



A Set Of Heuristics For User Experience Evaluation In E-commerce Websites

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- **GRIHO**: HCI and Data integration Research Group. Universitat de Lleida (UdL)

- **Vision**: The most important part of technology is the **people** using it

- **MASTER FINAL PROJECT**

- **HCI**: Human-Computer Interaction discipline

- **UCD**: User Centered Design methodology

- Design/Evaluation of interactive systems

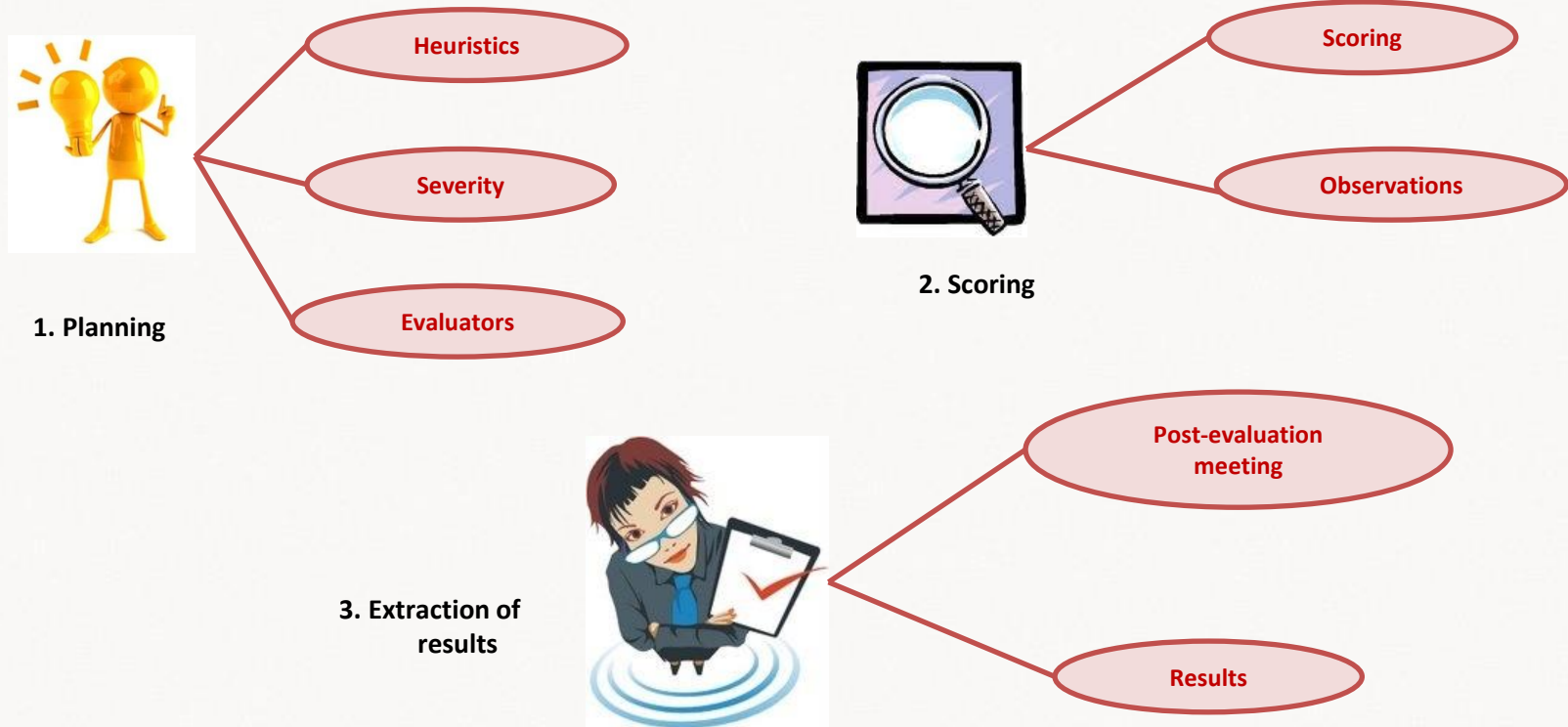
- **HE**: HEURISTIC EVALUATION

- **UX**: User eXperience

- applied to **e-commerce**



Heuristic Evaluation



Heuristics → Guidelines, Design Recommendations, Principles, Rules, UI Patterns, ...

HE strengths

- Widely used UX evaluation technique
- Quick & cheap (compared to other methods such as the user test)
- It can be applied in all the different steps of the development process
- It does NOT need exhaustive planning
- Intuitive evaluation process
- Excellent ROI
 - effort vs results
 - can detect 42% of serious problems and 32% of minor

HE weaknesses

1. It is **necessary to adapt the heuristic set to the specific features of each interactive system**
 - combine different recommendations sources in order to review the specific application domain
 - a long reviewing process as guideline collections inevitably induce conflict between various resources
2. Each set uses **different scoring systems** to score the recommendations
3. Long list of duplicated recommendations → A **clean-up and selection process** is then required
4. It has **Guideline conflicts**: some are dealing with “the same”
5. When heuristics become/are design guidelines are written as declarative sentences
 - BUT **evaluators prefer/need interrogative sentences**

e-commerce needs

- For e-commerce websites the adaptation of the heuristic set is especially challenging
 - Jakob Nielsen's HE **do not cover** all the aspects involved in B2C sites
 - Eddie Bauer's guidelines for Product Pages & Guidelines of E-Commerce Checkout Design are **too partial** (only for some aspects of B2C)
 - Need for supporting **specific components**:
 - shopping cart, customer service, checkout and registration process, category and product pages
 - (+) special factors: trustworthiness, safety and privacy

OUR GOAL

- To provide “a first set of heuristics” to evaluate the UX in e-commerce websites
 - The **set**: to pull all the e-commerce principles from the literature together and standardize them into interrogative sentences to be ready for evaluators to use.
 - An **unified scoring system** is also suggested to ease the reviews and overall scoring of B2C sites.
 - To **resolve conflicts**: The resultant heuristic set will prevent the problems that arise from the combination of the recommendations taken from different sources.

Step 1. To obtain the heuristic set and the scoring system

- From
 - T. P. Liang, and H. J. Lai, "**Effect of store design on consumer purchases: An empirical study of on-line bookstores**", in Information & Management, 39 (6), pp. 431-444 (2002).
 - N. J. Lightner, "**Evaluating e-commerce functionality with a focus on customer service**", in Communications of the ACM, 47 (1), pp. 88-92 (2004).
 - M. Cao, Q. Zhang, and J. Seydel, "**B2C E-commerce web site quality: An empirical examination**", in Industrial Management & Data Systems, 105 (5), pp. 645-661 (2005).
- To deduce and recollect all the recommendations given by the three studies
- Each recommendation was rewritten formulating an interrogative sentence and providing examples or advice to facilitate their scoring



Author	Authors' definition of their own recommendations	Recommendations/Guidelines about security from the studies	Resultant Heuristics inspired by the three authors' recommendations
T. P. Liang, and H. J. Lai	“Functional requirements derived from the customer's perspective”	“I trust the web site will not misuse my personal information”	Does the website show security logos? It should show them especially in the checkout process to build trust. The logos may be related to the shipment (FedEx, UPS, etc.), payment options (Visa, PayPal, etc..) or security, like SSL.
		“The web site is secure”	
		“The web site is realiable”	Does the website inform of the level of security when paying by credit card? It should demonstrate that it is a safe website to buy from.
		“I fell protected/safe when I use the site”	
N. J. Lightner	“Functional requirements that represent facets of customer service in a B2C site”	“Provide secure payment”	If personal information is required by the website, does it have the Privacy Policy available? It should include all possible uses of their personal information. The footer is the standard location to link this information. It has to be easily understandable by the customers.
		“Inform customer of paymen security (Safe Shopping Guarantee)”	
		“Inform customer of privacy policy (For instance: Link during checkout or help, Privacy icon link, etc.)”	
M. Cao, Q. Zhang, and J. Seydel	“A set of factors that capture the quality of an e-commerce website”	“Claiming security of transactions: Since the seller and the buyer do not actually see each other in the virtual market, Internet security is a major concern. Therefore, adopting proper security mechanisms, such as secured electronic transactions, and making announcements may help.”	Does the website has safety certificates granted by external companies? It is important to get them and let customers know about them. These are companies like VeriSign or ControlScan. It must use the secure SSL technology as well.



Step 2. Heuristics organized based on the stages of customer's buying behavior

- the heuristics are organized in **six parts**:

1. Need Recognition and Problem **Awareness** [14],
2. Information **Search** [6],
3. **Purchase decision** making [13],
4. **Transaction** [10],
5. **Post-sales** Services Behavior [4], and
6. Factors that affect **UX during** the whole **purchase** process [17]

intends to facilitate the **evaluators' understanding of customer behavior** to enhance the HE results

[64]



Step 3. Establish a scoring system

- Each heuristic
 - “yes/no” or 1 to 5 Likert scale
 - To obtain quantitative results
 - “yes” = 5 points
 - “no” = 1 point
 - The scale is represented as:
 - 1 strongly disagree,
 - 2 disagree,
 - 3 neither agree nor disagree,
 - 4 agree and
 - 5 strongly agree
- Every web will have a score from 0 up to 233 points
 - This eases the comparison between different websites
 - Useful to estimate the level of UX according to the heuristic set



Example:

[TABLE VI in the paper]

POST-SALES BEHAVIOUR [4 heuristics]

Heuristics	Description	Source(s)	Importance of factors
Does the system send a confirmation email after the customer's order?	The email should summarize the order and thank the customer. This generates a positive opinion from customer service.	N. J. Lightner	(Yes / No)
Is it possible to track the status of an order from the customer account?	This section should allow the customer to consult a previous order and to track current orders.	N. J. Lightner T. P. Liang and H. J. Lai	(Yes / No)
Can the customers manage their order(s) from the customer account?	The user should be able to modify or cancel orders. If returns are possible it should allow the tracking of its status.	N. J. Lightner	(1 2 3 4 5)
Does the website allow the customer to return an item?	This boosts loyalty and potential purchases.	T. P. Liang and H. J. Lai	(Yes / No)

Conclusions

- The presented set of guidelines
 - **64 guidelines organized in 6 parts**
 - covers all **UX facets** **except accessibility**
 - is an **assisting tool for evaluators** based on proved standards to review the aspects of a website that can affect UX
 - Also, for designers !!!
 - **covers as many as B2C websites as possible**
(nevertheless, it can be extended/adapted)
- Future work:
 - Introduce this set of heuristics in **Open-HEREDEUX system** and **validate** it developing empirical studies

- It is available on the Internet: www.grihotools.udl.cat/openheredeux



Open-HEREDEUX: Open HEuristic REsource for Designing and Evaluating User eXperience

[Open-HEREDEUX](#)[Open Repository](#)[Adviser](#)[Scorer](#)[Results Analyzer](#)[Video Tutorials](#)[References](#)[Login](#)

Open-HEREDEUX

OPEN-HEREDEUX is the short name that we use to refer to the project called: "OPEN HEuristic Resource for Designing and Evaluating User eXperience in interactive systems". It will enable UX experts to design and evaluate UX in a semi automated way.

OPEN-HEREDEUX is divided into four components:

- **The Open Repository of heuristics:** The main goal of this component is to manage information. We should provide the Repository with all the needed information to achieve the complete and minimum set of heuristics for a specific interactive system, and it also considers all UX aspects of a design phase or evaluation process for a specific interactive system.
- **The Adviser of heuristics:** The main aim of the Adviser of heuristics is to propose the most convenient list of heuristics to be used (for the specific system to be analyzed), such as recommendation principles in a design phase or such as evaluation principles in a UX evaluation based on heuristics.
- **The Scorer of heuristics:** If we want to use the adviser's set of heuristics to evaluate the UX, we can carry out the evaluation using the Scorer. It helps UX evaluators in their process of scoring the list of heuristics.
- **The Results Analyzer:** This component waits for the extraction of quantitative and qualitative results.

Thanks for
your attention

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