Portal Quality Issues

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INTRODUCTION

Web portals are emerging Internet-based applications that enable access to different sources (providers). Through portals the organizations develop their businesses within what is a more and more competitive environment. A decisive factor for this competitiveness and for achieving the users' loyalties is portal quality. In addition, we live in an information society, and the ability to rapidly define and assess data quality of Web portals for decision making provides a potential strategic advantage. With this in mind, our work was focused on quality of Web portals. In this article we present a part of it: a portal quality model and the first phases in the developing of a data quality model for Web portals.

BACKGROUND

Web portals are emerging Internet-based applications that enable access to different sources (providers) through a single interface (Mahdavi, Shepherd, & Benatallah, 2004). The employing of Web portals can help users to find the information, service, or product they desire from among a (large) number of providers and to do so effectively, without navigating through them one-by-one (Mahdavi et al., 2004).

Nowadays, portal users can move from one portal to another very easily. Therefore, the success of a portal depends on customers using and returning to their sites, because if a new portal puts up a competitive site of higher quality, customers will almost immediately shift their visits to the new site once they discover it (Offutt, 2002). Considering this, we developed a portal quality model (PQM), whose main task is to determine the quality level of a portal and to ascertain its weak points. This model is made up of the following dimensions: tangible, reliability, responsiveness, assurance, empathy, security and data quality (DQ).

For the data quality dimension in PQM, we have considered, in the first version, the DQ framework proposed by (Dedeke & Kahn, 2002). However, given its importance and its dependence on the context (Cappiello, Francalanci, & Pernici, 2004) we believe a specific DQ model for the Web must be used. For this, a data quality model for Web portals was developed and in this article the first steps for its construction are shown.

PQM

The PQM model (portal quality model) (Moraga, Calero, & Piattini, 2004) has been developed using the first two phases of the goal question metric (GQM) method (Solingen & Berghout, 1999) as well as the SERVQUAL model proposed by Parasuraman, Zeithami, and Berry (1998).

This model can be used to measure the quality of a portal, that is to say, the degree to which the portal facilitates services and provides relevant information to the customer.

The activities carried out in the two first phases of the GQM method are detailed as follows.

First Phase: Planning

The first activity carried out in this phase was to establish a GQM team which was independent of the project team. Then the area that we wanted to improve was selected—in our case this was the quality of portals. Finally, the project team was formed by all the developers of a specific portal (the portal of a region of Spain, namely Castilla-La Mancha).

Second Phase: Definition

One of the most important activities of this phase is to define the goal. In our case, the goal was defined as: "To improve

the quality of portals." Next, this objective was refined into several questions. To do that, the SERVQUAL model (Parasuraman et al., 1998) was used. This model was composed of five dimensions: tangible, reliability, responsiveness, assurance and empathy. With the aim of adapting it to the portal context, the definition of the dimensions was modified. Likewise, other two dimensions were added: security and data quality. One the one hand, the former was inserted because portals' users provide personal information, so, portals must protect all these data. On the other hand, due to the large amount of data that is handled in a portal, and taking into account that these data must be of good quality, the data quality dimension was added.

In addition, we divided some of these dimensions into sub-dimensions, with the aim of obtaining a more concrete model.

The six dimensions (questions) that make up our model (of quality of portals) together with their sub-dimensions (sub-questions) are shown as follows:

- **Tangible:** This dimension indicates if "the portal contains all the software and hardware infrastructures needed according to its functionality" (Moraga, Calero, & Piattini, 2004).
- **Reliability:** "Ability of the portal to perform the specified services" (Moraga, Calero, & Piattini, 2004). Besides, this dimension will be affected by:
  - **Availability:** The portal must be always operative.
  - **Search Quality:** The results that the portal provides when making a search must be appropriate to the request made by the user.
- **Responsiveness:** "Willingness of the portal to help and to provide its functionality in an immediate form to the users" (Moraga, Calero, & Piattini, 2004). In this dimension, the following sub-dimensions were observed:
  - **Scalability:** Ability of the portal to adapt smoothly to increasing workloads which come about as a result of additional users, an increase in traffic volume or the execution of more complex transactions (Gurugé, 2003).
  - **Speed:** It relates to the response times experienced by portal users (Gurugé, 2003).
- **Empathy:** "Ability of the portal to provide caring and individual attention" (Moraga, Calero, & Piattini, 2004). In this dimension, the following sub-dimensions are distinguished:
  - **Navigation:** The portal must provide a simple, intuitive navigation while it is being used.
  - **Presentation:** The portal must have a clear, uniform interface.
  - **Integration:** All the components of the portal must be integrated into a coherent form.

- **Personalization:** The portal must be capable of adapting to the user's priorities.
- **Security:** This is "The ability of the portal to prevent, reduce and properly respond to malicious harm" (Firesmith, 2004). This dimension will be affected by:
  - **Access Control:** Capability of the portal to allow access to its resources only to its authorized persons. Thereby, the portal must be able to identify, authenticate and authorize its users.
  - **Security Control:** Capability of the portal to carry out auditing of security and detect attacks. The auditing of security shows the degree to which security personnel are enabled to audit the status and use of security mechanisms by analyzing security-related events. On the other hand, attack detection seeks to detect, record and notify attempted attacks as well as successful attacks.
  - **Confidentiality:** Ability to keep the privacy of the users.
  - **Integrity:** Capability of the portal to protect components (of data, hardware, personals and software) from intentional or unauthorized modifications.
- **Data Quality:** "Quality of the data contained in the portal" (Moraga, Calero, & Piattini, 2004). According to Dedeke and Kahn (2002), four sub-dimensions are observable:
  - **Intrinsic DQ:** What degree of care was taken in the creation and preparation of information?
  - **Representation DQ:** What degree of care was taken in the presentation and organization of information for users?
  - **Accessibility DQ:** What degree of freedom do users have to use data, define and/or refine the manner in which information is inputted, processed or presented to them?
  - **Contextual DQ:** To what degree does the information provided meet the needs of the users?

COMPARING DIFFERENT QUALITY MODELS FOR PORTALS

In addition to PQM, other quality models specifics for portals can be found in the literature. Therefore, we are going to compare these models along with PQM. The reader can find more information about them in (Sampson & Manouselis, 2004; Telang & Mukhopadhyay, 2004; Yang, Cai, Zhou, & Zhou, 2004).

In Table 1, the main characteristics of the different models are compared.

Moreover, the different dimensions, which have been proposed in the models, have been compared. As a main

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