

# Modelling users' judgement of aesthetics and user interface quality

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Position paper/ Abstract

The paper introduces a framework for users' design quality judgements based on Adaptive Decision Making theory. The framework describes judgement on quality attributes (usability, content/functionality, aesthetics, customisation and engagement) with dependencies on decision making arising from the user's background, task and context. Incorporating the results from previous evaluations of websites (Ivory & Hearst, 2001; Sutcliffe, 2002; De Angeli et al 2006), we propose a theoretical framework for judgement of "attractiveness" based on Adaptive Decision Making theory (Payne, Bettman & Johnson, 1993), illustrated in figure 1. ADM theory asserts that people's decision making is adaptive and contingent upon the task, context, and their background-experience.

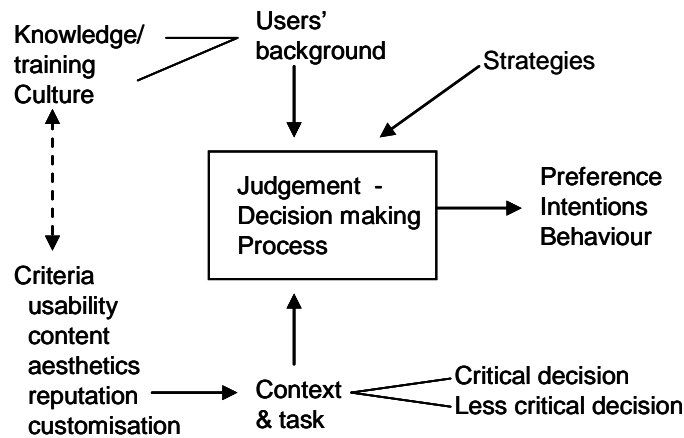


Fig. 1. Initial theoretical framework, based on Adaptive Decision Making theory.

It proposes that people make decisions by adapting their strategies to the task in hand, and that decision making is contingent on their background experience and the criticality of the decision. For example, for an important decision such as the purchase of high-value goods, most people will adopt a slow-path reasoning-intensive process with filtering and multi-attribute comparisons. Our elaboration of ADM hypothesises that users' judgement will also depend on interactions between decision-making criteria (e.g. design qualities such as content, aesthetics, functionality, usability) that are conditioned by the task context. In the context of ADM theory we posit that users will adopt a mixture of filtering on different criteria (Elimination by Aspects), and multi-attribute comparison (Weighted Attributes Decision) strategies to trade off between different quality criteria. For example designs could be selected by filtering based on perceived aesthetics to select the most 'beautiful'; alternatively, the overall assessment might be made by weighing the actual usability experience against the gain in content and services delivered by the application. Different strategies of this nature are implicit in Hassenzahl's theory of user judgement of beauty and goodness of interactive products (Hassenzahl 2004). We hypothesise that preferences for user interface designs when the scenario of use is critical will be based on more in-depth consideration of quality attributes, whereas for less serious contexts of use, preferences will be governed by selecting designs based on general aesthetic impressions. The outcomes of

users' judgement are preferences between designs, intention to use, and actual use (behaviour). The key research questions we wish to investigate are how design quality attributes bear upon users' overall judgement, the importance weightings of the attributes, and their possible interaction. In particular we explore the relationship between usability, aesthetics and content in more depth than previous studies.

Five judgement criteria are proposed in the initial framework for attractiveness ("pleasing or appealing to the senses, arousing interest" OED, Sutcliffe and DeAngeli 2005): *usability* following traditional definitions (e.g. ISO, 1997), including ease of learning, efficiency of use, memorability, low error frequency, and subjective satisfaction. Appropriate and interesting *content* is widely cited to be a key factor in successful website design (Lynch & Horton, 2001; Mullet & Sano, 1995) with *services* to describe the functions. Content and services correspond to the utility of an application. *Aesthetics* reflects the format in which the content and services are presented as well as the design look-and-feel and overall experience with a system (Hallnäs & Redström, 2002; Norman, 2004). *Reputation/identity* relates to the identity of the website owner and the brand-product identity which can be projected by a consistent visual style, logos, and product presentation (Merrilees and Fry 2002). Finally, *customisability* describes the extent to which the user can adapt the system to his or her needs; this can encourage users to take ownership over a system, and has been found to influence perceived usability and aesthetics (Blom & Monk, 2003).

The framework has been tested and refined by three experimental studies. The first two assessed judgement of quality attributes of websites with similar content but radically different designs for aesthetics and engagement. Halo effects were demonstrated whereby attribution of good quality on one attribute positively influenced judgement on another, even in the face of objective evidence to the contrary (e.g. usability errors). Users' judgement was also shown to be susceptible to framing effects of the task and their background and culture. These appear to change the importance order of the quality attributes, hence quality assessment of a design appears to be very context dependent. The third study assessed the influence of customisation by experiments on mobile services applications, and demonstrated that evaluation of customisation depends on the users' needs and motivation. The results are discussed in the context of the literature on aesthetic judgement, user experience and trade-offs between usability and hedonic/ludic design qualities.

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