

# DESIGNING FOR THE OTHER: HOW USER PERSONA AFFECTS DESIGN THINKING

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# DESIGNING FOR THE OTHER: HOW USER PERSONA AFFECTS DESIGN THINKING

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*Dedicated to my mother*

# CERTIFICATE

This is to certify that the thesis titled, “Designing for the Other: How User Persona Affects Design Thinking”, being submitted by Mr. Abhishek Dahiya to the Indian Institute of Technology Delhi for the award of the degree of Doctor of Philosophy has been carried out under my supervision.

The research work contained in this thesis has not been submitted in part or full to any other university or institute for the award of any degree or diploma.

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# ABSTRACT

The genesis of User Centered Design (UCD) process eventuated to ensure that the gaps in mental models of users and designers are bridged before launch of the products. UCD process has been typically helpful in domains where the users have to interact with the product through frequent and/or critical tasks and differences in designers' mental model and users' mental model may have a significant effect on effectiveness of the product. Design literature suggests various user research methods that allow designers to understand needs and problems faced by the users. Designers during user research are encouraged to observe users deeply to understand their motivations, problems and needs. Among various methods, User Persona is one of the most widely used user information presentation methods in the design industry. This method is popular due to the fact that it is helpful to better understand and empathise with the users and other stakeholders. On the other hand, designers are encouraged to use their creative thinking abilities to come out with novel solutions that could help their users. While understanding users and identifying their problems require structured or analytical thinking, synthesizing for various design solutions for the problem involves creative thinking. Hence, there is a deliberate shift by a designer between the two contrasting thinking processes.

The studies reported in this thesis have aimed to investigate how providing user information in the form of persona affects design thinking processes of a designer. It is posited here that a designer referring to user persona in the design process, might get influenced by information about the users and fixate on certain solutions, or get more cues or prompts from user data to develop creative solutions enhancing their design thinking process. Moreover, this thesis also investigates how designer's empathy plays a role in affecting design thinking process while working with user persona.

This thesis reports findings from experimental studies conducted with designers. A total of seven studies were conducted in this research. The purpose of these experiments was to observe the effect of user persona on design thinking process of a designer. For this, a mixed method research approach was taken. The studies presented in this thesis are reported as observational and experimental studies. The distinction between the two is based on the study approach and depth of analysis. Observational studies are exploratory in nature that helped in understanding the breadth of the phenomena. Experimental studies were mostly conducted to test research hypothesis and validate observations.

It was observed that user persona has an effect on the design thinking process of a designer. In some cases, user persona can lead to undesired behaviour like stereotyping and fixations. While in other cases user persona can aid overall design thinking process and helps a designer think more creatively.

## सार

अभिकल्पना (डिजाइन, design) की प्रक्रिया में कल्पना का आधार जब कल्पित वस्तु का उपयोगकर्ता रखा जाता है तो ऐसी प्रक्रिया को उपयोगकर्ता केंद्रित डिजाइन (user centered design अथवा यूसीडी) कहते हैं। उपयोगकर्ता केंद्रित डिजाइन (यूसीडी) प्रक्रिया की उत्पत्ति यह सुनिश्चित करने के लिए हुई कि उत्पादों की अभिकल्पना से पहले उपयोगकर्ताओं और डिजाइनरों के मानसिक प्रतिमान (mental model) में अंतर को पाट दिया जाए। यूसीडी प्रक्रिया विशेष रूप से उन क्षेत्रों में मददगार रही है जहां उपयोगकर्ताओं को बार-बार और महत्वपूर्ण कार्यों को करने के लिए उत्पाद का उपयोग करना पड़ता है। क्योंकि उपयोगकर्ता डिजाइनर द्वारा बनाई गयी वस्तु को अपनी मानसिक प्रतिमान की मदद से समझता है। यह मानसिक प्रतिमान उस उपयोगकर्ता के जीवन के अनुभवों के आधार पर बनता है और जब कोई नयी वस्तु उपयोगकर्ता के सामने आती है तो वह अपने पूर्व निर्मित मानसिक प्रतिमानों के आधार पर उसे समझने और उपयोग करने की कोशिश करता है। डिजाइनरों के मानसिक प्रतिमान और उपयोगकर्ताओं के मानसिक प्रतिमान में अंतर का उत्पाद की प्रभावशीलता पर प्रभाव पड़ सकता है।

डिजाइन सम्बन्धी वैज्ञानिक साहित्य विभिन्न उपयोगकर्ता अनुसंधान विधियों को प्रस्तुत करता है जो डिजाइनरों को उपयोगकर्ताओं की जरूरतों और समस्याओं को समझने में मदद करता है। उपयोगकर्ता अनुसंधान के दौरान डिजाइनर उपयोगकर्ताओं को उनकी समस्याओं और जरूरतों को समझने के लिए गहराई से निरीक्षण करते हैं। विभिन्न विधियों में एक विधि है उपयोगकर्ता सम्बन्धी सूचना को जीवंत तरीके से डिजाइनर के सामने रखना। इसे उपयोगकर्ता पात्र परिचय (persona/ पर्सोना) कहते हैं।

उपयोगकर्ता पात्र परिचय (पर्सोना) डिजाइन उद्योग में सबसे व्यापक रूप से उपयोग की जाने वाली उपयोगकर्ता सूचना प्रस्तुति विधियों में से एक है। यह विधि लोकप्रिय है क्योंकि यह उपयोगकर्ताओं और अन्य हितधारकों के साथ बेहतर ढंग से समझने और समानुभूति रखने में मददगार है। दूसरी ओर, डिजाइनरों को प्रोत्साहित किया जाता है कि वे अपनी रचनात्मक सोच क्षमताओं का उपयोग नए समाधानों के साथ करें जो उनके उपयोगकर्ताओं की मदद कर सकें। उपयोगकर्ताओं को समझने और उनकी समस्याओं की पहचान करने के लिए विश्लेषणात्मक सोच की आवश्यकता होती है हालाँकि उपयोगकर्ता की समस्या के समाधान के लिए रचनात्मक सोच आवश्यकता होती है। ऐसी परिस्थिति में डिजाइनर अपने चिंतन को दो विपरीत प्रक्रियाओं, विश्लेषणात्मक और रचनात्मक प्रक्रियाओं के बीच बाँटते हैं। डिजाइनर द्वारा की जा रही इस चिंतन को समझना इस थीसिस का उद्देश्य है।

इस थीसिस में बताया गए अध्ययनों का उद्देश्य यह जांचना है कि पर्सोना के रूप में उपयोगकर्ता की जानकारी प्रदान करने से एक डिजाइनर की डिजाइन सम्बन्धी चिंतन प्रक्रिया कैसे प्रभावित होती है। डिजाइन प्रक्रिया में पर्सोना का जिक्र करने वाला एक डिजाइनर, उपयोगकर्ताओं के बारे में जानकारी से प्रभावित हो सकता है और कुछ समाधानों पर ध्यान केंद्रित कर सकता है, या रचनात्मक समाधान विकसित करने के लिए पर्सोना से अधिक संकेत प्राप्त कर सकता है, जिससे उनकी डिजाइन सोच प्रक्रिया को बढ़ावा मिल सके। इसके अलावा, यह थीसिस इस बात अध्ययन करती है कि उपयोगकर्ता के पर्सोना के साथ काम करते समय डिजाइन सम्बन्धी चिंतन प्रक्रिया को प्रभावित करने में डिजाइनर की समानुभूति कैसे भूमिका निभाती है।

यह थीसिस डिजाइनरों के साथ किए गए प्रायोगिक अध्ययनों के निष्कर्षों की रिपोर्ट करती है। इस शोध में कुल सात अध्ययन किए गए। इन प्रयोगों का उद्देश्य एक डिजाइनर की डिजाइन सम्बन्धी चिंतन प्रक्रिया पर पर्सोना के प्रभाव का निरीक्षण करना था। इसके लिए मिश्रित विधि शोध दृष्टिकोण अपनाया गया है। इस थीसिस में प्रस्तुत अध्ययनों को प्रेक्षणात्मक और प्रयोगात्मक अध्ययनों के रूप में सूचित किया गया है। दोनों के बीच का अंतर अध्ययन के दृष्टिकोण और विश्लेषण की गहराई पर आधारित है।

प्रस्तुत शोध में यह पाया गया कि पर्सोना के प्रस्तुतीकरण का एक डिजाइनर की डिजाइन सम्बन्धी चिंतन प्रक्रिया पर प्रभाव पड़ता है। कुछ मामलों में, पर्सोना स्टीरियोटाइपिंग और फिक्सेशन का कारण बन सकता है। जबकि अन्य मामलों में पर्सोना समग्र डिजाइन सोच प्रक्रिया में सहायता कर सकता है और एक डिजाइनर को अधिक रचनात्मक रूप से सोचने में मदद करता है।

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## LIST OF ABBREVIATIONS AND TERMINOLOGIES

<b>HCI</b>	Human Computer Interaction. A multidisciplinary field that studies how humans interact with computers
<b>UX</b>	User Experience. The overall experience felt by users while using a product.
<b>UCD</b>	User Centered Design. A design methodology which keeps users in focus while designing a product
<b>CM</b>	Critical Moves. Design moves that are significant in the design process as they signify the important turning points in the design process
<b>LI</b>	Link Index. The ratio between the number of links and the number of moves
<b>EEG</b>	Electroencephalography. A method to measure electrical activity of brain functions over time which is often used to assess cognitive and affective state of
<b>SUS</b>	System Usability Scale. A widely used questionnaire based usability testing method for HCI products.
<b>PSD</b>	Power Spectral Density. It shows the strength of the variations in energy /power of EEG signals. The unit of PSD is energy per frequency.
<b>ICA</b>	Independent Component Analysis. Method to identify source of a signal.
<b>PCA</b>	Principal Component Analysis. A technique used to emphasize variation and bring out strong patterns in a dataset.
<b>Persona</b>	A fictional character created to represent a user type that might use a site, brand, or product in a similar way.
<b>Empathy</b>	The ability to understand and share the feelings of another.
<b>Design Thinking</b>	Term used to represent a set of cognitive, strategic and practical processes by which design concepts are developed.
<b>Linkograph</b>	A verbal protocol based design thinking analysis tool.