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Digital Tools

CONCEPT DESIGN EVALUATION

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Concept Design Evaluation

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SŠOF 2019

Networking for Entrepreneurship

Project Reference: 2017-1-SI01-KA202-035580

Start: 01-09-2017 - End: 31-08-2019

Co-funded by the
Erasmus+ Programme
of the European Union

Programme: Erasmus+
Key Action: Cooperation for innovation and the exchange of good practices
Action Type: Strategic Partnerships for vocational education and training

CONCEPT DESIGN EVALUATION

EVALUATION AS PART OF THE DESIGN PROCESS

Concept design evaluation is at the heart of the design process as it allows us to verify whether the concept fits in with the guidelines defined in the design brief. Evaluation is not the same as pitching the design to clients. It is a review or a comment of a product at a certain design stage. Evaluation is about grading the concept, defining priorities and outlining the stages of project design. That is why it is very important to evaluate all the phases of the design process carefully.

Evaluation is a cyclical process which iterates throughout the various stages of product development and continues after product launch (including the customer response, market success etc.). It is carried out to meet design standards and to check usability.

EVALUATION CRITERIA

A successful evaluation is systematic and is based on clearly defined criteria. The latter stem from guidelines or needs defined in the design brief for all stages of the product design process. The applied criteria should be multi-layered and multidirectional to allow for complex and creative solutions.

The evaluation criteria can be general or task-specific; it can be defined in compliance with design stages or professional fields involved in the design process.

For the most part, evaluation criteria are either objective or subjective. Some concept attributes are quantitative (dimensional characteristics, weight, material durability, etc.), while others cannot be measured (qualitative) and are thus subject to emotional reactions and product appeal; both of which are difficult to measure or evaluate.

WHO DOES THE EVALUATION

Choosing the right person for concept evaluation is crucial. Especially because subjective factors play a major role in concept design as they appeal to users' emotions. Evaluation is successful when the reviewer is familiar with the project history, strategic steps and final product effect. In such cases, designers are thought to be the best people for the job. They understand the complexity of a task and have the knowledge to bring together the requests and ideas of professionals from different fields (i.e. materials, price, aesthetics, sustainability, recycling, etc.). Then again, this does not mean that designers are the only competent professionals capable to do the evaluation. It is important that all those involved in the design process participate. However, they should limit themselves to their professional fields.

Furthermore, a team of top professionals is no guarantee for success. We know from experience that the most successful teams are those in which all members pursue the same objective and work enthusiastically towards its realization. Such teams can develop commercially successful and technically superior products as they manage to address the needs of like-minded consumers. In other words, concept evaluation which keeps in mind the customer's emotional response is key for success. It should be done by a team of professionals (not just individuals) who can successfully address the emotional needs of their consumers.
Taken from Simon Sinek´s "Start with Why: How Great Leaders Inspire Everyone to Take Action".

The relationship between professionals and customers is also crucial for success. When a customer trusts the designer, values their knowledge and shrewd judgement and knows they understand design scope, the process is more effective. In such cases, the customer's initial product idea can be altered based on designer's suggestions. The team's opinion is important; however, outsiders' feedback is also welcome, since those who are not involved in the project can redirect designers' attention to non-detected aspects of a product or its hidden flaws.

Evaluation is performed at different levels:

- Personal level - when the designer reflects on the quality of the ideas as they emerge based on personal criteria
- Design team level - when a group of experts with common goals discuss the emerging solutions
- Client level - when the client may judge a solution based on personal preferences.

In all the above cases, the people performing the evaluation are in some way involved in the process and can judge the emerging solution with a certain degree of insight. At other times, evaluation can be performed by independent jurors that judge designs based on present criteria. Such is the case of competitions and design awards. Examples of criteria used by the selection board of the Red Dot Award, Design Award & Competition, etc. can be found online. In their survey of the criteria for the assessment of good product design, Demirbilek and Park (2001) find that while different design awards, competitions and organisations have divergent attributes for selecting and nominating "good product design", some common ground can be established (image 1) .

SOURCE: Demirbilek, O. and Park, M. (2001): A survey of criteria for the assessment of good product design, Proceedings of the Fourth European Academy of Design Conference, (Aveiro, Portugal), 370-377.

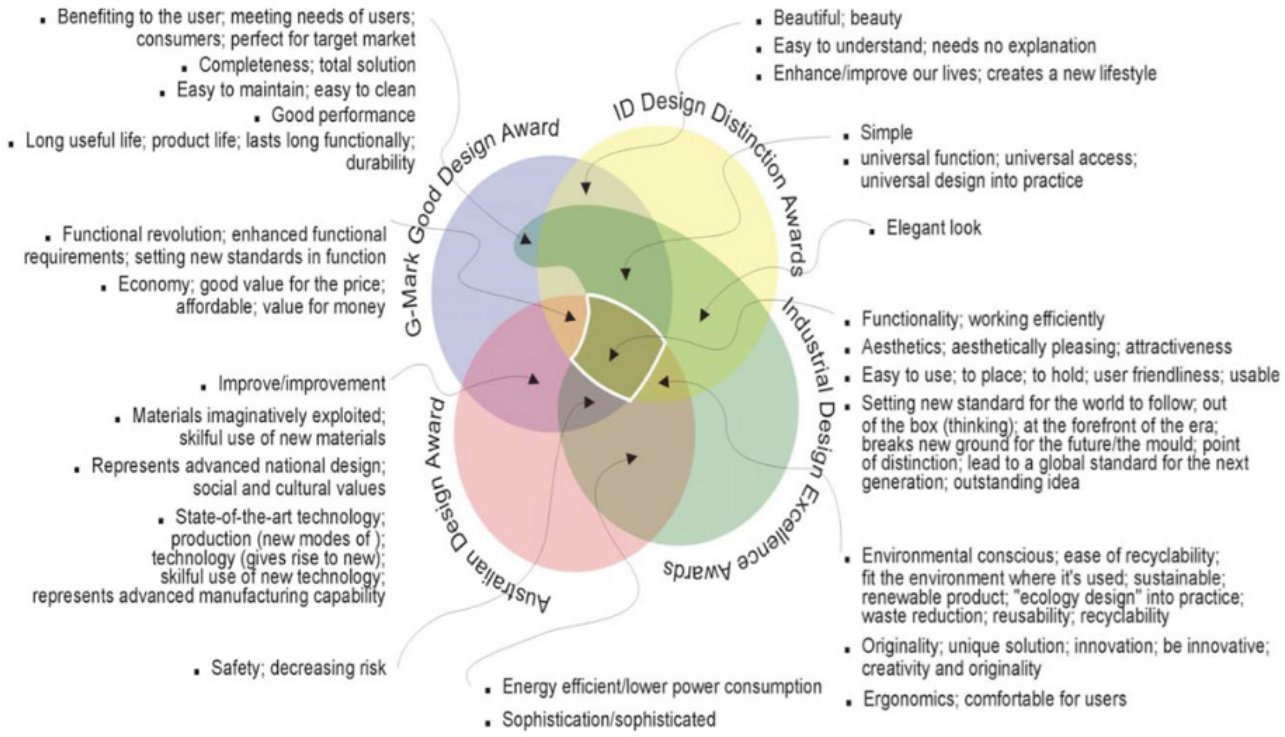


Image 1: Shared common "good design" criteria (Demirbilek and Park, 2001)

OBJECTIVE V SUBJECTIVE

In most cases, the evaluation process is a combination of objective and subjective approaches. Evaluating concept design differs from market research and other activities based on numeric data as the ratio between subjective and objective criteria is subject to change – it depends on the task, creative approach, the design stage, etc.

Product evaluating is strongly linked to design scope (product use) and the concept environment (team of designers, the customer, recognisability…). Design has to meet the needs of different customers and so does project evaluation. When the design reduces product cost (IKEA, Image 2) the objective and subjective criteria differ from those of sustainable design (LEGO) or business brands (Starbucks). The differences in evaluation are even bigger when it comes down to creating opportunities (Apple) or promoting business values (Mercedes-Benz, Image 3).

Image 2: Ikea Tvars lamp 2,50 Eur (https://www.ikea.com/it/it/catalog/products/20356136/)

Image 3: Mercedes-Benz S-Class 120.000,00 Eur

SOURCE: https://www.designorate.com/five-companies-five-rules-of-design/

THIRD PARTY DESIGN AND PROCESS SAFETY REVIEWS

Regardless of the evaluation hierarchy throughout the design process, concept design has to be re-evaluated in terms of safety and other aspects before manufacturing and marketing. This kind of evaluating is usually done by third parties that base their findings on objective criteria; i.e. mechanical, electrical or structural analyses, testing, materials characterization, product usage, health or environmental risk evaluations, construction management and regulatory support.

The aim of independent analyses is to double check a product and to foresee potential market or manufacturing risks. Such analyses consider a vast array of categories; such as product components, concept changes, production process, product use, health risks and others. An independent evaluation focuses on product features overlooked by the team of designers and reviews possible product impact on both the environment and the general public.

SOURCE: http://www.spartaengineering.com/process-design-for-manufacturing/

THE EVALUATION PROCESS

The evaluation of concept design is always a complex process; no matter who is behind it or where it is done. Its aim is to deliver an overall assessment of concept design. Evaluation is a cyclical process or a dialogue between problems and solutions which starts with an idea and returns with a solution. When working on a concept, constant evaluation helps to synthesise various concept attributes in the design process. Iterating concept evaluation allows designers to recognize and choose the best concepts which lead them to better final solutions.

EFFECTIVE SUBJECTIVE DATA GATHERING

As stated before, the design process is based on subjective and objective data. It is a well-known fact that granting objective data is much easier than understanding subjective reactions. When gathering objective data, we rely on measuring systems and existing data bases, whereas gathering subjective responses can be quite challenging.

It is important that we choose competent reviewers – sincere and capable to express their inner feelings in such a way that they contribute towards successful concept design. Even though everyone involved in design process should partake in the evaluation, some professionals have the knowledge necessary to evaluate several attributes. Such professionals are designers who have an insight into the scope and limitations of a project and can thus deliver solutions for final products. We know from experience that a good designer is a motivated designer. Therefore, a competent professional in charge of evaluation is a designer who fully understands the story behind the design. For the same reason, a designer who is successfully engaged in one project may not feel the same affinity about a different one.

Good designers are sound decision makers. They consider a wide spectrum of factors; such as the demographics of the audience, the path the eye will take across a product, the medium upon which the design will be implemented, the message it delivers and most importantly that a product appeals to the eye.

When gathering subjective data the choice of designer and the data collection techniques play a major role. People in charge of concept evaluation see a solution differently from the general public. If an object is placed in front of us for the purpose of evaluation, we analyse it differently than we would if we accidentally stumbled upon it. This phenomenon cannot be avoided even when the reviewer is aware of it. In such cases reviewers go ''I get it, but I don't think other people will'', which can have a major impact on innovation.

Product studies' reliability can be problematic when gathering subjective responses from the general public (a true outsider's response). These are some actions which can be taken to get a valuable and unbiased evaluation of a design:

1. Don't ask, "which do you like best?"
A successful design communicates an idea. It doesn't matter if someone "likes it" more than another. A pretty ad may look great but may not communicate the desired message. Instead ask which one communicates "x-idea" more clearly.

2. Don't ask specifics such as "do you like these colours? "
This is a personal preference and just because someone prefers blue to green doesn't mean that is the right choice for your design.

3. Lay the design in front of them. Don't say anything. After a few moments ask a few questions such as:
"What is the single (or primary) message of this design?"
"What was the first thing you looked at?"
"What do you remember about the design?"

4. Watch the viewer's eyes.
Where do they look first? How do their eyes move around the piece? Good design should guide the user so that upon a quick scan they get the main message without reading all the copy.

5. If possible sleep on it.
When things look different to what you expected, the most common reaction is "No, that's not what I was thinking". Give it a day, it may grow onto you. We all have an expectation of what something will look like, so it's easy to have a negative impression. It's important to trust your designers. You don't want to say no to a concept which was better than what you were expecting just because it was different than what you were expecting. Instead ask yourself if it represents the brand and communicates the message effectively.

6. If it's a multi-page design, put the design on the table and let them pick it up.
Watch how they browse through it. Did they pick it up and open it in the middle? Did they quickly skip through the first few pages? Did they browse front-to-back or back-to-front? Did they spend more time on one page than another?

SOURCE: https://modassicmarketing.com/when-evaluating-a-design-whose-opinion-should-you-value

THE IMPORTANCE OF EVALUATION CONSISTENCY

Quality design adds value and can determine product success. Well-known business brands are recognizable due to quality design which knows how to enhance business values. As stated before (see Objective v subjective), there are several approaches to design. However, well-known brands which rule the market owe their success to verified design methods working hand in hand with business philosophies. Consistency which is crucial for recognisability is the main design method.

A DESIGN METHOD is an organized approach to collecting and evaluating ideas leading towards a clear goal. That is why design solutions are a sum of sound decisions based on existing criteria and are not just a sum of subjective views. The method is key in finding problems and answers which ultimately bring us to final solutions. Consistency in both processes is crucial and is secured by clearly defined criteria throughout the design process. Looking for solutions comes to an end when the manufacturing begins; however, the evaluation process continues when products are reviewed for use and market success.

FORMATIVE EVALUATIONS

These are tests that are mostly used as part of the (or an iterative) design process where we are answering questions like “How do people experience our product?” or: “What are the biggest problems with our product which we need to fix?” Formative tests are performed when the goal is to identify problems. It helps to “form” the design for a product or service.

Formative tests give us qualitative insight by answering the “whys”; they can answer questions like how people actually experience the design and see where and why they might get stuck because you observe them directly, hear what they say using the thinking aloud method.

In the best case, these types of evaluations/tests should be conducted and repeated throughout the whole design process to identify problems at an early stage of system design.
In contrast to summative tests where we aim for an outcome like: “40% of our users were able to accomplish tasks in under 30 seconds”, an outcome of a formative test might be: “people struggled to complete checkout because the buttons labelled OK / CANCEL seemed confusing to them”. You can clearly spot the “why” here.

FORMATIVE USABILITY TESTS typically need 5 to 7 users, and the data you get is mostly qualitative. For example, cognitive walkthroughs and heuristic evaluations do also count as formative evaluations (they are done without external participants but by yourself).

Source:
https://www.thegeekettez.com/differences-in-formative-and-summative-evaluations-and-why-they-matter-for-ux-designers/

SUMMATIVE EVALUATIONS

Summative tests are used when you are trying to evaluate the usability – defined as efficiency – of a completed product. With summative evaluation/testing, your main interest is in the statistics of participants´ behaviour. Summative testing can be done with comparative tasks: Questions comparative evaluations can answer are “Is design A better than design B?” (i.e. “Is our product better than our competitors?”, “Is the new version better than the old one?” etc.).

Summative testing can also ask if the solution meets the performance requirements.
The question here is “Does our design meet a specific benchmark?” (e.g. “Are our users able to accomplish checkout in less than x seconds”, or “95% of users succeeded in accomplishing task y.”). Benchmark driven tests are most often seen in performance critical domains, such as healthcare, industry and gaming.
Summative tests are driven by statistics, which means that they require statistical training and they will not explain why something has happened – so the data you get out of summative testing is mostly quantitative.

This also means that the number of participants that you need can vary because it depends strongly on the statistical methods that you will be using to calculate the outcome. Often summative tests will require 10 to 20 participants (or even a lot more).

As we can see, summative testing may be hard to conduct and calculate for people without statistical knowledge, so you need an expert on this. And for this reason and some others – like the increased number of participants – summative tests are quite rarely used in user experience research – except for website optimization (online A/B Testing).

You can compare summative evaluations/testing to school exams – every exam is a summative evaluation in this sense because it will never explain why you didn't pass the exam – it only shows the outcome; i.e. that you did or did not pass the exam – or in our case: the product met a pre-specified criteria/hypothesis.

SOURCE:
https://www.thegeekettez.com/differences-in-formative-and-summative-evaluations-and-why-they-matter-for-ux-designers/

STANDARD EVALUATION METHODS

Evaluation consistency of concept design is achieved through proven methods and standard procedure. There are several standard procedures, three of which are discussed here. Since evaluation is never entirely objective as the evaluation criteria vary between projects, the procedure cannot be completely one sided. Moreover, designers are usually not fond of filling in charts as such tasks can interfere with their creativity. Therefore, experienced designers tend to rely on intuition and have a step-by-step approach to solution-solving or simply adapt to individual projects.
Nevertheless, standard procedure is helpful, especially during the pedagogical process as it enables students to evaluate the attributes of their concepts in regard to customers' demands in simple chart form.

There are three basic approaches to evaluating design ideas: pass-fail evaluation method, evaluation matrix and SWOT analysis. These methods can be used in isolation or step-by-step, depending on the number of ideas and evaluation criteria.

1. PASS-FAIL EVALUATION METHOD

This is the first method and can be applied for evaluating large number of ideas based in a simple acceptance or rejection question. Before going into in-depth evaluation methods, this basic step allows eliminating the ideas that do not fit with the basic project requirements such as the budget and target audiences. This method allows reviewing a large number of ideas in a short time due to its simple decision-making process based on prime criteria. The criteria can include questions such as:
- Does the idea comply with company strategy? (Yes/No)
- Does it talk to the company's target audience? (Yes/No)
- Is the idea budget acceptable? (Yes/No)

Although there can be a large number of ideas reviewed in this method, accurate evaluations should be taken into consideration as a priority in order to avoid eliminating good ideas with potential success possibility.

2. EVALUATION MATRIX

The ideas that pass through the first evaluation filter then go through the evaluation matrix method. In some cases, the submitted ideas for acceptance are just a few ideas, then when submitted to the evaluation process, the reviewers can skip the first methods and transition directly to this step.
In this method, the reviewers compare the ideas with a specific matrix or set of criteria. The criteria could include the following:

• The contribution of the idea within a company's overall strategic outcome
• The potential impact of the idea
• Expected stakeholders
• Expected budget to apply the idea
• Timelines to implement the idea

A specific score is given to each criterion. For example, the contribution the idea makes to a company's strategic outcome could include the following score set:

• Score 0: No expected contribution in the strategic outcome
• Score 1: Direct contribution to one strategic outcome
• Score 2: Direct contribution to two strategic outcomes
• Score 3: Direct contribution to three strategic outcomes
• Score 4: Direct contribution to four or more strategic outcomes
• Score 5: Multiple contribution to the organization's broad strategic outcomes

The comparison factors reflect the project requirement using a score rate. This score measures the potential success of the idea based on a number of factors. After the evaluation process is accomplished, a total score number is assigned to each idea. Each evaluator provides feedback about the idea, which can also be used to improve it.

Evaluation Matrix

Score / Criteria	0	1	2	3	4	5	Score
Strategic Outcomes	No expected contribution in the strategic outcome	Direct contribution in one strategic outcomes	Direct contribution in two strategic outcomes	Direct contribution in three strategic outcomes	Direct contribution in four or more strategic outcomes	Multiple contribution in the organization's wide strategic outcomes	

3. SWOT ANALYSIS

The SWOT analysis refers to the strengths, weaknesses, opportunities and threats of the idea as projected into the marketplace. This type of evaluation seeks to extend the reviewer vision to evaluate the idea based on the four factors, which predict the potential success of the idea in the market based on the market related factors.

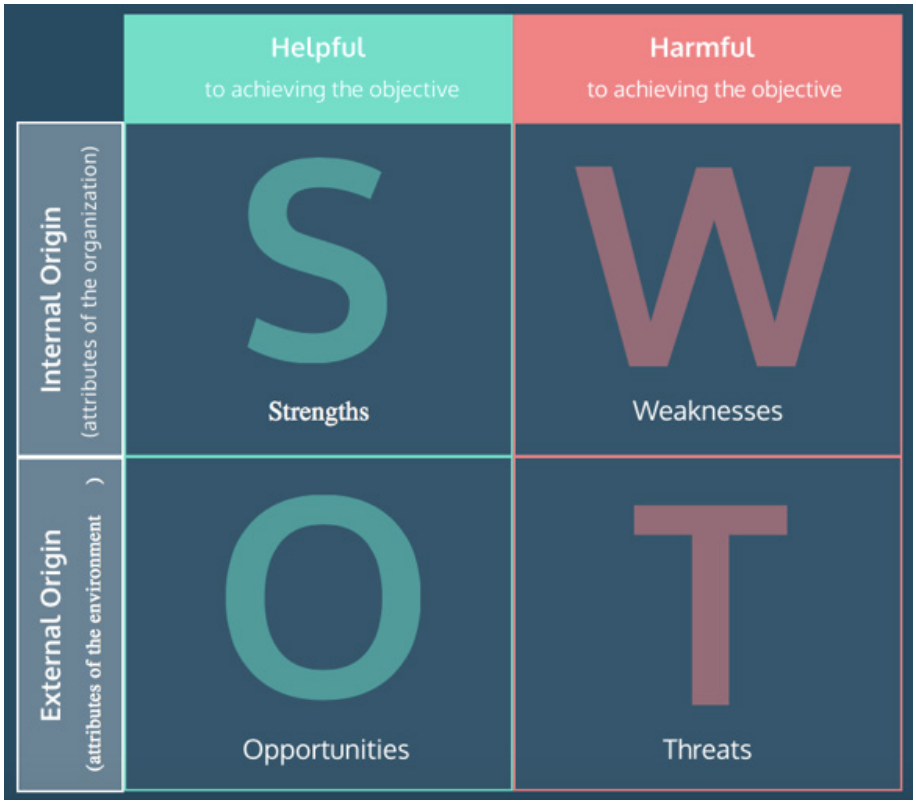
This analysis stage helps evaluating the idea based on the four SWOT factors such as questions determining strengths of the ideas:
• What are the idea's advantages?
• What can the idea be successful in?
• What are the current existing idea resources?
• How others may see the strength of the idea?

Questions analysing the weaknesses of the idea:
• How can the idea be improved?
• What does the idea lack in terms of experience, team and resources?
• What can prevent the idea from being successful?
• How do others see the idea in terms of weaknesses?

Questions analysing the opportunities the idea holds:
• What opportunities does the idea have in the market?
• How can the company help the idea to succeed?

Questions analysing the threats the idea could face or bring about:
• What are the obstacles that the idea faces?
• Do the weaknesses represent any threat to its success?
• What are the financial problems which the idea may face?

SOURCE: https://www.designorate.com/how-to-evaluate-design-ideas/



Easy-to-remember acronyms which also support design evaluation:

F.A.C.E. VALUE

Function - What does it do and how does it work?
Aesthetics - Is it attractive, why and what makes it so?
Construction - What is it made from, how and why?
Economics - How much does it cost and is this good value for money?

C.A.F.E.Q.U.E.

Cost - How much does it cost and is it good value for money?
Aesthetics - Is it attractive, why and what makes it so?
Function - What does it do and how does it work?
Ergonomics - How easy or comfortable is it to use?
Quality - How well is it built, what materials are used?
User - Who is it for and is it appropriate?
Environment - What effect do the product's manufacture, use and disposal have?

SOURCE: //www.bbc.co.uk/schools/gcsebitesize/design/systemscontrol/designevaluationrev2.shtml

ARTIFICIAL INTELLIGENCE

Many have attempted to make good use of the breakthroughs in the field of artificial intelligence (A.I.), even when it comes to evaluating concept design. Multi-attribute value analysis is a not so recent approach to concept design evaluation (Keeney and Lilien, 1987). Its major setback however lies in defining the evaluation criteria. Evaluating concept success based on pre-set parameters can only be trusted if the product success categories are well-chosen and well-defined, especially when evaluation depends on first impressions (Steinberg, Woll. 2015). With the developments in A.I. and the improvements achieved in the field of pattern recognition, A.I. is set to rule the scene. Still, the underlying question remains: Can A.I. completely replace subjectively engraved perceptions based on our inner feelings? Some things will always just feel right or not.

CONCLUSION

Regardless of the evaluation method, one must keep in mind two things. First, there are countless ways to tackle design problems. At the core of successful evaluation lies repetition of potential solutions throughout the product design process. The task is successfully accomplished if based on consistent criteria and clearly set goals.

Second, we do not always need elaborate criteria to tell us what good design is – sometimes we just know. In other words, design evaluation is not always based on objective criteria. At the heart of evaluation there is a competent designer who is up to the task.

EXTRA TOOL

Evaluation sheet: https://www.iainstitute.org/sites/default/files/designreviewchecksheets.pdf

Further reading: http://www.uiah.fi/projekti/metodi/13c.htm