Study on CMF Design and Process Development System for User Emotive Satisfaction

participating organizations

KOREA INSTITUTE OF DESIGN PROMOTION

DGDP 대구경북디자인진흥원 DAEGU GYEONGBUK INSTITUTE OF DESIGN PROMOTION

INTOPS® GROWING TOGETHER

Background

CMF stands for Color, Material, and Finish, and is the most intuitive design element that people judge with the five senses. CMF not only plays a decisive role in the first impression of a product, but it is also a critical factor in usability and setting the atmosphere of a space.

In a survey of 744 professionals in Korean product design companies (large corporations, SMEs), 80.6% responded that CMF is critical to enhancing the quality and competitiveness of product design (KIDP, 2022).

Although the importance of CMF is universally acknowledged, it involves complex elements such as the functional characteristics of materials, molding methods, finish expressions, and requires high expertise due to the long process from design to mass production, which includes mechanical design, working mockups, and mold production.

Global conglomerates invest in CMF R&D, continuously launching new products utilizing differentiated CMFs to secure product competitiveness. However, it is difficult for small and medium manufacturers to secure CMF capabilities due barriers such as high cost, manpower, and access to knowledge and experience.

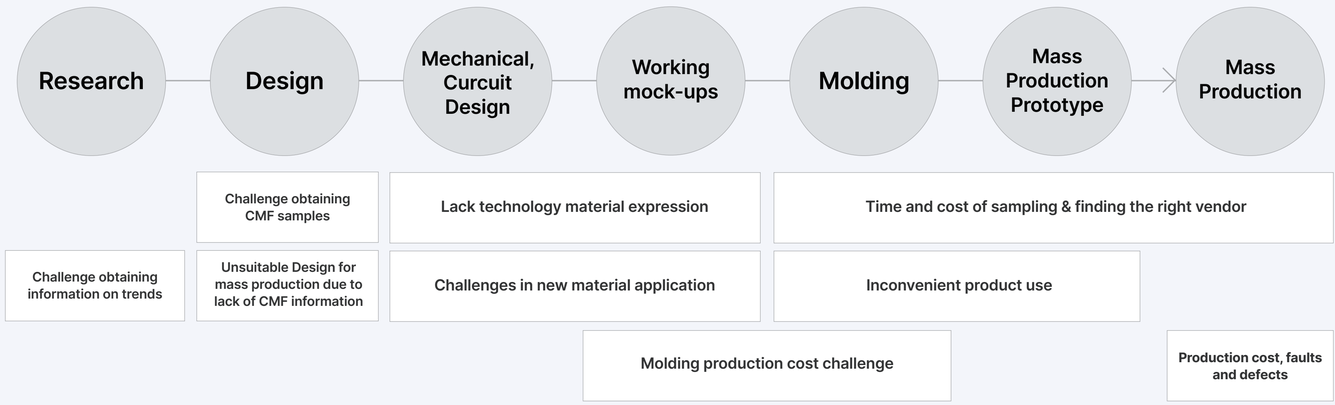
"Over the past five years, global companies have focused on CMF and created dedicated departments. In particular, for large home appliances, CMF's differentiators are being used as marketing tools."
— **Manager of LG Electronics**

"We are visiting a material company to discover new materials. Although the importance of CMF has increased, material discovery is still done offline through analog methods.
— **CEO of Design Agency**

80.6%
responded that CMF is critical to enhancing the quality and competitiveness of product design

A survey of 744 CMF Design-related workers('22)

Challenges in SME Product Design, by stage



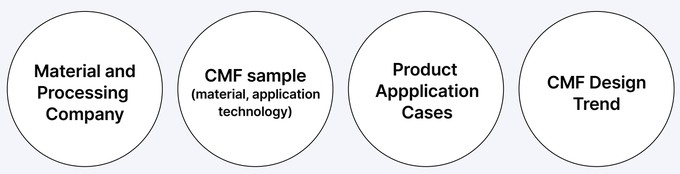
Research Outline

Establishing a CMF design process system that reflects the demand of SMEs

**The ultimate goal of this research is to aid SMEs consider CMF throughout the product design life cycle to best engage and satisfy consumer emotions.
As we continue to systematize and standardize the commonly shared technologies of CMF designs in response to industry demand,
we hope to see uptake of our research outcomes in various industry sectors.**

phase 1. Data Collection

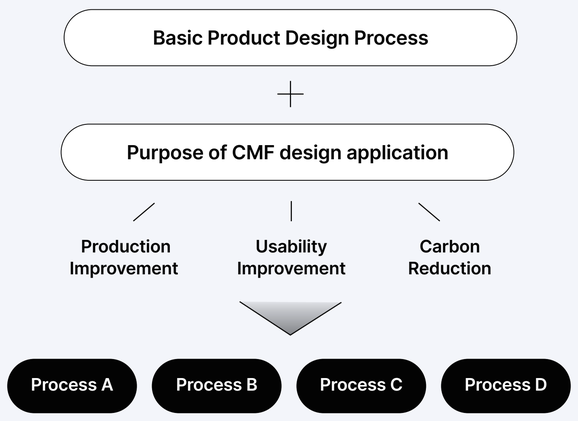
- **Building a CMF Database**



- **Development of Material and Technology Classification System**

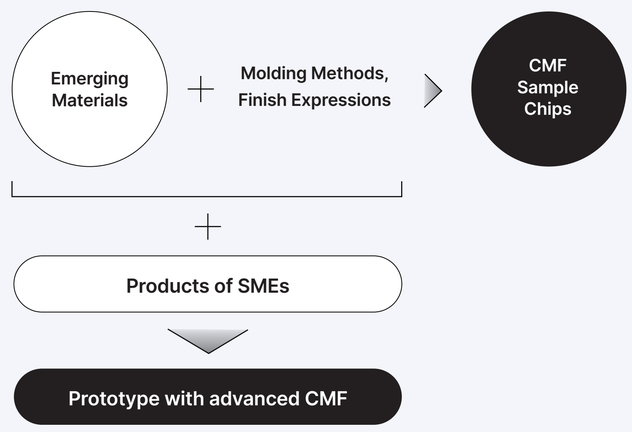
phase 2. Operating System

- **Development of CMF Design Process by Type**

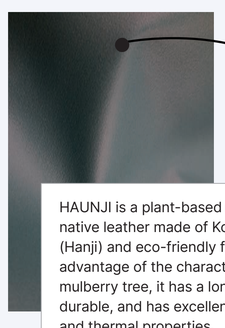


phase 3. Demonstration & Evaluation

- **CMF Sample Chip Production & Prototyping**



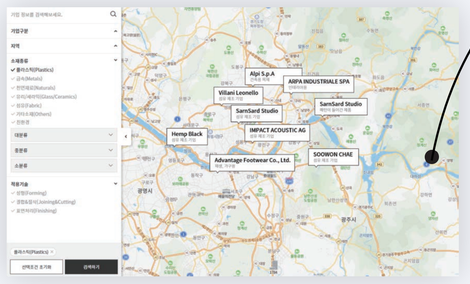
- Anaylze CMF Design Trend & Suggest Emerging Materials



HAUNJI is a plant-based natural alternative leather made of Korean paper (Hanji) and eco-friendly fabric. Taking advantage of the characteristics of the mulberry tree, it has a long life and is durable, and has excellent antibacterial and thermal properties.

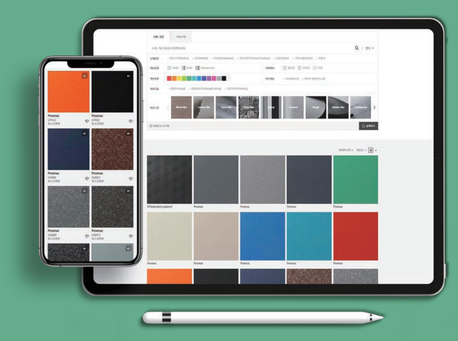
Identify and propose materials superior in economy and design by analyzing consumer trends, new industry trends, and SME demands. Selection criteria extends beyond simply fashionable or attractive materials. It encompasses comprehensive perspectives—corporate, consumer, production, and design—enabled through extensive research.

- Map a nationwide CMF supplier



Map the ecosystem of suppliers containing information from companies specializing in cmf, such as mockup, mold, and finishing. Closing the information gap between large companies and SMes by opening information on suppliers that used to be analog, such as visiting suppliers and casting through acquaintances.

On/Offline Platform



- Online CMF Library (https://dkworks.designdb.com/)
We operate an integrated CMF archival site (DB) that includes CMF-samples (materials, supply information, environmental considerations, etc.), information on CMF specialized companies, technical information, and application cases.

- Offline CMF Library
KIDP operates 7 offline Design-driven manufacturing innovation centers (DKworks) aimed at design consulting for manufacturing companies in seven key regions around Korea. DKworks have on display CMF sample chips and prototypes produced through this research project.

- Sample Chip Production

We develop sample chip designs that account for the unique properties of discovered, emerging materials. We manufacture versatile modular samples to facilitate an comparison and analysis across multiple material samples.

- Prototyping

We make working prototypes using CMF materials that are unique and high-potential for mass production. We offer partial cost-coverage of the mold manufacturing costs to help alleviate some of the financial burdens. This approach not only aids manufacturers but also sets precedent for enhancing brand value and improving functionalities utilizing CMF.