

# Findability aspects in family farming digital information environments

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## ABSTRACT

Family Farming is attracting interests of multiples actors of society and comprises a set of several rural activities that are managed and operated by a family and predominantly dependent from family hand labor. In Brazil this kind of activity has an important role in food production, representing 84% of all rural establishments. Linked with the relevance of the subject, there is a growing interest that Information and Communication Technologies (ICT) permeates these areas, amplifying access to information by farmers and bringing benefits to rural practices and increasing their competitive factor. This interest is observed through actions promoted by institutions such as governments, NGOs, private institutions and universities. Concomitantly, the Pro-Rectorate of University Extension from São Paulo State University has several outreach projects in this subject on its rolls and, among them, the extension project Digital Skills for Family Agriculture (CoDAF), with a purpose to provide alternatives to mitigate factors that difficult access to information by family farmers. However, the use of ICT, associated with a low educational profile of brazilians farmers, promotes not only concerns with aspects such as the access to content available on websites builded for this kind of public, but also raises questions like how information is available; and the way its users find the information contained therein. To Morville (2005), this kind of 'ease' of a user to find information about something or someone in a particular environment is called findability. Vechiato and Vidotti (2014) proposed a findability evaluation model to information environments with recommendations that should be considered in the strategy, the development and the maintenance of these environments, to achieve a better level of

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findability of information by the public. In this scenario, the objective of this work was to identify points of attention related to the findability of information on websites with a set of users that includes family farmers. The universe of this research was bordered on the structure and all content available through CoDAF website in December'14. This paper carried out an exploratory analysis, identifying elements on website and on their source code that enables to validate recommendations settled on findability evaluation model, towards to a better findability of information in CoDAF website. The exploratory analysis was divided into five steps, namely: i) storage of log of users' activities, ii) navigation structure, iii) contents layout, iv) presentation of content on mobile devices, and v) metadata. On all steps, the collected data from website was used to observe all the findability recommendations, and then results were divided into ten categories. The results determined that only four categories partially fulfilled findability recommendations. The conclusion results on a systematically observation strategy that concentrates five aspects that need to be considered in Family Farming websites: a) a generalization of the information contained in items on navigation structures; b) concerns about visual hierarchy navigation structures with sub-levels; c) minimizing a use of different structures in layouts content; d) aspects related to user's participation improvement on information available; e) use of descriptive metadata.

**Keywords:** Information and Communications Technology. Information Findability. Family Farming. Information Science

## INTRODUCTION

Family farming is a theme that is attracting the interest of various sectors of society. According to the Food and Agriculture Organization of the United Nations - the FAO - family farming includes

[...] all family-based agricultural activities, and it is linked to several areas of rural development. Family farming is a means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labour, including both women's and men's. (Food and Agriculture organization, 2014, p. 1)

In Brazil, family farming is composed of more than 4 (four) million establishments, representing approximately 84% (eighty four percent) of the total establishments in this sector, occupying a total area of 80,25 million (eighty thousand two-hundred and twenty-five) hectares (Instituto Brasileiro de Geografia e Estatística, 2006).

Therefore, family farming has a prominent role in food production and the maintenance of this chain of production is important for meeting the needs of the modern day society. In 2013, the FAO formalized that 2014 would be celebrated as the year of Family Farming throughout the world, where efforts would be made to give greater attention to the issue in attempt to

[...] to reposition family farming at the centre of agricultural, environmental and social policies in the national agendas by

identifying gaps and opportunities to promote a shift towards a more equal and balanced development. (Food and agriculture organization, 2014, p. 1)

Associated to the relevance of this theme, there is also a growing interest from the states and Non-Profit Government Organizations (NGO), private institutions of academia used so that Information and Communication Technologies (ICT) permeate these spaces - and this process triggered actions which seek to somehow encourage the introduction of practices and knowledge for the use of ICT in rural communities. These actions are directed to the formulation of programs and rural extension policies that establish not only programs and awareness workshops benefiting the use of ICT, but also awareness for the amount of data and information available throughout the web (Bisi, et. al., 2013; Yusop et al., 2013).

The use of ICT is increasingly being inserted in the universe of rural activities as a competitive factor. In other words, the use of technological tools can help contribute and amplify the access to important information, both for the development and improvement of agricultural activities, as much as the formation of networks for the exchange of experiences (Assad and Panetti, 2009).

In these scenario, arose in 2012 the university extension project Competências Digitais para Agricultura Familiar (CoDAF) with the objective to provide alternatives that minimize the factors that hinder the access to information through family farmers, for example, the lack of capacity and familiarity with ICT and information systems that exist today (CoDAF, 2014a).

To assist with the process of communication with the stakeholders, the CoDAF has a website that acts as a point of reference, with the role to promote:

[...] courses and activities developed by the project, beyond the dissemination of important information and content for family farmers, such as information on government support programs, family farming advantages and its principal characteristics. (CoDAF, 2014a, p. 1)

However, the use of ICT associated with the profile of the factors involved in family farming promotes concerns not only in relation to the access of content available on the CoDAF project extension website, but also raises questions of how information is available; and the way its users find the information.

The ease in finding information from anywhere and at any moment, about something or someone, from any location of time is called, *findability*, or in the portuguese language<sup>1</sup> known as ‘encontrabilidade’ (Landshoff, 2011; Marcos, 2007; Vechiato and Vidotti, 2014).

The findability of information in digital information environments occurs from the information search through navigation mechanisms (offered by the website itself) or by research strategies in an outside search engine website. However, the findability study goes beyond the navigation and search tools of these systems, analyzing

[...] features that delineate the characteristics the subjects of information, combines mobility, convergence and ubiquity from technological developments, considered as human actions for the pursuit of knowledge in a given environment that has digital and analog characteristics. (Vechiato and Vidotti, 2014, p. 4)

Vechiato and Vidotti (2014) also propose a review of information findability in digital information environments, with bases in attributes - characteristics which promote the possibilities to find information by users in an informational environment - and recommendations - which from theories and attributes, established attention points to improve information findability.

In this scenario, the objective of this study is to identify the main points related to information findability on websites with a public who, among its set of users, has family farmers. The universe of research was bordered to the structure and content available through the CoDAF extension project in December of 2014.

In methodology, the work uses an exploratory analysis of the website, identifying the attributes established by the evaluation model proposed by Vechiato and Vidotti (2014, p. 11-19), trying to identify possible recommendations towards a better information findability. Research tools was used: a) *Google Chrome*<sup>2</sup> and *Mozilla Firefox* browsers - in its forms of web browsers and code-font viewer to *HyperText Markup Language (HTML)* format, and b) for the exploratory analysis DaSilva<sup>3</sup> - a website accessibility validator.

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<sup>1</sup> Landshoff (2011) proposed three forms of translation for *findability* in the portuguese language: “encontrabilidade”, “formas de encontrar a informação” and “encontro da informação”.

<sup>2</sup> Google and Google Chrome are brands registered by Google Inc.

<sup>3</sup> DaSilva is a tool developed by *Acessibilidade Brasil* in partnership with *W2B Soluções Internet*, being the first website accessibility evaluator in the portuguese language, with bases in the accessibility guidelines and recommendations by W3C/WAI (WCAG1 e WCAG2) and by E-mag developed by the Brazilian electronic government in partnership with *Acessibilidade Brasil*. With DaSilva is it possible to analyze all the pages from a website and indicate the accessibility errors present by on that pages” (Dasilva, 2014).

This study is segmented into 5 (five) chapters, this one is the introduction itself, sequentially, an exploratory analysis of the CoDAF extension project website, results, conclusions and references.

## **EXPLORATORY ANALYSIS OF THE CODAF EXTENSION PROJECT WEBSITE**

The exploratory analysis of the necessary characteristics for the evaluation process of findability of information on the CoDAF extension project website, is divided into five phases.

Sequentially, each phase looks to describe characteristics such as: the storage of user activity, the navigational structure, the content disposition, the content presentation through mobile devices and the metadata.

### **Storage of User Activity**

To make its content available, the CoDAF extension project adopted a content management system technology called Joomla!<sup>4</sup>. By default, Joomla! has no specific tool for the storing and recovery of data about users activities.

### **Navigational Structures**

The main navigation structure of the website is located on the bottom of the page (in footnotes area), arranged centrally, horizontally, and have a total of 7 (seven) items, being that 3 (three) are hyperlinks with labels in a text format, and the rest as images (Figure 1).

Figure 1 - Shot of the principal navigation structure



Source: Cropped by the authors from CoDAF (2014)

Starting from the left to right, the items on the navigation bar are arranged as follows: access to the Facebook page (a label made up of the Facebook logo linked to the respective social media website), “Informations to Family Farmers” (a text label), “Informations to Consumers” (a text label), “About CoDAF project” (a text label), the logo for *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES) (a text with no hyperlink), the logo for *Pró-reitoria de Extensão Universitária da Universidade Estadual Paulista* (PROEX) (a text with no hyperlink) and a image from Creative Commons, visually representing the license from content of website (a image with no hyperlink).

<sup>4</sup> Joomla! it is a Content Management System and is licensed under the GNU - General Public License.

When accessed one of the items “Informations to Family Farmers”, “Informations to Consumers” or “About CoDAF project”, individually, from primary navigation, the website engines redirects the user to a specific page for each item, when and where will appear the structure to a secondary navigation (Figure 2), additionally located on the left side of the website, vertically, composed by hyperlink items with text labels. The primary navigation structures continues to be present in all these pages.

If an item on secondary navigational have sublevels, this sub-items are displayed and aligned to the right of the page, such as a “tree” hierarchy structure. For example, the item “Trabalhos” has three sub-items: “Articles”, “Presentations” and “Applications” (highlighted by the red rectangle).

Figure 2 - Screenshot of the secondary navigation structure



Source: Cropped by the authors from CoDAF (2014)

However, the group of items that show up in the secondary navigation structure vary according to the content. In other words, by clicking on each of the items: a) “Informations to Family Farmers”, b) “Informations to Consumers”, and c) “About CoDAF project”, the items found in the secondary navigation structure will be different.

Table 1 - Items identified in each of the secondary navigation structures

| Secondary Navigation Structure    | Primary Navigation Structure   |                           |                     |
|-----------------------------------|--------------------------------|---------------------------|---------------------|
|                                   | Informations to Family Farmers | Informations to Consumers | About CoDAF project |
| Main Page                         | X                              | X                         | X                   |
| About CoDAF                       | X                              | X                         | X                   |
| Members                           | X                              |                           | X                   |
| News                              | X                              |                           |                     |
| Informations about Family Farming | X                              |                           |                     |

|   |   |   |   |
|---|---|---|---|
| Scientific Works                        | X |   | X |
| Events                                  | X |   | X |
| List of Family Farmers                  | X | X |   |
| CoDAF courses                           | X |   |   |
| Search for Products, Farmers and Cities | X | X |   |
| Farmer's Map                            | X | X |   |
| Contact Us                              | X |   |   |

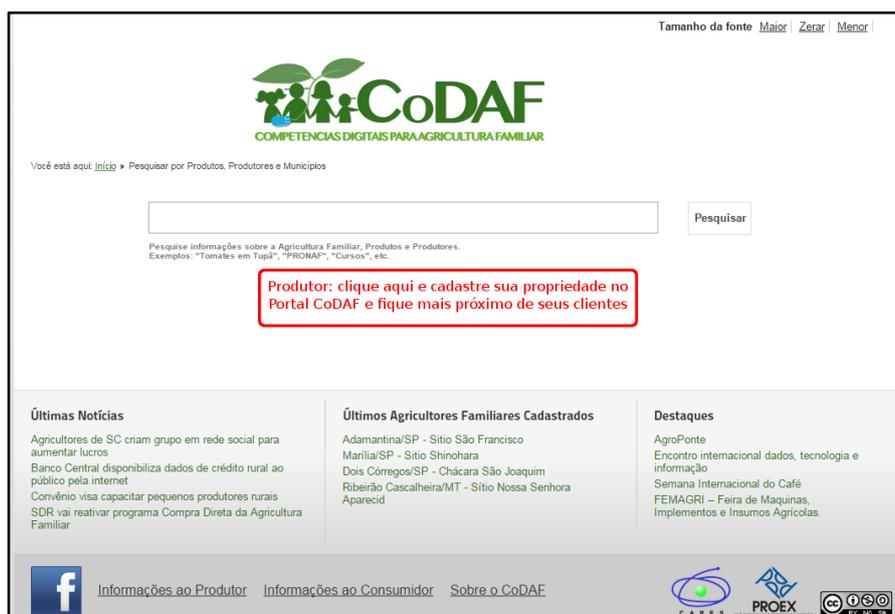
Source: Authors

Table 1 presents the items from each the secondary navigation (First column from the left) found in each of the items from the primary navigation (splitted up in the next three columns from left to right). When one item (row) is found in the secondary navigation structure (column), the cell that intersects those is marked with an 'X'.

## Content Disposition

The pages found on the website uses 5 (five)<sup>5</sup> distinct structures for diagramming content (Figure 3).

Figure 3 - Example of diagramming structure of content on the website



Source: CoDAF (2014)

<sup>5</sup> For systematic effect, was associated a numbering system to uniquely represent each of the identified structures, beginning with the roman numeral I and ending with V, in ascending order.

Common characteristics for all structures:

- A. Logo image of the CoDAF extension project, located at the top, centralized, with measurements of 361 pixels (width) and 135 pixels (height), hyperlinked so that by clicking on it, it will redirect the user to the website's initial page;
- B. A Font size manipulator to website, located on the upper right hand corner;
- C. *Breadcrumbs*<sup>6</sup> located below the original logo of the website, with a purpose to enable a user to may identify landmarks, in order to spatially direct the path of access to a content;
- D. Three columns at the bottom of the website, with each one of them representing, respectively from left to right, a) hyperlinks to the four latest news updates available on the website, with the label being the title of the article; b) hyperlinks to the last four rural properties of family farmers registered on website, the label being composed of the name of the town in which the property resides and the name of the farm; and c) hyperlinks of four featured contents on the website, with the label being the title of the content;
- E. The primary navigation structure, located at the bottom, centrally aligned.

Below the image of the logo of the CoDAF extension project and the *Breadcrumbs*, and above the three columns with access to recent featured content, is marked the place where differences appear in the form of content presentation in each of five distinct structures identified in website layout.

The structure I presents the content in two columns. The column on the left contains the secondary navigation structure and the larger column on the right presents content in a multimedia mix of texts and images. Its use is focused on the presentation of news, institutional texts, rural property descriptions, events, among many others.

Figure 4 presents an example of an institutional text using this structure.

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<sup>6</sup> The standard *Breadcrumbs* proposes to be a kind of trail created during navigation, visible in strategic way places on the page layout, allowing the user to see exactly where he's been and where he is, within the page hierarchy (Santos, 2009).

Figure 4 - Screenshot of an example of structure I

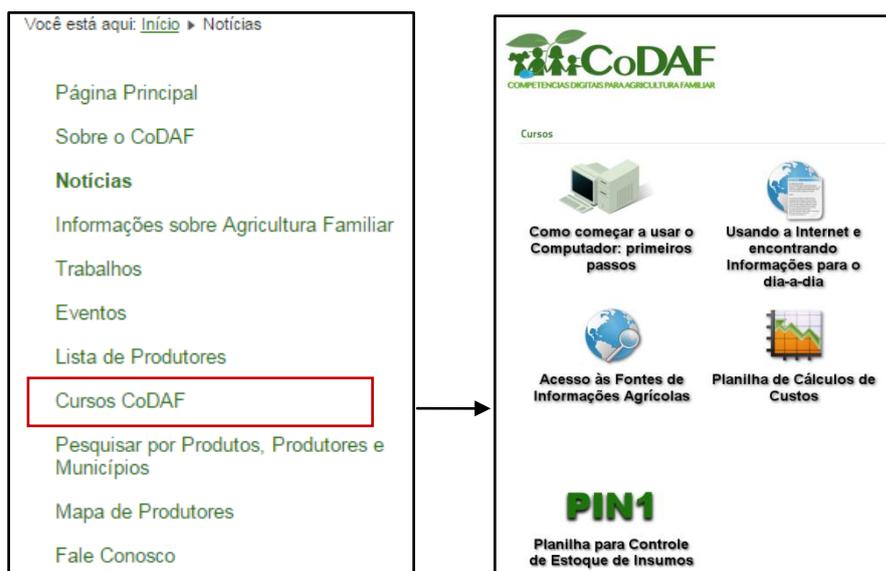


Source: Cropped by the authors from CoDAF (2014)

The structure II presents the content in two columns. The column on the left contains the secondary navigation structure and the larger column on the right presents a list of items divided into two more columns. Each item is made up of one hyperlink and its label is a combination of an image (icon) with a text. Each item has a hyperlink for access to other content. Its use is focused on categorizing topics within one context on the website.

For example, Figure 5 shows an example of how to use structure II to present on the website available courses in a concentrated format.

Figure 5 - Screenshot of an example of structure II



Source: Cropped by the authors from CoDAF (2014)

Structure III presents the content in two columns. The column on the left contains the secondary navigation structure and the larger column on the right presents previews of existing content of the website. It is divided, from top to bottom, first by featured content, followed by six items in two separate columns. In the end, the structure places a list of all other content, where each item is a hyperlink with the label being the title of the content to be accessed with.

Figure 6 - Screenshot of an example of structure III



Source: Clipping from the authors of CoDAF (2014)

Its use is dedicated to concentrating the access of themed content in one place, as a place to find all the news, or all the events. Figure 6 presents an example of the structure utilized to concentrate all news on the website.

Structure IV presents the content in two columns. The column on the left contains the secondary navigation structure and the larger column on the right, contains content in a table format, with no header, and a single column where its cells are order alphabetically, ascending.

This structure is used only to list registered family farmers who already share their data to CoDAF extension project, being that each cell of the table is a hyperlink to a specific page with information about that specific rural property. The label is formed by the combination of the town in which the rural property is located, plus the name of the farm (Figure 7).

Figure 7 - Screenshot of an example of structure IV

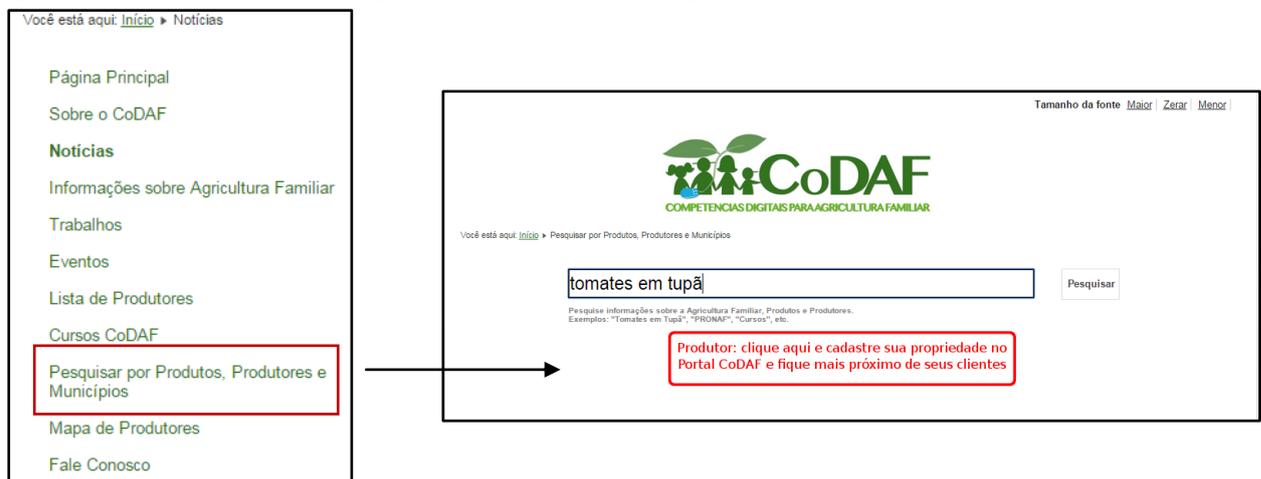


Source: Cropped by the authors from CoDAF (2014)

Structure V presents all content in a single column. This structure aims to be the hub of content searches offered on the portal and therefore, this process is divided into two stages.

During the first stage (Figure 8), the structure is made up of items to perform the search, them being: a) an open text box, b) a button that triggers the action of the search, with the label 'Search' and c) a short text containing *modus operandi* of the search.

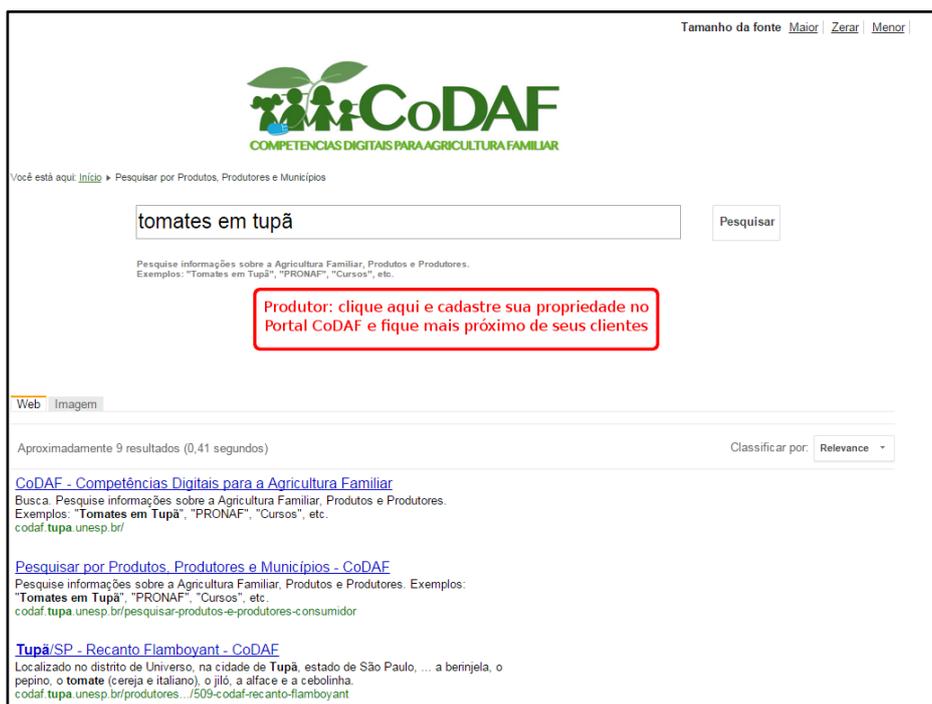
Figure 8 - Screenshot of an example of structure V (first stage)



Source: Cropped by the authors from CoDAF (2014)

When the user clicks on the button 'Search', the user is sending information about the search to the website, and in this second stage, the website presents to the users the results within a different structure (Figure 9).

Figure 9 - Screenshot of an example of structure V (second stage)



Source: Cropped by the authors from CoDAF (2014)

The website uses a third-party search engine, customized to only display content related with CoDAF extension project website and the search results are presented in a list ordered by relevance. Each result has a set of four lines of text formed by the title of its contents (that also has a hyperlink for access), followed by a two line with preview of the content and (below) a *Uniform Resource-Locator (URL)* of the content. It is possible to reorganize the content to be listed ordered by relevance or by date published, also being able to filter the results to only retrieve images.

### Content Presentation through Mobile Devices

The website does not have its own interface for the display of content on portable devices such as *smartphones*, *tablets* and other similar gadgets. Figure 10<sup>7</sup> shows the interface of the website when pulled up on an Apple iPhone 5 *smartphone*<sup>8</sup> with the iOS operating system (left), and an Asus Nexus<sup>9</sup> model 7 *smartphone*<sup>10</sup>, with an Android operating system (right). In both devices it is necessary to have both horizontal and vertical navigation bars.

<sup>7</sup> The iOS and Android operating systems were chosen because they are the most common operating system used on smartphones. (HACHMAN, 2014)

<sup>8</sup> Apple, iPhone, iPhone 5 and iOS are brands trademarked by Apple Inc.

<sup>9</sup> Nexus and Android are brands registered by Google Inc.

<sup>10</sup> Asus is a brand registered by ASUSTeK Computer Inc.



From results obtained by the exploratory research on CoDAF extension project website, were identified the following characteristics<sup>11</sup> as recommendations for information findability (Vechiato e Vidotti, 2014):

*1. Utilize instruments for the organization of information, such as navigational taxonomies and terminology monitoring instruments, such as thesauri and ontologies, when appropriate.*

*1.1. The existing navigational taxonomy has a adequate categorization of concepts/terms:*

- The website has a structure divided into a primary and a secondary navigation. The items founded on each navigation are categorized consistently in relation to content already on the website. In other words, the content is distributed in a consistent manner with the proposed themes.
- The items founded on secondary navigation, in the context of “Informations to Family Farmers” and its sub-items, were observed the following characteristics:
  - a) The item “News” shows at the bottom of a list with older news, but the label of the area is referred to as “More articles<sup>12</sup>”, which can confuse the user. The same occurrence appears in the item “Events”;
  - b) The content exhibited when the item “Informations about Family Farming” is accessed does not display all of the existing content in this context, for example, missing the item “DAP”;
  - c) The text label for the item Manuals, Instructions and other lecturesis written in different ways in the secondary navigation and in the structure of the content on item “Informations about Family Farming”;
  - d) the item “Trabalhos” is absent in the item “Projects”;
  - e) the item Search Products, Farmers and Cities does not shows the secondary navigation structure, and;
  - e) the content for the item “Farmer’s Map” only has one hyperlink;
- The items that are comprised by the secondary navigation structure in the context of “Informations to Consumers” and its sub-items, were identified the following characteristics:
  - a) the item Search Products, Farmers and Cities does not shows the secondary navigation structure, and
  - b) the contents of the item “Farmer’s Map” only displays a single hyperlink in its content;
- The items that are comprised by the secondary navigation structure in the

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<sup>11</sup> In order to facilitate reading, the recommendations proposed by Vechiato and Vidotti (2014) are cited with their terms in italics.

<sup>12</sup> From portuguese: more articles.

context of “About CoDAF project” and its sub-items, were identified the following characteristics: a) the accessing the content for the item “Members”, the secondary navigation structure displays the items of navigation for the item “Informations to Family Farmers”; b) the item “Trabalhos” presents divergence its sub-items and the content that is available, the items “Project” and “Applications” are absent in the secondary navigation structure, and c) the hyperlink “Articles/Presentations” does not work adequately.

1.2. *The existing navigational taxonomy has significant and consistent terms that do not hinder your understanding:*

- The terms are suitable to represent the contents and theme of the website and are presented in a clear and objective way. The content of the navigation structures of the website does not use acronyms, abbreviations or terms in other languages, the presence of these could compromise the access had by the family farmers;

1.3. *A controlled vocabulary is used, acronyms and/or ontologies, to represent the subject of the information resources:*

- The website does not present evidence establishing the use of a controlled vocabulary, acronyms and/or ontologies, in the representation of topics in the existing information resources.

1.4. - The website does not present evidence that establishes a use of a controlled vocabulary, acronyms and/or ontologies, in the representation of topics on the existing information resources.

2. *Implement social sorting capabilities (folksonomy) and navigation through the tags assigned by the subject.*

2.1. *There are social sorting capabilities (folksonomy) that favor the participation of the information subject:*

- In the exploratory analysis, no evidence was identified that website is using any sort of social classification for its content.

2.2. *The tags generated by subjects are available in a ‘tag cloud’ way, to facilitate social navigation:*

- Similar to the above item, no evidence was identified that website uses any sort of “tag cloud” disposition.

3. *Represent the informational resources through metadata.*

3.1. *The informational resources are coherently represented by metadata:*

- There is no evidences of a metadata use to describe the informational resources

available on the website. This absence was observed both in the source-code (written in HTML and JavaScript) and in contents.

4. *Invest in infocommunication mediation of subjects:*

4.1. *The subjects participate in the production of the information available:*

- The only channel of communication on the website is through the resource “Contact Us”. There is not an area to leave comments or buttons to share the information with others.

4.2. *The subjects participate in the organization/representation of available information:*

- Users can't participate in organization and representation of information on the website.

5. *Amplify the possibility of the subjects finding information through different environments and devices.*

5.1. *The informational environment enables its resources, products and/or consistent services on multiple devices:*

- As presented in the previous chapter, the site presents difficulties in the presentation of content on mobile devices. The user of the website always needs to use the horizontal scrollbar to access all of the content available. For example, in the display of text a horizontal scrollbar is necessary to read each line in each one of the paragraphs.

6. *Investigate the behaviors, competencies, experiences and intentions of the subjects.*

6.1. *There are indications that the system is concerned with the intentions of the user through interactions such as an user log analysis or other types of technologies for this purpose:*

- The website does not use a technology to store and analyze user logs. Therefore, there are no indicative issues related to intentionality of the subjects, in either a passive form (such as recording the actions of the subject on the website, periods of activities on website, among others), or in an active way (such as the use of folksonomy, to express their intention by assigning keywords to describes a content).

7. *Apply recommendations and evaluations of accessibility<sup>13</sup> and of usability:*
  - In relation to specific questions of accessibility, the start page source-code - that contains the structure and start page data - was inputted to validation through the analysis of the accessibility presented by the evaluation tool DaSilva (2014). The results of the tool has identified 21 (twenty-one) errors that compromise the full access to the content for users with special needs and 63 (sixty-three) warnings, with recommendations for the best practices. Of the results obtained in this summary, the following errors are highlighted: a) images, logos and other non-textual contents do not have an alternative textual label for use by screen reader softwares; b) the absence of instructions in places where the user needs to do some data entry (such as a text-box), and c) some parts of content that are not operable from the keyboard, requiring the use of a mouse or touch screen. Also highlighted are the following recommendations: a) the use of other elements to make content prominent besides colors, such as common forms of symbols and shapes; b) the proper ordering and transition of components available in the content, when accessed by keyboard shortcuts, and c) images containing text should be replaced by images without text or a image with a text outside of the image, for example, allowing the reading of this text with a screen reader software.
8. *Invest in the use of affordances to guide the subjects in space (wayfinding) during the navigation:*
  - The site uses *Breadcrumbs* to create spatial orientation marks in every displayed content. Each mark is of one item of the primary or secondary navigation system, with the exact ordering of items in which these navigation structures must be accessed to get this content.
9. *Invest in the use of affordances for query and search results:*
  - 9.1. *The search mechanism uses resources that assist the subject in the development of the search strategy (such as the autocomplete resource):*
    - There is no use of any affordances at the moment in this study, for example the use of autocomplete or suggestions in the period of typing to a search term.

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<sup>13</sup> This study takes into consideration the definition of accessibility of the World Wide Web Consortium (2014), where accessibility on the internet means people with special needs can use the web, realize, understand, navigate, interact and contribute, including the elderly, in order to provide equal access and opportunities for people with different abilities, with security and anonymity. The accessibility supports the inclusion of people with special needs, elderly, residents in rural areas, in under developed countries, and among others.

9.2. *On the page with the search results there are aspects presented to help refine the search:*

- In the search results from the website, it is possible to classify the results by data or relevance and filter results of every kind or only images.

10. *Provide pragmatic searches:*

- The website uses a third-party search algorithm from the search tool *Google Search*<sup>14</sup> and therefore has no descriptive elements that could support how operation or the strategy works on search algorithm.

Table 2 - Information findability results from CoDAF website

| Item     | Attributes and Findability of Information  | Results |
|----------|--|---------|
| <b>1</b> | <b>Information Organization and Terminology Control</b>  |         |
| 1.1      | Navigational Taxonomy (has adequate categorization of concepts/terms)  | Y       |
| 1.2      | Significant and consistent terms   | Y       |
| 1.3      | Use of controlled vocabulary, thesauri and/or ontologies   | N       |
| <b>2</b> | <b>Features of Social Classification and Navigation</b>  |         |
| 2.1      | Folksonomy   | P       |
| 2.2      | Tag cloud  | N       |
| <b>3</b> | <b>Representation of Informational Resources through Metadata</b>  |         |
| 3.1      | Use of Metadata  | N       |
| <b>4</b> | <b>Infocommunication Subject Mediation</b>   |         |
| 4.1      | Subject participation in the production of information   | N       |
| 4.2      | Subject participation in the organization of information   | N       |
| <b>5</b> | <b>Possibilities of the Subject to find Information through different Environments and Devices</b>                 |         |
| 5.1      | Availability of resources, products and/or services in informational environments consistently on multiple devices | N       |

<sup>14</sup> Google Search is a brand trademarked by Google Inc.

|           |   |   |
|-----------|---|---|
| <b>6</b>  | <b>Investigation of the Behaviors, Competencies, Experiences and Intentions of the Subjects</b>   |   |
| 6.1       | Analysis of the interaction log and other technologies  | N |
| <b>7</b>  | <b>Recommendations and evaluations of Accessibility and Usability</b>   |   |
| 7.1       | Usability of the environment  | P |
| 7.2       | Accessibility of the environment  | P |
| <b>8</b>  | <b>Use of Affordances to Guide the Subjects in space (wayfinding) during the Navigation</b>   |   |
| 8.1       | Use of breadcrumbs and metaphors  | Y |
| <b>9</b>  | <b>Use of Affordances for Query and Search Results</b>  |   |
| 9.1       | The search mechanism uses resources that assist the subject in the development of the search strategy                                     | N |
| 9.2       | On the page with the search results there are aspects presented to help refine the search   | Y |
| <b>10</b> | <b>Provide Pragmatic Searches</b>   |   |
| 10.1      | The search results are different types of documents based on the initial search strategy of the subject, presenting them in related forms | N |

Source: Authors

Table 2 summarizes the results from the information findability analysis of the CoDAF website. The results are grouped into recommendations, such as the model proposed by Vecchiato and Vidotti (2014). From left to right, the first column represents a sequential and unique identifier number for every recommendation, followed by a column with a brief description. The last column represents the status of THE recommendation from the CoDAF website, with possible values being 'Yes' (symbol 'Y'), 'No' (symbol 'N') or 'Partial' (symbol 'P').

## CONCLUSIONS

From the results of information findability on information environments geared to the public of family farming, this work proposes an observation strategy with five points of attention to websites:

### **1. Generalization of the information contained in the navigation structure:**

The items “Informations to Family Farmers”, “Informations to Consumers” and “About CoDAF project”, available in the primary navigation structure, could be moved to the top, preventing the continued use of the vertical scrollbar to access these items and/or return to start page.

The logos available in the primary navigation structure (Creative Commons, CAPES e PROEx logos) should have hyperlinks to their respective official websites, thus harmonizing all items in this navigation - in other words, structuring navigation in a way that all objects have a hyperlink, facilitating the understanding of the family farmers.

The website could offer the user the use of folksonomy, a tag cloud and the use of controlled vocabularies, in order to help future interventions in the organization of items contained in the navigation structure.

### **2. The visual hierarchy navigation structures with sublevels:**

When the items “Scientific Works” are “CoDAF courses” are accessed, available in the secondary navigation structure, the hierarchical data structure available within these items is indented in a way that does not promote the identification of this hierarchy.

The visual structure of the items, “Search for Products, Farmers and Cities” do not includes the secondary navigation, which creates a different structure from all the other content on display on the website, hinder to a better understanding of the navigation disposition to family farmers.

### **3. The reduction in the use of different structures to presents a content:**

Structure V, specific to the website content research, could offer the use of affordances for the elaboration of the query, for example, autocomplete and suggestions, to increase the potential of content search strategy by family farmers.

Elaborate its own interface to shows website’s content fully available on devices with limited screen capability, for example, mobile devices. This point reflects directly in mobility capabilities, of convergence and ubiquity - an important characteristic for family farmers.

With regard to aspects related to usability and accessibility, despite the website navigation allowing the use of the ‘TAB’ key to scroll through the navigation structures, the hyperlinks and objects, of the items “Scientific Works” and “Articles” can not be accessed that way. In addition, all content is only available in Portuguese. Additionally, it is important that the sequence of this keyboard movement is organized in an order - and that regardless of the sort or organization chosen - is standardized in all content available.

The website has a collection of images in which mostly have alternative text features allowing the screen reader software to read them. However, a total of 4 (four) images, which are located in the page footer, do not have this feature. The website also has some content in video format, which also does not use equivalent alternative textual form.

All errors identified by the accessibility validator DaSilva should be corrected, so that, by following the best practices of accessibility and usability, therefore it is possible that the information environment enhances access to a wider audience, for example, visually impaired, elderly and others.

#### **4. Issues of user participation in content generation:**

The structures I, II, III and IV could offer the users a way to make comments and suggestions, promoting family farmers to participate in website information production and also contact peers.

Enable and install components in the Content Generating System, Joomla! for the storage and tracking of users' activities, promoting and possibility a research of users's behaviors and the intentionality of subject.

#### **5. The use of descriptive metadata:**

The website could provide metadata in source-code in order to describe the contents available on website.

This analysis sought out to highlight the importance of information findability recommendations proposed by Vechiato and Vidotti (2014). The fulfillment of these recommendations on the CoDAF website may facilitate navigation, search, retrieval and location of the content available, trying to reach a specific target audience (family farmers), who still have some limitations imposed by external factors, for example, unfamiliarity with the use of ICT.

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