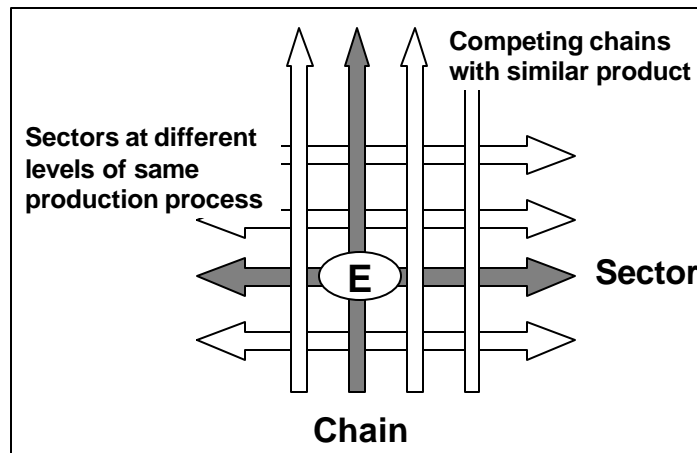


Figure 1: Enterprise (E), sector, and chain

- (a) enterprise specific information for enterprises in different sectors and chains,
- (b) sector information of common interest for enterprises within sectors for different sectors at different stages of the production chains, and
- (c) chain information of common interest for enterprises within chains for different chains.

In principle, the physical portal infrastructure for information delivery builds on virtual portals for information provision which aggregate enterprise specific information ('enterprise portals'), sector information ('horizontal portals'), and chain information ('vertical portals'). The physical organization of the portal infrastructure for information delivery may differ from the virtual infrastructure for information provision and combine different virtual portal alternatives in accordance with management or user requirements.

The differentiation between enterprise-specific (individual) and common information interests as well as between common sector interests and common chain interests requires a thorough analysis of enterprises' information needs and their appropriate allocation to the different information categories. This allocation could be the result of cooperative efforts of interested groups or of a competitive allocation phase.

The allocation of information needs may change over time. It depends on the strength of formal and informal cooperation between enterprises within sectors and production chains. Due to market pressures in the agrifood sector, cooperation will generally intensify over time but especially within chains to meet the increasing requirements on food quality and production efficiency.

3. Portal Infrastructure Models

3.1 Focus (content) organization

Principal organizational alternatives for the delivery of information with common interest involve
 (a) horizontal portals with stage orientation and
 (b) vertical portals with chain orientation

The present situation in European countries as well as in the US is characterized by the emergence of horizontal portals, some of them highly publicized and with strong backing by interested groups (Schiefer et. al, 2001). However, the majority of them has a narrow focus on one or a few sectors (products). Vertical portals are still rare and on an experimental stage. The experimental vertical portals are usually managed by a single member (enterprise) of a chain and might only be accessible by members of the chain.

Examples of horizontal portals at farm level in different countries include machinery trade, plant production, commodity trade, meat production, etc. (Schiefer et al., 1999, 2001). Examples of vertical portals include a portal in meat production where farms are linked with meat processors, restaurants and consumers (Boeve, 1999) and a chain-internal portal in grain/flour production where farms are linked with mills and bakeries.

The present situation is the basis for two main development paths with a horizontal and a vertical focus (see figure 2).

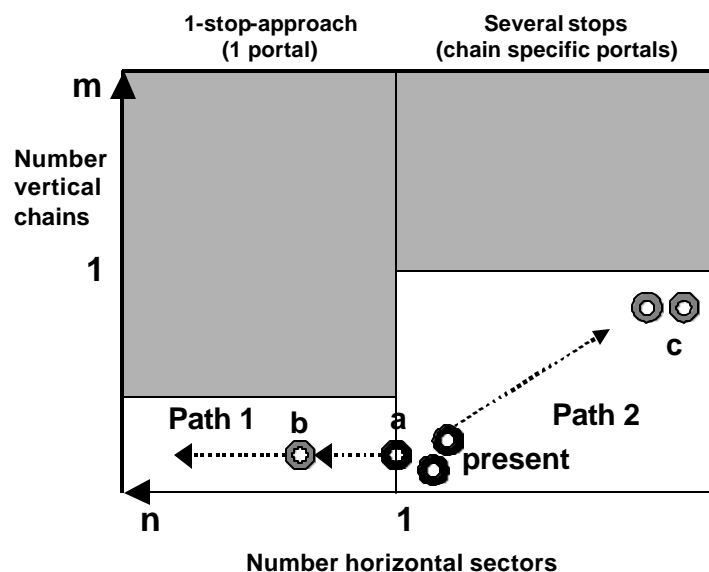


Figure 2: Portal development paths (intensification (a), horizontal aggregation (b), chain orientation (c))

Development path 1 involves the horizontal integration of different virtual sector portals to offer multi-sector user enterprises as, e.g., farms, a one-stop information service alternative. This development path is presently the main focus of development efforts.

Development path 2 involves changes in information priorities which follow changes in the business environment of enterprises towards increased cooperation within production chains. However, except of some experimental examples, this switch in the information service priorities of portals is not yet common.

Research on critical success factors in different sectors of the agrifood chain suggests that changes will not so much affect information topics but the focus of the information content linked to the topics. As this change will follow structural changes in business environments, it will be a gradual one. Horizontal portals will gradually incorporate chain oriented information (mixed portals) and change to portals with priority, and eventually exclusivity on chain related information (vertical portal). The switch to vertical portals is combined with a narrowing in information topics. While horizontal portals are, in principle, broad in focus, vertical portals concentrate, in principle, on a single line of food products.

For a farm, the combination of both development paths leads to a situation (see figure 3) where it is linked to a single horizontal portal (horizontal aggregation) and to a number of different product specific vertical portals (portal differentiation).

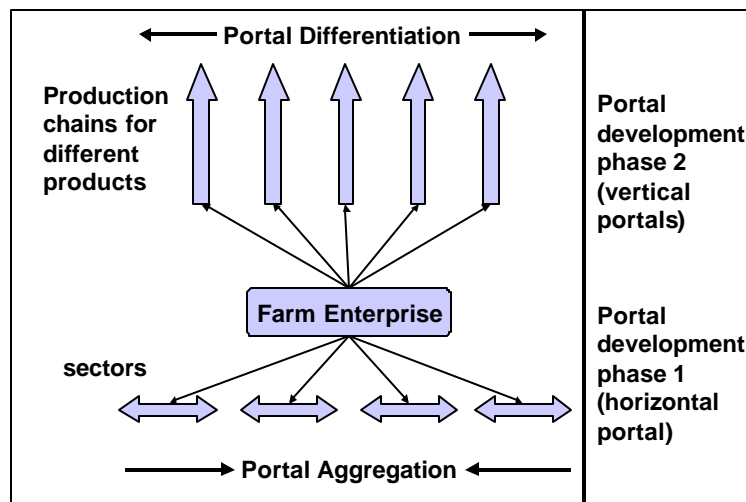


Figure 3: Development of portal linkages of a farm

3.2 Management Organization

The management of information delivery builds on the physical organization of information delivery through internet portals which may directly match the virtual portal infrastructure for information provision. However, there are alternatives, especially on the sector level:

1. Enterprise portals might, additionally, serve common information interests.
2. Invisible sector portals which are not accessible by potential users might collect

information with common interests which are then provided to users through different enterprise portals within a sector.

3. Sector portals might not only serve common information interests but provide enterprise specific services.

The development in sectors is usually initiated by individual enterprises or individual groups which start with comprehensive enterprise or sector portals. Examples for enterprise initiatives are known from enterprises in food processing and trade with a strong market position. In a more mature situation, where efficiency considerations gain in importance, enterprise and sector portals limit themselves to the delivery of enterprise specific information or of information with common interest, respectively.

Responsibilities for the management of operations in enterprise portals or in vertical chain portals are usually directly linked with the enterprises' or chains' own management. This facilitates portal management and initiatives for their establishment. The situation is more complex for sector portals where users' usually cannot build on a joint business operation.

There are two principal alternatives, a competitive and a cooperative approach. In a competitive approach, the management is organized by individual enterprises from within or from outside the sector. In a cooperative approach, user enterprises or their representatives jointly establish a new management board for the operation of a sector portal. Empirical studies suggest that development starts with a competitive approach which might later be complemented or even replaced by a cooperative approach.

3.3 Content Organization

Information needs of users are generally determined by enterprises' critical success factors. Intensive empirical studies in different sectors confirm that critical success factors of enterprises in sectors of the agrifood complex are quite similar within sectors and between sectors. This allows, in principle, the design of a common blueprint information topic infrastructure for different types of portals which, in turn, could facilitate not only user navigation but also the exchange of information topics between portals.

Differences concern the actual information content. As an example, the critical success factor 'competition' could be served through information on, a.o.,

- (a) global or national market developments (common interest)
- (b) new product developments (common interest)
- (c) new product development and branding by competitor or competing chain
(enterprise-specific, chain specific)
- (d) price developments and forecasts in certain markets (common)
- (e) changes in marketing approach and price policy of local competitor or competing chain (enterprise-specific, chain-specific).

To serve enterprises' information needs for certain critical success factors, enterprises usually need both, enterprise-specific information as well as information with common interest. To link both, users could be supported by

- (a) a management organization involving invisible sector portals (see above),

- (b) the placement of appropriate information links (hyperlinks) between different portals or
- (c) the implementation of a search concept ('my-concept') which identifies appropriate documents in different portals and links them to a user's own enterprise portal.

All three alternatives for user information access support could be facilitated through the availability of a common blueprint information topic infrastructure.

In the agrifood sectors, many different institutions are involved in the generation of information. Efficiency considerations require their incorporation in portal initiatives. This puts additional pressure on the identification of a common blueprint topic infrastructure. A coordinated integration needs to build on the availability of such an infrastructure and, in addition, on an identification of the necessary information complexes and on a categorization of information complexes regarding their interest base. An example for the dairy industry had been developed in Spiegel (1994).

4. Summary

Information portals are key instruments in the development of an information infrastructure which could serve the interests of enterprises in the agrifood sectors. However, the complexity of business environments requires a differentiation in the focus, management and content of information portals which considers business infrastructures, information interests of enterprises, and efficiency in information provision and delivery. Common interests of enterprises, the cooperation of enterprises in production chains and sectors, and first experiences suggest a separation of information delivery in 3 main categories: enterprise-specific, sector-oriented with a horizontal focus and chain-oriented with a vertical focus.

This differentiation is the basis for the identification and discussion of appropriate information portal infrastructures, principle portal management alternatives, and possible infrastructure development paths for the agrifood sectors. The analysis is supported by experiences from first developments in different countries with well established internet infrastructures.

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