AN E-VORTAL FOR THE PORTUGUESE BAKING INDUSTRY
Requirements Model

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Abstract: Nowadays, Internet is fundamental to the development of the competitive capability of practically any industry. Web portals, mainly the vertical portals, have in this context a major role, because they are basic instruments for the dissemination and search of the information. Despite this fact, it is apparent that no such Web solution is available in Portugal for the baking industry, in spite of the fact that this is one of the major industrial sectors in the national context. Believing that the lack of a vertical portal for the baking sector is a deterrent to its growth, in this paper we present the results from a study developed to identify the main requirements for a system of this kind.

1 INTRODUCTION

The creation of a web portal for the baking industry is, for some years now, a reality in several European countries and other world markets. The reasons invoked for its creation are most diverse. One of them is the easiness and comfort with that the portals supply the access to the information, in a versatile, customizable and personalized way, based on the preferences of the users. Another frequent described reason is the globalization. Globalization causes an increase of the competition due to bigger integration of the markets (Gouveia et al., 2007a).

In spite of the fact of the baking industry is one of the major industries in Portugal, the Portuguese scenario is somewhat different: up until now there is no such portal (Gouveia et al., 2008).

The majority of Portuguese food and agriculture companies have an incipient use of information technologies when compared to their European counterparts (SPI, 2001). Though the trend is to grow, the companies' use of the Internet to buy and sell goods and services is relatively negligible (INE, 2001, INE, 2003, INE, 2004, INE, 2005).

The sector's lag in this domain, together with the lack of a dedicated e-vortal, is one of the main motivations to this work: to contribute to the conception of an Internet solution (vertical portal), that gathers information, services and other resources useful to the various intervening parts, by identifying its main requirements.

Technological innovations may contribute in numerous ways to a company's competitive advantage, by enabling improvements in satisfaction of demand, cost reduction or quality increase. So, this kind of portal can act as a basis for new economies and be a booster in lifting old economies to the new market realities (Zirpins et al., 2001).

Thus, we propose the creation of an e-vortal for the Portuguese Baking Industry: a portal that provides to all the community an access point to the information and resources, in a way to potentially increase the business between the suppliers and the baking industry companies.

In this paper we propose a set of main requirements for the development of vertical portals in baking industry. In section 2 we introduce some fundamental concepts on Internet web portals and vertical portals and make a brief presentation of the baking industry in Portugal. Section 3 presents several requirements that should be considered in the design of new vertical portals for the baking industry. The paper ends with some final remarks in section 4.

2 CONTEXT

In the past few years, the Internet and, particularly the World Wide Web (WWW) has expanded continuously, in terms of the technology used and in terms of dimension, becoming an essential way for business relationships. From this development, several instruments of research and data organization appeared, in which the Web portals have a particular relevance (Gouveia et al., 2007).

2.1 Web Portals

The concept of Internet "portal" is relatively recent and it is not consensual yet. One can briefly define a portal as an integrating point of access to relevant information, a convergence point for different users, with a wide range of information.

The idea of Internet Portal is comprehensive and may include everything from a simple online catalogue to a complex intranet solution. However, a common characteristic is its role as a starting point, offering a doorway into using web services (Zirpins et al., 2001).

The fast growth of the WWW and the recognized importance of Portal Web, led in few years, to the incoming of countless portals, many times with different characteristics among themselves. Consequently, several authors proposed different definitions, many times for the same object of interest (Gouveia et al., 2007).

One of the first classification of portals was presented in 2002 (Strauss, 2002), dividing portals into two large groups according to the depth of their content: horizontal portals and vertical portals. Horizontal portals are public websites whose goal is to serve its users with a broad set of services and resources in an effort to convince them to make the website their homepage. On the other hand, vertical portals provide information, application and other resources targeted to a specific community or interest group.

In 2003, Clarke and Flaherty added two new dimensions to this classification: not only the depth of the portal's content (vertical/horizontal), but also its mission (transaction/information) and its target (public/private). Each dimension should be viewed as a continuum, with all portals expressing varying degrees of each element (Clarke and Flaherty, 2003).

Focusing our attention on the "depth of content" dimension, vertical portals, or "vortals", offer contents and services targeted to a specific domain or community: professional classes, people from certain locations or with other common interests (Zirpins et al., 2001).

Given the increasing difficulty of efficiently searching the web using keywords, a new trend in the design of website for specific users appeared: a verticalization phenomenon, i.e., the creation of portal-like internet websites specially tailored for a specific subject or area of interest, which allows for the reduction of portal size without omitting relevant content.

As opposed to general-purpose search engines, vertical portals have search tools with adequate strategies and terminology, focused on the target market (Medeiros et al., 2000).

A vortal, an abbreviation of "vertical portal", is a vertical industry, market or specific group, portal on the Internet. Vortal refers to a website that aggregates varied content and services of interest to a particular industry and makes it available to industry members. While a portal, such as Yahoo! or AOL, attracts a large number of "netizens" (Internet citizens), offering a wide range of contents and links to other sites, vortals are narrower in focus and address a specific industry, theme, or interest. The audience or participants may be smaller, but they have a higher interest and are highly targeted (Vortalbuilding, 2005b).

The concept of a vertical portal is based upon the premise of linking customers and vendors together within a focused environment. This environment provides information, services and other resources, which encourage members to remain within the boundaries of the vertical portal. Vortals are also seen as business-to-business communities or business-to-consumer communities (Vortalbuilding, 2005b).

A well-designed and well-developed vertical portal can create a snowball effect. Users visit it because it has quality information, advertisements, discussion forums, products, contents, friends, etc. A higher number of website users, imply more advertisements, products and participation, which in turn will attract more users to it. Once the users' loyalty is ensured, they will keep visiting and using the portal on a regular basis.

Companies and individuals who share the some interests may gather to interact, collaborate and transact on a digital market. In Portugal, such need clearly exist for certain markets, as one can infer from the recent appearing of industry specific portals, like the construction industry.

2.2 The Portuguese Baking Industry

According to the Portuguese classification of economic activities (CAE), the Baking and Pastry Industry is part of group 158 – Manufacturing of other alimentary products. Group 158 and others make the Food, Beverages and Tobacco Industry division.

In terms of gross sales, group 158 is the second largest in its division, just behind group 159 (Beverages Industry). The Baking and Pastry Industry alone (CAE's class 1581) contributed, in 2001, with 49% of group 158's gross sales (INE, 2002a).

The relative weight of class 1581 has been growing since 1998. That year, according to INE (INE, 1999), this economical sector represented just 28% of group 158's total gross sales.

If gross sales-wise group 158 is relevant in the food industry context, in terms of employment it is even the more so. Group 158 – Manufacturing of other alimentary products – is by far the most important, representing approximately 50.000 jobs in the year 2000.

Thus, the importance of the baking industry in the context of the Portuguese food industry is evident.

2.3 Portuguese Baking Industry Internet Portals

Vertical portals design and development is, for some years now, a concern and a reality in several countries (Maltz, 2005).

In Portugal the reality is quite different from other countries. The e-vortal concept is not yet well established, as we can see by the lack of implemented e-vortals focused on the Portuguese Industry. If we focus our attention on the specific sector of baking industry, then the situation is extreme. After an exhaustive Internet search we concluded that currently there is no an e-vortal for the Portuguese baking and pastry industry (Gouveia, 2006).

There are, certainly, a few sites that belong to industrial associations of the sector which aren't more than an institutional presence in the web. We can, as an example, refer to the site of the FIPA – Federação das Indústrias Portuguesas Agro-limentares (Food-Agricultural Federation of Portuguese Industry), ACIP-Associação do Comércio e da Indústria de Panificação, Pastelaria e Similares (Baking Trade and Industry Association) (Gouveia et al., 2007a).

The FIPA was constituted in 1987 with the aim to represent and defend the interests of the Portuguese Food-Agricultural Industry nationwide and in the European Union. This site is dedicated to every Portuguese Food-Agricultural industry, as well as those that work directly with them. In spite of not being an association of the Bread Makers sector, it has yet some connection with it. This site can be classified as an informative portal. In it one may find, essentially, relevant information for to the Portuguese Food-Agricultural Industry. Another case is the official site of the Trade Association (ACIP). This association presents itself as the largest Portuguese association of the Bread Making and Bakery sector. This site can be classified as an institutional one, once it gathers information about the ACIP as well as news and data of its activities. So far, this site isn't providing any further service to the user (Gouveia et al., 2007a).

3 AN E-VORTAL FOR THE BAKING INDUSTRY

A well-conceived e-portal may create a snowball effect: having good contents, forums of discussion, products and advertising, people will visit the portal. As many people visit the portal, the larger will be the number of advertisers, the participations in the discussion forums, the production of contents and the possibilities of cooperation and data sharing, therefore contributing to the development of industry.

The bakery sector is one of the most representative sectors in the Portuguese industry as a whole (INE, 2002a).

The lack of Web vertical portal hinders the chances of a bigger development for the baking and pastry industry. So, we propose a new e-vortal for the Portuguese baking industry.

When one considers the creation of an industry-specific portal for a sector such as the baking industry, the processes involving the identification, analysis, negotiation, description, validation and requirements management assume a paramount importance. These processes are decisive in the system development and assume a great relevance as a factor of success in its construction (Gomes and Soares, 2004).

In this section first we discuss the fundamental concepts that should be considered in the development of an e-vortal for the Portuguese baking industry. Next, we present the requirements that a system of this kind should support.

3.1 Fundamental Concepts

An e-vortal solution for the industrial sector should be based on five fundamental concepts, as depicted in Figure 1 (Gouveia et al., 2008):

- Community;
- Collaboration;
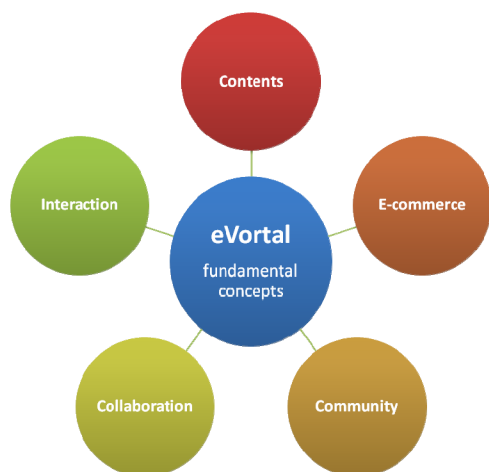- Interactivity;
- Contents;
- E-Commerce.

Figure 1: Fundamental concepts for an e-vortal solution. Source: (Gouveia et al., 2008).

3.1.1 Community

The main aim of an industry vertical portal is to encourage companies and individuals with interests in a specific industry to interact, collaborate and do business within a digital market. This virtual community will allow actors with a common interest to meet, to share ideas and information, and to know each other better, so they can strengthen their relationship.

3.1.2 Collaboration

It is important to distinguish the words "collaboration" and "cooperation". Usually we don't make a distinction between them (Dillenbourg and Schneider, 1995). However, there is a difference in the way the activity is performed by the ensemble. Cooperation consists in dividing tasks among the participants, each person or organization being individually responsible by part of the problem solution. Collaboration is characterised by the mutual contract of the participants, who work in a coordinated effort to solve the problem all together (Dillenbourg and Schneider, 1995). Sharing

experiences, searching for new solutions and products in partnership, are examples of possible collaboration in the baking sector of industry.

3.1.3 Interactivity

Internet websites and portals in particular, offer lots of communication opportunities in both directions: they offer interactivity. Stuart Brand defines it as a "Mutual and simultaneous activity on the part of both participants, usually working towards some goal, but not necessarily" (Brand, 1987). With an e-vortal, the user should be able to interact with the system and find the information she or he needs.

3.1.4 Contents

The content of a vertical portal is very important. The existence of e-vortals is in part due to a huge need to reduce the size of portals, making search easier, while no omitting relevant contents. The search tools can (and should be) improved and they must provide the specific terminology and strategies of searching for a sector or subject (Vortalbuilding, 2005a). The users' fidelity is one of the greatest challenges that an e-vortal brings up. The quantity and quality of its contents is an important item to achieve that fidelity. If we keep the contents always up-to-date with a high level of quality, existing users will remain faithful to the portal and more new users will visit it, which in turn will make the portal even more attractive to the participation of different agents – partners, announcer and collaborators. The increase of participation will allow a higher degree of information sharing and higher possibility of collaboration among partners.

3.1.5 e-Commerce

e-Commerce is the purchasing or sale of goods and/or services through electronic networks such as the Internet. A platform which will make relationships and business transactions easier between partners should be provided in an e-vortal for the baking industry. This will improve a number of aspects of a business, both for sellers and buyers.

Being one of the most complex sides of a vertical industrial portal, we can consider two phases of its development. In a first phase it can promote the relationships and transactions among business partners. So, an e-vortal will allow several aspects of the business process, for the one who sells, as well as for the one who buys. The promotion of new products, the small effort demanded by the support of catalogues, the quick answer to the customers and

the possible increase of sales due to the increase of the market base, are some of the advantages foreseen for the sellers.

The fastest answer for the search of the best solutions, the quick access to new suppliers, and consequently to better prices are, among others, some of the advantages for the buyer.

In a first stage of the portal for the Baking Industry, one can say that it will improve the communication among several agents. The partners will be able to decide more easily as they share a common platform.

For a second stage, it will be reserved the b2b transactional platform. The implementation of automatic processes of proposal requests, the submission of proposals and the closure of deals are the aspects taken cared by the platform.

3.2 Requirements

The design of a new Baking Industry e-Vortal should take in account all the concepts referred in previous section. In this section we identify and describe some of the function/components such e-vortal should support.

A study has been made with the purpose of investigating different aspects of vertical Internet portals. It was an interpretative and exploratory study and consisted, in a first phase, on the development of a conceptual framework and, in a second phase, on the identification and analysis of currently existing vertical portals, trying to understand their objectives, characteristics and functionalities. The needs of the baking industry were particularly studied.

Thus, four dedicated e-vortals to the bakery industry had been analyzed: Bakery-Net (www.bakery-net.com); Bakery Online Market Place (www.bakeryonline.com); Federation of Bakers (www.bakersfederation.org.uk); e Portal da Padaria (www.portaldapadaria.com.br).

This research made possible the identification of various critical elements that were systemized in the form of a set of requirements that are presented in table 1.

The display of the main characteristics/functions for an e-vortal solution for the bakery sector comes from a conjunction of characteristics found in other portals, as in portal bakery-net.com, with other completely new, as a result of the analysis of the sector needs.

Table 1: E-vortal main requirements.

Function	Brief description
Bakers' Guide (Buyers' Guide)	This is an area where all companies registered should be listed. Some groups can be: Equipment vendors, Ingredients, Maintenance & Sanitation, Packaging, Shipping, Services and others
Documents	Publishing and browsing documents and papers related with the bakery sector
Legislation	Browsing important legislation for the baking industry sector
Useful information	Useful information like weather and stock market information
News	News about the industry
Event Scheduler	Browsing and searching on event scheduler
Training Courses	Here it should be possible to browse all the training courses available. It should be also possible to do the registration in a course available
Recipes	Recipes browsing and sharing
Classified ads	Browsing and creation of small classified ads
On-line Catalogues	Products browsing and online catalogue
B2B platform	This platform act as a promoter of the relationships and transactions between partners. Thus, several aspects of the business processes will be made easier (for buyers and sellers). Requests for additional information about equipment, products or services, delivery or terms of payment, are some examples.

As already referred, web portals can be classified according to three dimensions (Clarke and Flaherty, 2003):): the portal purpose, contents and the level of access provided. The portal one proposes presents these characteristics in several levels, as in Figure 2.
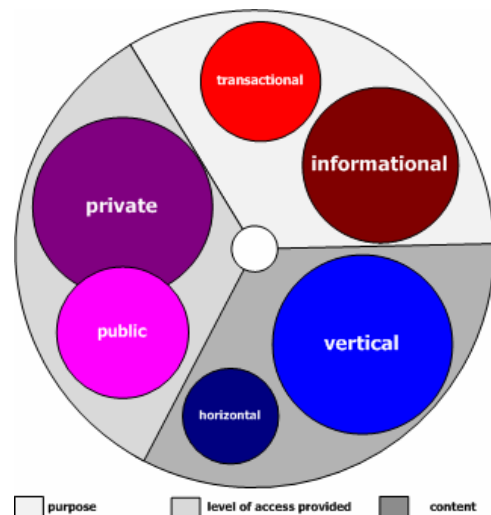

Figure 2: The Bakery e-vortal dimension characteristics.

The e-vortal main requirements presented on table 1 will be detailed and classified according to these dimensions in the following sub-sections.

3.2.1 Portal Purpose

According to their purposes, the portals can be divided in transactional and informational. The solution presented cannot be classified, exclusively, as an informational e-vortal. It will contain characteristics mainly of an informational portal with updated news of the sector, newsletter, events and training courses, updated legislation, among others. It will also have transactional portal characteristics. This portal will allow costumers gathering data of products (characteristics, prices, conditions of delivery, availability, etc.), comparing prices and, mainly, promote business transactions. In Table 2 one can see the main characteristics of the proposed e-vortal according to its purpose.

Table 2: E-vortal main requirements: purpose.

Transactional	Informational
Online Catalogues	News
Products and prices comparison	Newsletter
B2B platform	Legislation
Training courses - browsing and registration	Event scheduler
	Training courses Agenda
	Weather information
	Stock Market information
	Recipes
	Articles and other documents
	Classified Ads
	Baker' Guide

3.2.2 Content

The horizontal portals are those whose contents are wide. This kind of portals don't give access to specific community services contents, but on the contrary, they dispose information, applications and other resources, through multiple category of users, representing every member of a community.

The vertical portals can display contents and services directed to a domain or specific community. They can be centered in specific professional communities, people from certain places or communities with common interests.

This portal is clearly a vertical one, due to the particular content and the fact that it is dedicated to a well defined community.

The classification of the proposed solution is, in this dimension, simpler. The bakery portal is mainly a vertical one, because it focused content and

services, and the fact that it is dedicated to a specific community with a common interest – The Bread and Bakery Industry. In table 3 one can see the main characteristics of the proposed e-vortal, classified according to the contents.

Table 3: E-vortal main requirements: content.

Vertical	Horizontal
News	Weather information
Newsletter	Stock market information
Legislation	
Event Scheduler	
Courses Agenda	
Online Catalogues	
Products and prices comparison	
B2B platform	
Recipes	
Classified Adds	
Articles and other documents	
Baker' Guide	
Training courses - browsing and registration	

3.2.3 Level of Access

A public portal is a portal of which information and/or services are available for any Internet user and have no access restrictions. Opposite to these, the Private Portals have restricted access to a group of users.

The bakery e-vortal will give free access of some contents for every Internet users. As an example there will be the news, legislation and scheduled events, for example. The Table 4 presents the e-vortal characteristics according to its users

Table 4: E-vortal main requirements: level of access provided.

Public	Private
News	-> Registred users
Legislation	Newsletter
Event Scheduler	Recipes
Stock market information	Browse Articles and other documents
Weather information	
Classified Ads	-> Partners
Training Courses browsing	Browse and maintenance of online catalogues
Baker' Guide – List of companies	Products and prices comparison
	B2B platform (proposals/additional information)
	Training courses Agenda
	Training Courses – Registration
	Baker' Guide – companies browsing

Some of the contents will be of restricted access to registered users. This restriction will become it two distinct levels: registered user and partner. The distinction between these two types of users is the following one: a registered user will have access the preferential content, such as Recipes and Newsletters; a partner, for its side, will not only have access to the previously described preferential content, but also to all the services related with the e-vortal b2b functionalities. We can highlight: on-line catalogue browsing and maintenance, products and prices comparison, buy or sell on-line, training courses, agenda and registration, among others.

3.3 Discussion

The expected impact after the implementation, in Portugal, of an e-vortal for the baking industry can be analyzed according two complementary aspects. The first aspect is about the competition, it will allow, among others things, a bigger integration of the markets, the multiplication of commercial exchanges and the increase of agreements and partnerships between companies. It will help the various actors of the baking industry to create new commercial relations, as well as fortifying the existing relations. In the "new economy", the information, the knowledge and know-making becomes raw material, and the possibility of being able to access it, in useful time, will be one of the main strategically weapons of the competitiveness. The companies of the baking sector will have at it disposal a tool that will allow them to face these new requirements. Thus, we contribute for the satisfaction of the necessity of modernization of the sector. One another aspect is the resultant advantage of the business growth, as much for who sell as for who purchase. Reduction of administrative costs, increase of productivity and modernization of the market are some of the testimonials given to the press by company CEOs and company owners when they are mentioned to the impact of the adoption of an e-vortal tool in its company. One of the reasons pointed in practically all the testimonials is the increase of the business opportunities. The chance to negotiate with new companies is an immediate more-value of the electronic platforms. As much for the suppliers as for the customers, this kind of platform, increases the option as much of purchase as of sale. The suppliers see the number of potential customers to increase - the prospection of new customers is facilitated. Customers can easily to compare prices of some suppliers and, because these are normally more competitive of what the ones that are not in the platform, can thus buy the lowest cost or in more advantageous conditions.

4 CONCLUSIONS

The technological advances of the last decades gave origin to an atmosphere where the organizations are forced to search new options to reduce costs, while at the same time to compete within their markets. This atmosphere needs flexible, capable and competitive organizations, able to make radical changes in the way they do business, employ people and use technologies (Varajão, 2001).

To be more competitive or, as we saw, to survive, companies, whatever is sector is - and the baking industry is not an exception -, they will have to anticipate, or at least to follow, the technological changes that happen everyday, in the national and international markets.

The Internet allows any company, big or small, to easily enter new markets, to conquer new clients, to establish relationships with new suppliers, and to establish new partnerships, without the material, geographical and time constraints of the conventional way to do business (Varajão, 2003).

The difficulty to find references about the baking industry in Portugal through an Internet search, for example using Google, suggests the need for the development of an Internet solution for this sector with vertical portal characteristics.

This kind of initiative, when it is well done, allows companies with a wider publicity and expansion of their markets, the keeping and attraction of new clients thought different and innovative ways, a better response to partners and clients, better services, new services available, and a cost reduction (in products, services and support).

An e-vortal for the balking sector can have a direct consequence on the growing of IT integration in business processes, making companies and organizations more in sync with current times and trends.

We intended with this work to give a contribution and to promote the development of this important industrial sector. The requirements presented in this paper should help the design and development of vertical portals for this sector.

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