

Abstract

The design process has been extensively studied so far. However, the theoretical and empirical around the understanding and knowledge of design practice results has not been completed in a clear and definite understanding that considers the multiple domains that participate in the design and product development, especially the when structuring the design problem. Moreover, the growing need for better understanding between the different actors involved in the design of products, namely: designers, engineers, journalists and especially consumers, evidence is now required to have more participatory processes and methodologies, communicating and interconnected, not only considering the technical and functional, but also issues related to people through interaction and combination of actions that run during product development aspects.

Factors integration market demands, the use of new technologies, upgrading of traditional frames of reference for the realization of the design process, etc., are decisive when facing the design process. This context requires the designer and design teams to rethink the procedures and protocols that are conducted from the definition of the design problem to formal representation and product appearance. In this regard the different disciplines that are commonly involved in the design process trying to make, from their perspective and knowledge, good management and planning of the activities that make up the formalization of the design problem. And combine multiple criteria and domains that are able to do interdisciplinary integrate in the design space. While current models approach their implementation often suffers from consistency results are less efficient and sometimes even poorly structured. Because of this we understand must rethink, firstly involving both engineering and design processes, as well as the dimension of design education about this new vision to face and participate in the dynamics of practice design and development of products.

The research focuses on identifying, understanding and depth of knowledge in the practice of the design process, conceptual design and results obtained through the conceptual actions and the formal representation of the design. While most models currently methodological approach the process correctly, most of them do not clearly evidence the activities and actions defined and later developed in the conceptual design activity, where mainly defined the formal aspects and appearance of the product, seeing it as the key and critical activity of the design process.

First, the steps and sequences of the design process in conjunction with the analysis of the models, which are usually used heretofore studied. In turn the activity of conceptual design and definition of the conceptual design and the actions they take when design and engineering process develops conceptual design is studied. Finally it analyzed and identified key factors associated with morphological development, the shape and appearance of the design. Second research provides descriptive studies through a questionnaire to experts and students from design and engineering to know the opinion and applied knowledge about the phenomenon of the design process, the conceptual design and the formal representation of the design.

The research approach takes around three hypothesis and three sub hypothesis organized around three interrelated and dependent constructs: a) design process; b) conceptual design and c) formal representation of the design, with which they define and identify the elements and variables that constitute the step sequences, or specific common actions associated with the conceptual design, the morphological development of the conceptual design and related components with visual and formal values assigned to product design. All these aspects are analyzed and verified through exploratory studies of literature review and descriptive studies to the collection and processing of data by means of statistical measurements.

In research results related to product design problem are obtained, from the perspective of process development: sequence of steps and actions of conceptual design. This allows viewing in the future new scenarios in practice and design education, as well as the interpretation and

modeling of new methodologies to realize synchronous design processes, primarily between design and engineering.

Keywords:

Process design, conceptual design, industrial design, engineering design, design education, product form

Research lines:

Design process, conceptual design, design education, design methodology, methods and systems, product engineering.