

## USABILITY DESIGN OF SUSTAINABLE ANTHURIUM eCOMMERCE

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### Abstract

A framework for usability evaluation and design of sustainable anthurium eCommerce is proposed. It includes a checklist and a neural networks-based model. The framework supports the allocation of usability problems and the defining of relevant improvement measures for anthurium eCommerce services. A case study with an eCommerce website for anthurium cut-flowers applying the framework is carried out. Its support for the design of anthurium eCommerce services was confirmed by usability tests. The framework contributes to enhancement of customer shopping experiences, not only by adding value to customers' time on site, but by increasing the average order and transaction values. Redesign recommendations for the website are defined. Guidelines for design of sustainable anthurium eCommerce services are developed. The usability and sustainability of anthurium eCommerce services are significantly improved after implementation of redesign recommendations. By using the framework significant increase of revenue and customer conversion rates is expected.

**Key words:** usability, anthurium, eCommerce, evaluation, design.

### Introduction

After a year of fragile and uneven recovery, global economic growth started to decelerate on a broad front in mid-2010 and this slower growth is expected to continue into 2011 and 2012. The United Nations baseline forecast for the growth of world gross product is 3,1 per cent for 2011 and 3,5 per cent for 2012, which is below the 3,6 per cent estimated for 2010 [1] and the pre-crisis pace of global growth (cf. Fig. 1). The global recovery poses risks for world economic stability and is proving a challenge for online businesses; however web-based retailers such as Netflix [9] and Amazon.com [1] are obtaining some of their best financial performances [2]. During this period, a usable and effective eCommerce solution will play a vital role in enhancing a firm's sustainability, as consumers are particularly cost conscious and unsure whether to spend what money they do have, thus bad usability can shatter their already fragile confidence and prevent them from making a purchase. Websites with good usability, making purchasing quick and simple will generate more sales and encourage customers to return. The critical success factor in eCommerce of getting the customer to make a purchase still remains the single most important objective to increasing a firm's profits. Also important for a firm's sustainability is converting attracted web buyers to loyal customers. By creating awareness among targeted groups of potential customers in the present global climate would increase customer trust and increase a firm's

chances of remaining successful as shown in [5] and [10].



Fig. 1. Growth of the world economy [3]

A sustainable eCommerce business model is based around the adding of value to the internet [6]. Targeted leads are defined as radical new ideas, perspectives and technologies that hold the potential to trigger a change in sustainable agriculture. The key to building of a sustainable eCommerce business model is the capturing of targeted leads. A list of targeted leads gives an internet marketer the ability to market to a segmented audience over and over again. Additionally, it gives the website owner the ability to invite repeat traffic any time fresh content is added as well as offer them new products and services over and over again. These leads have been crucial in history of the existing agricultural knowledge infrastructure and will remain important in the future as driver for

sustainable development. One way to effectively distribute targeted leads is by offering better usability on the website compared to competitors.

For sustainable anthurium eCommerce to become successful and to prevent negative side effects not only technical hardware elements are important but also software and orgware elements. Another important prerequisite for sustainable eCommerce is value capturing through entrepreneurship. Nowadays in agricultural life sciences patent rights are introduced which have to co-exist with, for example, anthurium plant breeders' rights in plant varieties with its principle of breeders exemption in order to preserve open innovation. New solutions aiming at sustainable development can be organized by intersectional and directional targeted leads or open innovations sometimes followed by a switch between them [4].

In the following a framework for usability study of sustainable anthurium eCommerce will be described. By a case study its applicability will be illustrated.

### 1. Framework description

For creating of usable sustainable anthurium eCommerce websites a framework is proposed. On Figure 2 the framework design steps are shown.

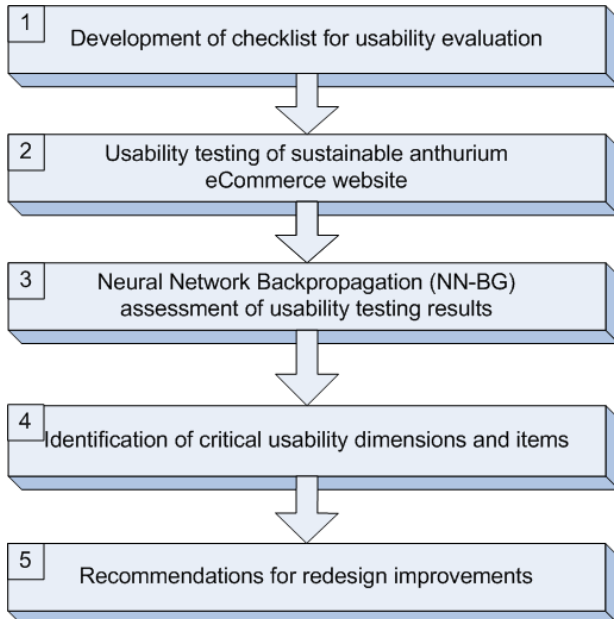


Fig. 2. Framework steps

For measuring the usability dimensions of anthurium website a checklist should be created (steps one). Step two includes collecting data

from users interacting with anthurium website. At step three a neural network backpropagation-based model is created [11]. At step four, based on weighting coefficients determined by neural network model, quantitative usability indices are determined. By means of these indices at step five the most critical dimensions and checklist items to anthurium website usability are defined and relevant measures for improving anthurium website usability are determined. With the implementation of the resulting improvement measures the usability index is increased, i.e. better anthurium website from the user viewpoint.

### 2. Case study

The framework was applied for usability evaluation of an eCommerce website for anthurium cut-flowers. The prototype homepage of this website is shown on Figure 3. On Figure 4 is presented the screenshot of the homepage of the website. Usability testing with 73 participants was conducted. During tests think aloud approach was used to ascertain qualitative feedback based on user actions, comments, moods and dialogue. Questionnaire results were used to obtain both quantitative and qualitative feedback of user's experience.

MATLAB neural network toolbox [7] was used to process the participants' checklist data as input to the neural network. To select the most critical eCommerce dimensions, the neural network weights after its training are used. During neural network training the target was reached after roughly 2 epochs (cf. Fig. 5). The weights of the neural network which had produced the smallest sum squared error (SSE) were used for our study (cf. Fig. 6).

Trust, entertainment, navigation and product information were the eCommerce anthurium website usability dimensions which gave the highest weights and were considered as most critical for further improving the usability of the website. Several recommendations were proposed to improve the usability in these critical areas, for example, include metaphors and icons that provide a sense of assurance to the eCustomer, for example a „lock” next to the login section and state clearly in the „store policy” all aspects of sensitive nature regarding payment transactions, for the trust dimension (cf. Table 1).

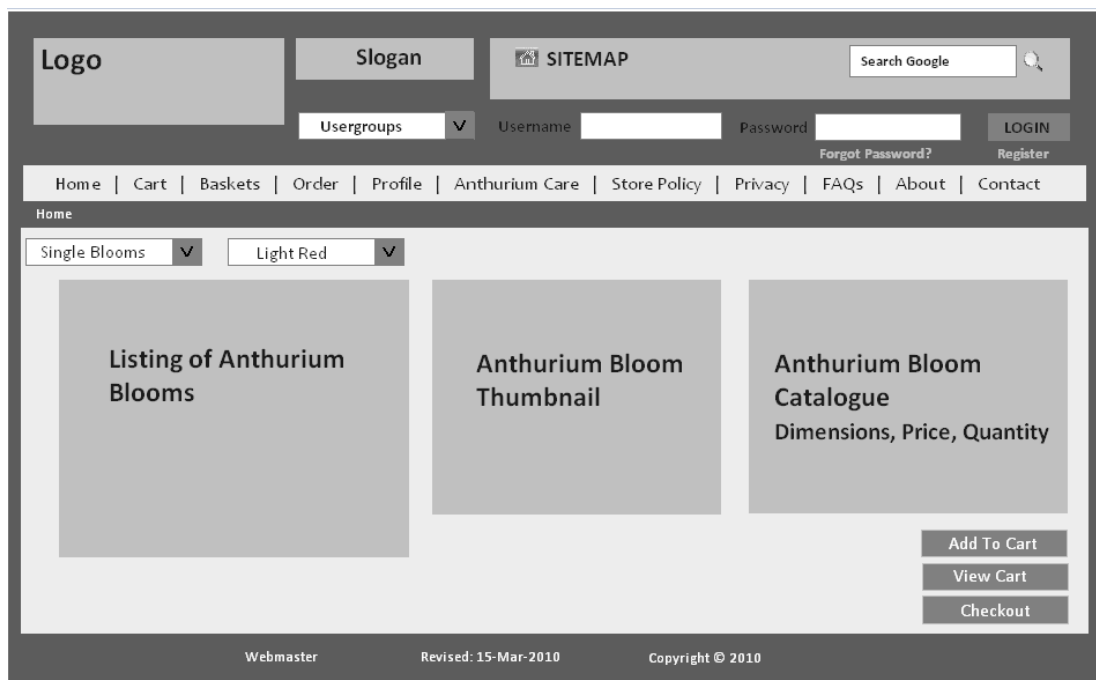


Fig. 3. Anthurium eCommerce website homepage prototype

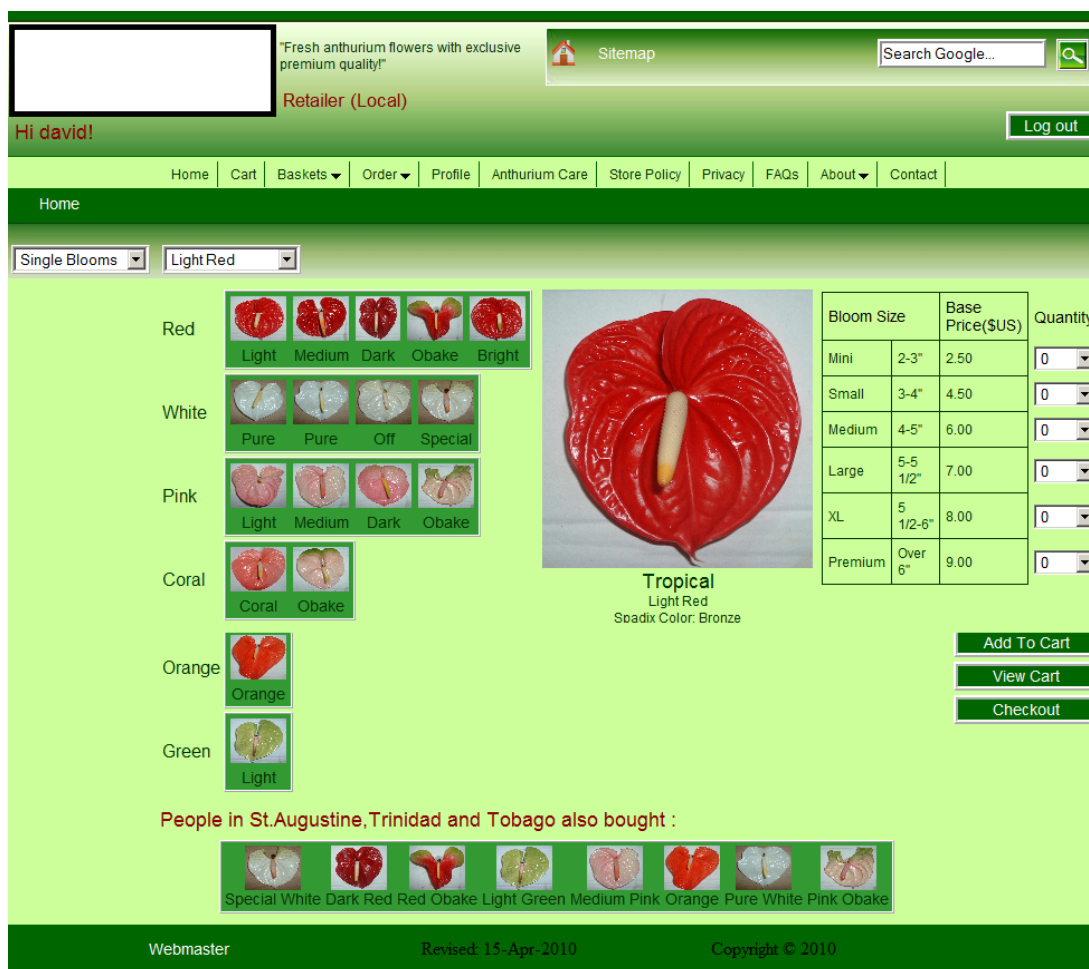


Fig. 4. Anthurium eCommerce website homepage

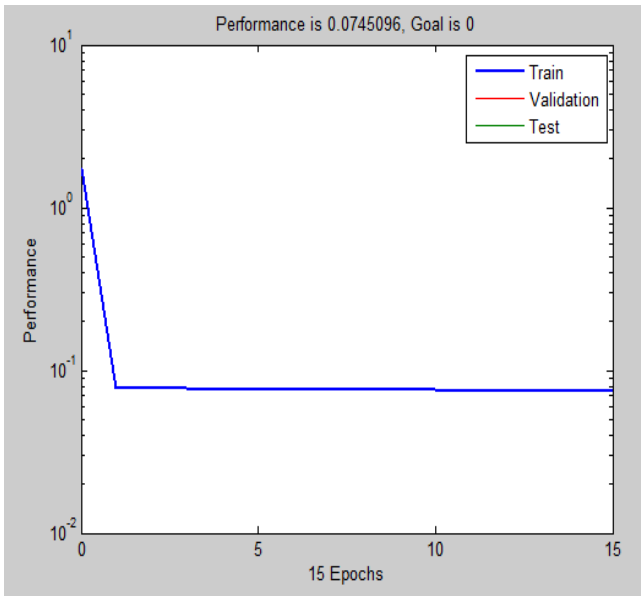


Fig. 5. Neural network training

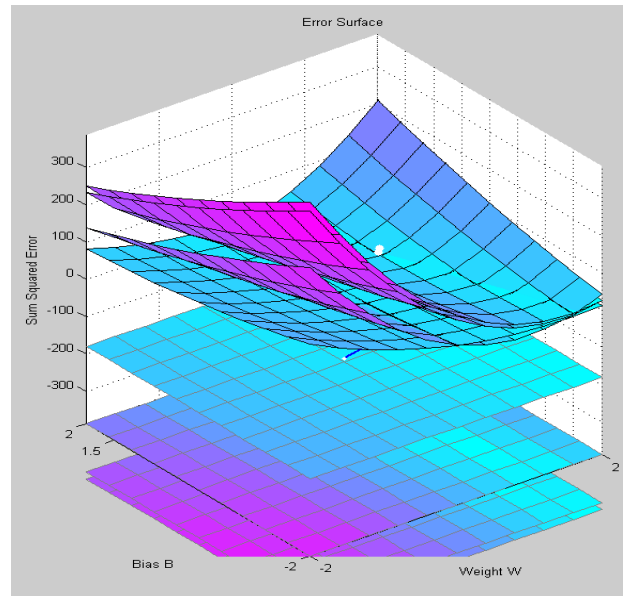


Fig. 6. Neural network SSE

Table. 1. Guidelines for usability design of anthurium eCommerce websites

Nr	Trust	Navigation	Entertainment	Product Information
1	Include third-party approvals and endorsements such as Verisign, Truste, WebTrust, Trusted Site Seal	Define information content on the web site in the form of chunks. The average individual comprehends $7 \pm 2$ chunks of data at any given time [8]	Redesign the interface to create a more interactive experience	Include more product descriptions
2	Include metaphors and icons that provide a sense of assurance to the eCustomer, for example a "lock" next to the login section	Add breadcrumb for more effective navigation	Use a better colour scheme that would stimulate a sense of excitement in the eCustomer	
3	State clearly all aspects of sensitive nature regarding eCommerce website payment transactions	Optimize the keyword search on the web site		
4	Emphasize on the website the fact that the company adheres to the Data Protection Act and other acts that dictate how private information must be handled.	Provide a help menu to provide guidance to eCustomers		
5	Aesthetic improvements to create a more professional-looking interface.			

**Conclusions**

The results of study on anthurium eCommerce show that making targeted usability improvements on these websites can enhance its sustainability. A framework including a checklist and a backpropagation neural network model for usability evaluation of eCommerce websites is proposed. Based on evaluation results the most

important usability problems and relevant anthurium eCommerce website design improvements are determined.

Such a framework can enhance anthurium marketing product strategies, product services and create roadmaps to identify potential usability issues that would result in reaching higher sustainability in many decisions within

this industry. Thus usability would help online retailers in their finding sustainable profitability in the eCommerce continuum. These findings lead to a set of segment-specific usability strategies that companies can employ to reach above industry-average profits and, presumably, high and sustainable market valuations.

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