The Impact of Interface Animation on the User Experience:

Directing Customer’s Attention in Online Shopping Sites

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Research Days, UFP – July, 2017
Research Problem

• **Problem:**
  - too much information online, directing and maintaining attention is difficult (Crawford, 2015)
  - distracted attention affects online shop providers
  - an average of **69% of all online shop visitors leave their shopping cart before fulfilling the purchasing process** (Baymard Institute, 2017), according to Checkout Usability study by Baymard Institute

• **Possible reasons for high shopping cart abandoning:**
  - customers’ attention is distracted,
  - too many providers and customers are wandering around in sites
  - products are being saved for later consideration,
  - shopping cart is used as a wish list
Research Problem

• **Attention Economy**
  • is a situation in the market, a phenomenon that affects both consumers and providers. Consumers need to find the best product or a website from loads of options available, and providers want to attract and keep consumer’s attention to their products. For example, in the interface design, if it takes the user too long to find something, he will probably find it through another application (Davenport & Beck, 2001)

• **In sum:**
  • Consumers need to find and choose product from all the options available
  • Providers want to attract and keep consumer’s attention to their products
Research Goal

Solution:

• Some issues can possibly be solved through design changes (like adding functional animation)
• **Functional interface animation** is a UX design tool that supports design solution and serves a functional and logical purpose (Daliot, 2015)

The main goal of this research is to investigate:

• the effect of functional animation on the user experience
• how efficiently users solve different types of shopping tasks in web shops
• whether or not animations help to attract user’s attention on the interactions that have the most importance in fulfilling the purchasing process
Research Question

The main research question (RQ) is:

RQ: How functional interface animation affects the efficiency of users and the user experience across different types of shopping tasks in web shops?
The research methodology

Phase 1
Theoretical Background
Literature Review

• Aimed to understand:
  • the definitions
  • the connection of classical animation principles and interface animations
  • potential animation benefits
  • importance of attention direction and management

Phase 2
Theoretical Background
Exploratory analysis

Phase 3
The Experiment
Experimental A/B Test, a study of user preference
Main results gathered from the literature:

1) **Interface animations have strong connection with the classical animation principles**
   (Johnston and Thomas, 1981)
   - **Classical animation principles** from Disney area are timing, easing, squash and stretch, overlapping action etc.
   - **Functional interface animation implemented in UI design** are used for functional purposes
(Phase 1) results

2) **Animation usage benefits:**
   - reduces cognitive load
   - helps to reduce change blindness
   - helps to communicate
   - attracts attention and directs focus

3) **Attention managing** is extremely important in online shopping sites
   - it may reflect directly in the sales
   - user not noticing relevant changes might lead to user making mistakes and feeling frustrated. It may end up losing client and money
The research methodology

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Phase 2
Theoretical Background
Exploratory analysis

• Aim is:
  • to complement the knowledge and inputs gained in phase 1
  • to review the current functional animation patterns used in online shopping sites

Phase 3
The Experiment
Experimental A/B Test,
a study of user preference
(Phase 2) findings

The main **functional animation patterns** used in online shopping sites:

- reveal firstly hidden information
- show user where to look next
- support interaction with clear visual response
- present disappearing and reappearing
- help user to understand the UI
- give effective error notifications
The research methodology

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Theoretical Background
Exploratory analysis

- Aim is:
  - to complement the knowledge and inputs gained in phase 1
  - to review the current functional animation patterns used in online shopping sites

Phase 3
The Experiment
Experimental A/B Test, a study of user preference

- an experimental A/B test aimed to:
  - understand how functional interface animation affects the efficiency of users and the user experience across different types of shopping tasks in web shops
The research methodology

Phase 1
Theoretical Background
Literature Review

• Aim is to understand:
  • the definitions
  • the connection of classical animation principles and interface animations
  • potential animation benefits
  • importance of attention direction and management

Phase 2
Theoretical Background
Exploratory analysis

• Aim is:
  • to complement the knowledge and inputs gained in phase 1
  • to review the current functional animation patterns used in online shopping sites
  • to learn the online shopping processes and steps

Phase 3
The Experiment
Experimental A/B Test, a study of user preference

• a user preference study aimed to:
  • to complement above A/B test
  • to gain additional information about participants’ opinions
Procedure

1. Introduction
2. Start the procedure
3. Allows screen recording
4. Start A/B test
5. Open a questionnaire
6. Save, upload and share the screen video
7. End the procedure

- Open the link
- Tasks 1-6
- Read task description
- Start the task
- Fulfill the task
The task example
Participants

- 40 participants in total
  - 20 test with animation
  - 20 without
  - Participants were randomly assigned into 2 groups
- Background information:
  - Mostly working full time and university students
  - Nationalities:
    - Estonian
    - Portuguese
    - Syrian
    - Ukrainian
The study data analysis

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Mean: 00:00:10

Confidence Interval at 95%: 1.25 (+/- 0.235) 1.15 (+/- 0.1565)
Sum of main results achieved from A/B test

The results show that:

• adding animation to certain purchasing processes could have some attention directing properties

• each interaction step needs to be separately approached because not all added motion had a positive effect on efficiency

• there was some evidence, that animated elements in the interface attract more attention and influence user’s choices
A/B test results (task 1)

- **Positive effect of animation:** in the B version of the prototype, the products quickly slid in from the bottom of the page after loading.

- **Motion drew possibly the participant’s attention** and **indicated** where the products are located.

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<tr>
<th>Group</th>
<th>Task 1 completion time</th>
<th>Task 1 number of clicks done</th>
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<td>1,25</td>
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<td>B (with animation)</td>
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A/B test results (task 5a)

- It is reasonable to use **only one animation at a time** because several animated objects might have a confusing effect on the user.

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<td>B (with animation)</td>
<td>00:00:08</td>
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Study limitations

- using a prototyping program Proto.io instead of an actual Web site would
- Participants’ main focus was on fulfilling the tasks and they did not act entirely naturally
- the checkout was left out of the study
A study of user preference results
Suggestions for further research

• To explore, how would interface animations affect the real purchasing process

• A study could be done with A/B testing, where two or more versions of online web shop designs, whether with animated elements or not, would be shown to users at random. Later, the statistical data could be compared and analyzed

• Requires good planning time-wise and in terms of analysis methods, because it is more complicated to compare results when no certain tasks are given
Main contribution to the field

• Author brings some knowledge about interface animation usage for attention directing in online shopping purchasing steps

• The goal was to provide empirical evidence of **positive influence** of functional animation on user experience

• Work provides somewhat meaningful evidence of animation's usage for attracting and focusing attention