

THE GENDER PERFORMATIVITY OF PRODUCTS: A CONCEPTUAL FRAMEWORK

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Abstract. The tendency to view products as passive entities has led to the concept of the “gendered product”, often used in gender and design studies, misleading to adequately account for the active role of products in gender performance within a social context. This study aims to fill this gap by conceptualizing the “gender performativity of products” through the integration of Actor-Network Theory (ANT), Material Semiotics and Judith Butler’s theory of Gender Performativity. A practical framework is provided for designers, researchers and those working in design-related fields to critically evaluate how products contribute to or are influenced by the concept of gender performativity. Accordingly, dimensions have been identified in this study by regarding products as performative objects and re-evaluating them through the lens of gender performativity and material semiotics through formulation of performativity and empirical investigation study. These dimensions are: observed space, transformative, semantic, delegated task and other performative potentials. This theoretical framework offers a holistic perspective for understanding the dynamic interactions between the product, the user, the designer and other contexts such as culture, space, medium, time and social norms, emphasizing that products are not static objects but rather impact society as active agents in the context of gender.

Keywords: Gender performativity, product design, material semiotics, Actor-Network Theory (ANT), gendered products.

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1. Introduction

Products are not merely passive objects; they actively shape and reproduce social norms, including gender. While, earlier studies have significantly contributed to understanding of gendered products, their approaches conceptualized gender as a predefined attribute rather than a performative process. As a result, this approach makes it challenging to adequately define and conceptualize the potentials of gender performativity of products and their roles in the social structure. Because, they both place the human at the center and do not conceptualize gender as a constructive and performative concept. Instead, the focus mostly on the effects on the user and consumer behavior or on defining existing norms by emphasizing the gendered attributes via product semantics (Alreck, 1994; Debevec & Iyer, 1986; Milner & Fodness, 1996; Ritnamkam & Sahachaisaeree, 2012; Van den Hende & Mugge, 2012; Wolin, 2003). Although there have been studies on gender performativity and products, these studies primarily examine products within the framework of consumer perception and marketing strategies (Drake & Radford, 2018; Petersson McIntyre, 2018).

The main problem this study addresses is that existing research on gendered products has not sufficiently explored their performative and relational aspects of both

the concept of gender and products. Prior studies have primarily framed gendered products as passive representations of gender norms rather than as active participants in gender performativity. This gap underscores the need to reconceptualize products not as passive entities but as active participants in the performative process of gender construction. Unlike earlier studies, this paper addresses this gap and aims to conceptualize the gender performativity of “gendered products” by considering them not just as representations, but as performative objects actively shaping the concept of gender. To explore this, the study develops a theoretical model that conceptualizes the performativity of products.

This study integrates three theoretical approaches: first, ANT, which argues that non-human actants coexist with living entities within the social network (Latour, 2007); second, gender performativity, which posits that gender is constructed through a performative process (Butler, 2008) and finally, material semiotics, which helps explain how semantic perception emerges from the objects within specific context (Law, 2008; Tang *et al.*, 2022). At the intersection and synthesis of these three perspectives, the gender performativity of products emerges as a critical concept, offering a novel framework to examine how products “become gendered” through performative interactions between humans and non-human actants. Rather than treating gender as a static attribute assigned to products, this study reconceptualizes products as active participants in the dynamic construction and transformation of gender norms. As shown in Figure 1, the diagram below visualizes these interrelationships.

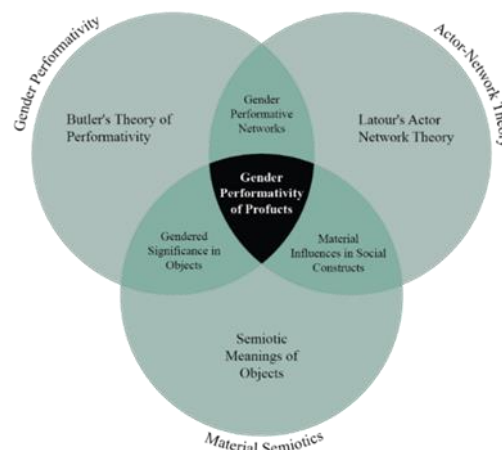


Figure 1. Graphical representation of gender performativity of products, illustrating intersections

The dual intersections constitute perspectives formed by interpreting these theoretical approaches and provide the basis for a clearer understanding of the center triple intersection area. By establishing the interrelationships between these theoretical frameworks, this study formulates the following research questions to better understand and explore the gender performativity of products.

- How do products re-perform gender in social and cultural contexts?
- How do products transform or challenge gender norms?
- How do the formal and functional characteristics of products affect gender performance?
- How is gender reproduced or transformed through users' interactions with products?

To systematically explore the gender performativity of products, this study follows a three-step research process.

In the first step, a theoretical synthesis was conducted.

In the second step, a conceptual model was developed based on this theoretical synthesis. This model formulates the performativity of products and was specifically designed with a focus on gender performativity in products.

In the third step, an empirical investigation was carried out to explore the scope, boundaries and relationships of this model. Through empirical exploration, this study examines how the model captures the relational structures and dynamics that shape product engagement in gender performativity, rather than aiming to empirically verify causal claims. The sample product group in this study consists of personal care products, specifically epilators and electric shavers. Considering the overall process, it is important to note that the proposed model and formulation may not be universally applicable to all product categories.

In sum, this study develops and applies a structured conceptual framework - the “Gender Performativity of Products” framework - to explore how gender performativity of products reveals in socio-material interactions. This study contributes to design and gender studies by highlighting the active role of products in shaping, reinforcing and transforming gender norms through the conceptualized dimensions. This study follows theory-driven research approach, contributing to the theory-building phase, where an initial conceptual framework is developed based on existing theories (Cash, 2018). While statistical tests were conducted, they were not used for hypothesis verification but rather to explore and refine the framework on the gender performativity of products. To achieve this, a mixed-methods approach was employed, integrating statistical analyses and qualitative content analysis.

This study follows a theory-driven research approach, contributing to the theory-building phase, where an initial conceptual framework is developed based on existing theories (Cash, 2018). rather to identify relational patterns within the data and support the theoretical framework. The theoretical perspectives of Actor-Network Theory (ANT), Gender Performativity Theory and Material Semiotics provided the analytical foundation for examining the performative dimensions outlined in the study. These perspectives guided the analysis of products and their positioning within socio-material networks, shaping and mediating gender performativity within everyday practices.

In the scope of this study, two main concepts have been addressed as “gender performativity” and “product performativity”. Additionally, three concepts have been emphasized as “performative sign”, “performative meaning” and “gender performativity of products”. In addition, the five-dimensional model is proposed for a clearer understanding of the gender performativity of products. These dimensions are determined in relation to 'performative sign' and 'performative meaning', which are developed and proposed in this study. Drawing inspiration from Barthes' concepts of sign and myth, these concepts provide an analytical framework for exploring the multilayered relationship between products and gender. Additionally, an empirical investigation was conducted by organizing an online survey with a total of 182 participants and documenting the physical and digital sales spaces of the selected products.

2. Theoretical Intersections in Gender Performativity of Products

Research examining the relationship between products and gender dates back to the early 1970s. However, a historical examination of gender studies reveals that the terms “sex” and “gender” were not as clearly delineated as they are today. In fact, they were sometimes used interchangeably (Gentile, 1993). For example, in the pioneering studies on products and gender conducted by Golden et al. (1979) and Allison et al. (1980), the term “sex” was used instead of “gender”. This distinction is significant because early research often treated gender as a fixed characteristic rather than a performative and relational process.

Butler argues that gender is not a fixed essence but a socially constructed process shaped through repeated actions (Butler, 1988; 2008). This understanding rooted in Derrida's (1988) idea of meaning production through iteration of cultural practices. In this context, bodies are shaped and gendered according to social norms. Moreover, the perception of gender is reinforced through the iteration of culturally performative behaviors. In short, Butler argues that gender is socially constructed and that this construction occurs as a result of repeated performative actions.

In parallel, Actor-Network Theory (ANT) and Material Semiotics provide a framework for understanding how both human and non-human actants shape these performative processes. Traditional epistemology distinguishes between human and non-human actants, defining them in two different autonomous ontological categories. However, ANT opposes this approach and considers each of the human and non-human entities as actants, arguing that they are in network interaction and communication with each other (Çelikel, 2015). ANT takes a materialist approach and builds on relational ontology, grounding the theory in relational materiality (Sismondo, 2011). The social is a heterogeneous concept that cannot be fixed by a single group. The elements that constitute sociality are formed by the commonalities of various groups and relations with each other. Rather than centering 'human' as the sole subject, the social encompasses associations including non-human actants and their interactions. This association reflects the heterogeneous nature of the social (Latour, 2007). Thus, in the social context considered from a new standpoint, it offers a perspective in which action is not only attributed to humans but also to objects, technologies and other subjects who actively participate in this process. Hence, the study proposes the concept of a gendered product as a performative situation, where multiple layers, contexts and actants coexist.

2.1. Performative networks in gender context

This theoretical intersection reveals that gender is not only based on the human body and act, but also that the effects of other actants that constitute the social structure are effective in the reproduction of gender (e.g., clothes, tools, culture, history etc.) (Corrigan & Mills, 2012). This intersection enables the exploration and identification of actants that enhance the performative impact of gender. Performative networks in gender context focus on how objects and their usage shape social structures through interaction.

For example; product packaging plays an active role in gender performativity by reinforcing or challenging through design elements such as imagery, color etc. (Pettersson McIntyre, 2018). Each of these elements functions as an actant within the performative network. In addition, the heterogeneity of ANT and its avoidance of essentialism by emphasizing the interrelationships between things are similar to performative gender theory (Lagesen, 2012). In this sense, in the context of gender, social entities of gender

are not solely human-centered but also encompass other relations and partnerships that constitute the social. As a result of these networks, the elements that constitute material culture are also considered to be part of the social. When evaluating this material culture in the context of gender, it can be observed that many products that we use in our daily lives fall within this framework, as emphasized by Corrigan and Mills. For instance, epilators and trimmers are often designing and marketing distinct gendered choices, sleek, white, pink pastel-colored designs for women and black, blue bold metallic designs for men (Figure 2). In the case of epilators and trimmers, their physical design elements acts as an actant in the performative network, while their color and texture serve as gendered signifiers that reinforce existing norms.



Figure 2. Epilator designs (top), Electric shaver designs (bottom)
(images from the official websites of the brands)

2.2. Gendered significance in objects

This theoretical intersection reveals how the material properties of products, such as form, texture and color, alongside their representation in packaging and advertisements, carry and communicate meanings associated with gender. In brief, this highlights how products reflect and perform their gendered characteristics. One of the most prevalent areas of product gendering is personal care products such as soap, deodorants, hair dye, hand and body lotions, razors, shampoo and shaving cream (Moshary *et al.*, 2023). However, product gendering is also frequently encountered in electrical personal care products. Epilators are predominantly marketed toward female users, while grooming devices for shortening and trimming are targeted at male users (Van Oost, 2003). Additionally, gendering is observed in various products such as pens (Drake & Radford, 2018; Kaygan *et al.*, 2019) to consumable food and beverages (Caruelle, 2024). In addition, other actants associated with the product, such as advertising, who voices the advertisement, who uses the product in the advertisement, and brand perception, contribute to reinforcing the gender performativity products (Debevec & Iyer, 1986; Paek *et al.*, 2011; Wortzel & Frisbie, 1974). All objects that act as actants in the context of gender carry signifying properties. This product gendering occurs through semantic pathways associated with gender, encompassing formal features, advertisements, packaging and even scent. These signifying properties influence users' product preferences and usage.

The focus in gendered significance is on the contexts in which these gendered expressions occur, meaning it draws from semiotics. Barthes (2006) argues that objects are not merely functional but also gain meaning through semiotic codes. This study is influenced by Barthes' concepts of semiotics and myth, which provide a lens to explore how objects acquire secondary meanings beyond their immediate function.

2.3. Material influences in social constructs

This theoretical perspective examines the concept that the meanings of objects are shaped by the networks they are in and the relationships they establish with other actants. Objects do not merely serve functional roles but also act as tools for reinforcing or challenging social norms (Thorpe, 2009; Wehrle, 2019). Bourdieu's (2006) concept of habitus provides a useful framework for understanding how individuals internalize and reproduce social structures through their engagement with objects. For instance, the way a certain product is used and the symbolic values that this product carries are determined by the influence of other actants in the network (users, cultural norms, etc.). For example, ideal fountain pen is associated with gendered clothing norms in the workplace and especially with suits (Kaygan *et al.*, 2019). Business objects (e.g. fountain pens, conference tables) influence competitive norms in an unconscious way. This is consistent with the idea that the meanings of objects are shaped within the social context and network of relationships (Kay *et al.*, 2004). In addition, small household appliances are predominantly marketed to women because it is socially acceptable for women to perform housework (Doğanay, 2021; McLuhan, 1951), while products such as drills, etc. are targeted at male users because tasks such as repairs are socially attributed to men (Bloodhart & Swim, 2020). It is not just the objects in themselves that carry meanings intrinsically, but these meanings have been formed and shaped through complex articulations of social norms with the relationship to cultural expectations. Objects may be perceived or used in one particular way depending on their position in a network of actants and in society generally.

3. Conceptualizing and Formulating Performativity

Some utterances not only indicate a state of affairs but also perform an action. Austin (1962) calls such utterances as “performative utterance” or simply “performative” and gives the example of saying “yes” to get married to emphasize the logic and power of performative sentences. However, performative utterances are not processed in a pure and context-free manner; the same expression can be repeated in different contexts and each repetition can add new meanings to performative utterance (Derrida, 1988). For this reason, every performativity is contextually and historically determined. Therefore, the meaning and effect of performative expressions can change according to the situation in which they are used. Butler (2011) uses the concept of performativity to explain the notion of gender. By specifically incorporating a performativity framework that involves iteration, Butler (2011) highlights the repetitive enactment of norms. The repeated association of performative acts with the body and social norms/structures not only reinforces these norms but also has the potential to subvert them.

The concept of performativity is also explored in material fields such as objects or artifacts and architectural spaces. Thus, new approaches are put forward to explain the social meanings and functions of objects and spaces in the context of their performative properties. For instance, cities are spaces that are changed and recreated through our repetitive movements and interactions. Therefore, cities are not fixed and unchangeable but can be transformed through all these movements and interactions (Bekkum, 2020). For example, when people engage with urban spaces differently such as walking, running or protesting etc. their actions reshape how they experience the city. These interactions do not just change individual perception but also influence how the space itself is used and understood by other observers. As a result, they sometimes reinforcing existing

norms and sometimes challenging them. In some cases, people can shape the streets of the city by opening new pathways (Figure 3).



Photos by Sena Semizoglu

- The red line represents the new paths created by pedestrians.
- The green line represents the expected walking area guided by the design.

Figure 3. New paths formed by the repetitive movements of city dwellers

Another example, the choice of clothes to wear to a job interview is shaped by how one wants to look, but also by the expectations of employers and the socially determined image of the ideal employee. In such a situation, the clothes that reflect one's desire to look “professional” and “successful” are determined under the influence of all of these factors. This shows that objects are not only physical entities, but also embody social values, meanings and power relations (Horan *et al.*, 2014). The meanings of the signs on the products, within the cultures and for the users to which they are attached, make them actants that carry messages. In such a case, the concept of material-semiotics comes into play.

In material semiotics, relational thinking is applied not only to semiotic signs but also to the relations between material objects. All entities, whether animate or inanimate, are shaped through relations and these relations are realized both between themselves and through the signs they bear (Kaygan, 2016). ANT utilizes semiotics, explaining that entities shape their forms and acquire qualities through their relations with other entities. Based on this context, entities attain meanings and forms as a result of the relations they are in. Actants perform the formation of meanings (Law, 2008). Thus, in principle, everything is indeterminate, reversible and redefinable. For example, while the “things” that make a car perceived as a status symbol can be provided and explained by semiotics, the repeated use of the car in the context of this status symbol demonstrates its performativity. In other words, the performativity of the object goes beyond how it is perceived and is concerned with how this perception is transformed into action. This highlights the transformative potential of objects and actions in shaping societal norms and power dynamics.

Products are not merely functional objects but also products that interact with users and form/do a performance shaped by users' actions. This concept includes allowing construction, referentiality, iterability, the dependence of time and space, plurality of meanings and delegated performance (Çelebi & Kaya, 2022). For instance, a chair is typically used for sitting, but it can also be used for purposes such as reaching high places, blocking a door or serving as a makeshift ladder. This exemplifies the concept of plurality of meanings and allowing construction. The performativity of products also serves as a bridge to understanding the power of actants in ANT. In summary, the different usage forms of products, beyond their basic functions and design purposes, are shaped not only

by human actions but also by the physical characteristics of the products, the environment they are in and many other actants.

However, within the scope of this study, performativity is defined and conceptualized as follows:

- Performative actions, discourses or objects can be defined as elements or constituents (discourse, action, object) that make something happen in a given context.

- Repetition/iteration and norms can be considered factors that increase the permanence of a performative process. In particular, performative actions that repeat the same thing over a certain period of time contribute to the formation or consolidation of social norms.

- Context and situation are two connected important concepts that contribute to the continuity of performativity. The permanence and continuity of these contexts and situations ensure the success of performativity in the relevant context. Therefore, situation is not treated as a separate variable but rather as an integral component of context.

- Performative things allow for feedback. Feedback received at the societal level (the assemblage of human and non-human entities) can transform and change the process of performativity.

The concept of performativity is defined as the process of creating or actualizing a certain situation as a “sign” through specific actions, discourses and objects via iteration, which subsequently generates meaning. A performative action, discourse or object not only conveys meaning but also enables the realization of a situation within its context. This process can be reinforced through repetition, depending on specific conditions and contexts.

3.1. Formulating of performativity

Building on the explanation of performativity provided above, a formulation of performativity was derived from Barthes' (2006) concepts of sign and myth. This formulation is the first structure that makes the relationship between the process of meaning production through performativity more understandable and constitutes the theoretical logic of the study. Mathematical representation is presented to provide a structured framework for understanding how meaning is formed through performative processes.

When an actant repeatedly performs certain actions within a particular context, meanings are produced within that context. If meaning and context continuously repeat the same actions, reinforcing the process through performative consistency, the meaning itself becomes solidified. This logic is similar to Barthes' process of the formation of meaning in the order of signification model and the subsequent emergence of the concept of myth (Barthes, 2006). In this context, the following formulation of the concept of performativity is proposed in this study:

- $\text{Performativity} \Rightarrow [(\text{Actant} + \text{Act}) \times \text{Context}] \times \text{Iteration}$
- $\text{Performative sign} = (\text{Actant} + \text{Act}) \times \text{Context}$
- $\text{Performative meaning} = \text{Performative sign} \times \text{Iteration}$

This formulation and mathematical representation are not meant for literal analysis but rather to help visualize and structure the performative process. By breaking it down into components, it offers a way to grasp how actants, actions and contexts interact over time, making these abstract relationships easier to understand.

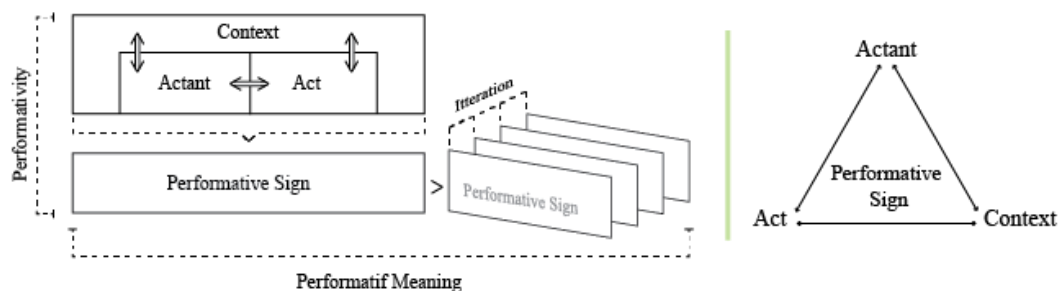


Figure 4. The graphical representations of the performativity

In the formulation, the plus (+) and multiplication (x) signs symbolize whether relationships are dependent or independent. Also, parentheses and the order of operations retain their mathematical meanings to facilitate the clearer definition of performative relationships. In this context, the relationship between the context and the actant and act is considered dependent because context is “multiplied” with both actant and act. The relationship between the actant and the act is evaluated as independent when they are “summed”; however, this independent relationship becomes inseparable due to the context's dependency on both. The context unifies their states within a specific framework. Iteration, then, emerges as another multiplying factor that enables these interdependent states to repeat with the same dependency. It serves as the driving force that allows performative meaning to sustain its existence through similar repetitions and over time, to be perceived as a primary framework for these interconnected relationships.

Actant: It refers to the entity that performs the action - individual, object or entity. If expressed analogous through the semiotic system, this concept is slightly similar to the signifier. However, the signifier here is something that carries many meanings on a multidimensional level and is also a sign in the past due to the superimposed structure of the myth system.

Act: It refers to the action itself. This “act” can be speech, behavior, or another physical performance. If expressed analogous through the semiotic system, this concept is quite similar to the signifier. It focuses on the visible or articulated output of the actant's role.

Context: An actant's legitimate context may include one or multiple level. Sub-relationships within a singular context can additionally affect both the actant and the action. For instance, in the realm of gender, supplementary gender-related factors may influence the agent and their conduct. Contexts may differ and coexist, encompassing cultural, environmental and sustainability dimensions, among others. The interaction of these contexts influences the “performative sign”, as they collectively constitute fundamental components of the performative process. In the semiotic framework, the structure linked to the sign at the connotative level pertains to the notion of context. ANT asserts that social interactions are contingent upon the environment and existing conditions. Likewise, the semiotic system analyzes interactions via the interconnections among these elements. Context contributes to establishing an observable relationship and causes the meaning attributed to the actant and the act to change. It achieves this both through its effect on the actant and on the act. It achieves this both through its effect on the actant and on the act, particularly by establishing an interpretative frame within which their meaning and interaction are continuously constituted.

Performative sign: It refers to combination of the act performed by the actant within the same or similar given context. It reflects the way of whole scenery not the meaning. In other words, it carries the meaning.

Iteration: The repetition of the act performed by the actant within the specific context (performative sign) over a certain time interval emphasizes this iteration. This iteration highlights the continuity and variability of performativity, as opposed to the constancy within the semiotic system. Additionally, variations in repetition may also produce shifts and changes in meaning, making performativity both stabilizing and transformative.

Performativity: A description of the dynamics of this process. Within a context, an actant performs an act and this process is consisting of iteration, following the similar structure.

The emergence of performative meaning: It refers to the meaning assigned to the actant and act, which emerges from the repeated enactment of the performative sign over time. Thus, this meaning isn't static; instead, it stabilizes as the actant continues to perform the act within similar contexts, reinforcing meanings through iteration. To elaborate: if an actant performs an act within a specific context and the relationship between the actant and the act is based on the same or similar iteration within a similar structure, meaning is formed. This meaning is then assigned to the actant on a performativity level.

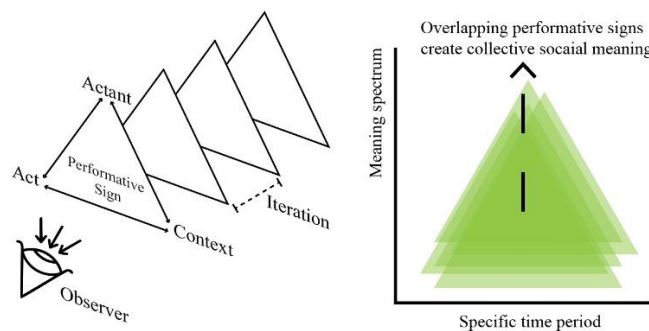


Figure 5. The graphical representation of performativity and meaning-making

4. Reconceptualizing Gender Performativity of Products

According to Butler, "...performativity is not a singular act, but a repetition and a ritual, which achieves its effects through its naturalization in the context of a body, understood, in part, as a culturally sustained temporal duration" (Butler, 2002). In the context of gender, gender roles are determined by norms set by society and that society reproduces certain actions and discourses repeatedly, leading to the formation of certain patterns identified with genders (Butler, 1988; 2008). Therefore, individuals perform gender and the body is shaped and reshaped through gendered norms (Butler, 2004). This reflects the power inherent in the instrument of performativity as both a tool for enforcing norms and a means of their potential subversion.

If the performativity of gender is examined within this logic:

- Actant: Body (what the body can do, its biological and physical characteristics)
- Act: The form of a behavior, gesture, facial expression, etc.
- Context: The concept of biological and physical distinction (biological sex) related cultural norms

- Iteration: The repetition of the body (actant) and act (behavior) associated with the same context within a certain time interval.

Through repeated iterations, the related meanings attributed to the body give rise to social meanings associated with that body and biological sex, forming the concept of gender. Both the body and behavior gain performative significance when contextualized within the framework of biological sex. In this context, the body gains meaning through its association with biological sex and behavior. Iteration reinforces this meaning, resulting in the body becoming “gendered” through performative acts. This perception of the body in relation to biological sex is termed gender, understood as a performative construct. As the body is contextually situated and interpreted through its biological categorization, its actions are imbued with meaning within this framework.

Building on this theoretical foundation, the concept of performativity is extended to products, where contextual relationships similarly play a critical role. This involves reapplying the expression developed in the section on the conceptualization of the performative concept, with a focus on products and the evaluation of contextual relationships. Just as gender performativity is shaped through iteration and social context, products, too, gain gendered meanings through their interactions with users and environments.

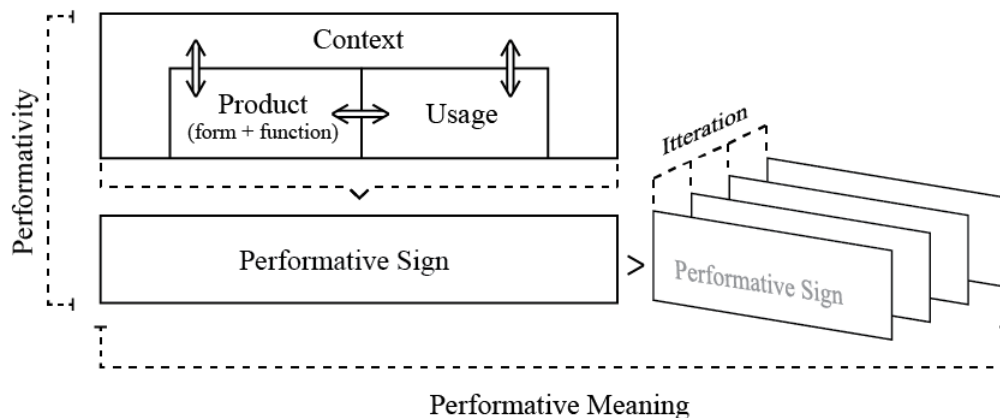


Figure 6. The graphical representations of the product performativity

- $[(\text{Product} + \text{Usage}) \times \text{Context}] \times \text{Iteration}$

Product (Actant): The actant here is the product. A physical product can be defined by two primary parameters: its physical properties and its function, i.e., what it does. Due to these parameters, the product as an actant is included in the formulation as follows:

- $[(\text{Product (Form + Function)} + \text{Usage}) \times \text{Context}] \times \text{Iteration}$

Usage (Act): At the product scale, the act appears as usage. Products can be used in various ways by different people, both in accordance with and beyond their function. In some cases, they can be used differently from their main function, as they offer solutions to other tasks. In some forms, the context defines the usage and evolves into enactment. The product in motion, standing or on display has meaning and performance. It indicates both functional use and performance or how the product will interact with people, places and contexts. As in the same performative process, the contexts necessary for an act to gain meaning apply here as well. The way a product acts (usage), similar to a body's behavior or gesture, gains meaning through its contextual framing. In other

words, usage (how a product is used) becomes visible and meaningful within a specific context, shaping and reinforcing its performative significance.

Context: The context refers to the interpretative frame that emerges from the situation and environment in which the use of the product is situated. When products are used by a person, the user takes part as an actant within the socio-material network. However, in design processes or analytical frameworks, the “user context” refers to the interpretative frame established by positioning the user within a conceptual relational setting. This includes all the relational structures that influence parameters such as the product’s intended use, where it is used, who uses it, and its associated meanings. Since products have an active role within a social network, they maintain contextual relationships with the environment, conditions, user, other concepts, and definitions they are associated with. These relationships also affect the way products are used and interpreted. For this reason, context is expressed as a composite of interconnected contexts:

- Context (Context₁ + Context₂ + Context₃ + ...)

Iteration: This refers to the repetition of the contextual enactment (Usage + Context) by the product (the contextual actant) within a given time interval. Additionally, variations in repetition can also introduce shifts, allowing products to either reinforce or challenge gender norms.

Accordingly, the following expression is formulated:

- $\text{Performativity of the Product} = [(\text{Product} + \text{Usage}) \times (\text{Context (Context}_1 + \text{Context}_2)))] \times \text{Iteration} \Rightarrow \text{Performative Meaning of the Product}$

This logic can serve as a tool to develop a more holistic approach to understanding the gender performativity of products. In this context, the gender performativity of products can be expressed as:

- $\text{Gender Performativity of Products} = [(\text{Product (Form} + \text{Function)} + \text{Usage}) \times (\text{Context (Gender)})] \times \text{Iteration}$

Expanding the formula further:

- $[(\text{Physical characteristics of the product} + \text{Function of the product} + \text{Usage}) \times (\text{Context (Gender)})] \times \text{Iteration}$

The gendered context of the product’s physical characteristics, function and usage, along with the repetitive continuation of these elements, demonstrates how a product becomes gendered. However, the contextual relationships can become more complex. If both gender and space are taken into account, the formula becomes:

- $[(\text{Product (Form} + \text{Function)} + \text{Usage}) \times (\text{Context (Gender} + \text{Space)})] \times \text{Iteration}$

In such a situation, performative meaning can be explained as a comprehensive semantic relationship where form and function gain meaning according to each context. The meanings assigned through the performative process result from the commonality of all these contextual relationships.

The multiplicity of contexts in the gender performativity of products complicates analyzing them within a specific framework. These formulas illustrate how products participate in and contribute to gender-related performative processes. In this sense, dimensions that capture the dynamic, interactive and contextualized nature of performativity within the product framework have been identified through this formulation. These dimensions reflect the structures and conditions that enable the formation of performative processes specific to the product and are expressed through the performativity formula developed in this study.

5. Dimensions of Gender Performativity of Products

These dimensions have been identified using the performative formula through an examination and grouping of commonalities in the relevant literature, aiming to describe the gender performativity of products. The intention of this conceptualization is to explore how products perform gender in various scenarios and contexts, offering new ideas in product design by showing that products are part of the gender network through their performativity.

Although each dimension has a specific focus, it is still interrelated with the others. That means, one dimension can influence and shape another. Due to the “nature” of gender performativity, it is difficult to describe products as existing within a singular and fixed structure. In this context, transitions and intersections between the performative gender dimensions of products can occur.

5.1. Observed space dimension

The effect of performance also depends on the conditions of space and time (Çelebi & Kaya, 2022). When this is applied to products, the iteration of the environments in which the product is used or presented allows the product to pass through repeated contexts if they involve the same or similar actants and contexts.

Here, the basic formula integrates gender and space context to express the gender performance of products and explain the observed space dimension.

- $[\text{Product (Form + Function) + User + Usage}] \times [\text{Context (Gender)}] \times \text{Iteration}$

In this dimension, (Product Form + User + Usage) variables are at the forefront.

The meaning and value of products can change depending on where and how they are presented. The same product may exhibit different gender performances in varying environments. One possible reason for this is that environments often carry predetermined gender associations. For example, moving a bag that a female consumer prefers from the women’s aisle to the men’s aisle might cause her to reconsider her choice, as she may perceive the product to no longer align with her preferences (Drake & Radford, 2018). This emphasizes that the gender performativity of the product can change in the eyes of the observer depending on the environment in which it is presented. One other example, computers used in offices are perceived to have a lower status because they are not used for complex tasks and they are mostly used by women (Van Oost, 2003). This situation illustrates that product perception can vary based on the prevailing social norms of the environment in which the product is presented and utilized.

The evaluation of a product may influence its performance when combined with other products. For example, the perception of a fountain pen as a masculine object is reinforced by the clothing, identity and profession of its users, which collectively enhance its significance (Kaygan *et al.*, 2019). This fundamental logic is present throughout various phases, from product design to marketing. The context in which the product is showcased, encompassing elements such as mood boards, product visualization, rendering, marketing and advertising, is influenced by the presence of other actants that embody the characteristics the product aims to exhibit. This statement seeks to illustrate how the presence of semiotic tools can shape the product, rather than focusing on the presentation of the product itself through these tools.

In summary, the observed space dimension is influenced by the social and medium context in which product is utilized and presented and constitutes an immediate and observable performance.

5.2. *Transformative dimension*

The interaction between products and users allows for the use of products in ways beyond their intended design purposes. Consumers can surpass the passive act of purchasing by actively modifying products to meet their needs and desires, thereby attributing new meanings and reshaping the functional and cultural significance of these products (Norman, 1988). Similarly, consumer goods function as tool for expressing cultural meaning, which is reciprocally transmitted between products and users (McCracken, 1990).

Users attribute new meanings to objects and that they are drawn to these altered and redefined meanings (Krippendorff, 2005). These perspectives indicate that products and their users have the potential to mutually transform each other. It can be said that when this transformation occurs in gender contexts or at the moment this transformation begins, a mutual performative action emerges.

Here, the basic formula expresses the gender performativity of products and explains the transformative dimension.

• $[\text{Product (Form + Function) + Usage}] \times [\text{Context (Gender + User)}] \times \text{Iteration}$

In this dimension, (Product Form + Usage) x User Context and (Product Function + Usage) x User Context variables are at the forefront.

That means: In the transformative dimension, products and usage (via users or usage for product placement) are interrelated continuously and cyclically. Users produce products by creating, using and modifying form and function and products produce users as design and affordances constrain behavior. Repetition through iteration provides the conditions for norms to stabilize or change at any point in time, especially in gender contexts.

This dimension focuses equally on form, function and usage through contextual iteration to show that new important meanings emerge alongside norms during interactions when use is repeated and that products can both reinforce and challenge gendered expectations.

In summary, there is a bidirectional interaction in this dimension. The product influences and is influenced by the gender performativity of the actants it interacts with and the user similarly influences and is influenced by the gender performativity of the product. This relates to the ability of products to allow for the construction of multiple meanings and affordances (Norman, 1988). Product's affordances are a cultural habit that is difficult to change (Krippendorff, 2005). However, a cultural habits shift can occur through the performativity of products. This transformation can happen from the consumer perspective through active intervention in products and from the product perspective through the affordances they offer.

These mutual transformations and transformation processes illustrate that, due to the performative effects of products, both the user and the product can direct and transform the product toward a certain norm in the context of gender, but can also be used to challenge it.

5.3. *Semantic dimension*

Krippendorff defines product semantics as the study of how people assign meaning to artifacts and interact with them and as a design approach focused on the potential meanings artifacts hold for users and stakeholder (Krippendorff, 2005): From these

definitions, it is clear that product semantics or product signifiers, are also important for understanding product affordances (Norman, 1988). However, referentiality, also appears as a factor that can affect the semantic interpretation of products. In referentiality, the influence of the cultural environment is undeniable and past actions can influence future actions (Çelebi & Kaya, 2022). Semantics focuses more on the transmission of meanings and less on their effects, performativity brings attention to the effects of these transmissions.

It is a fundamental dimension directly related to product semantics, material semiotics and performativity. Semantic dimension refers to the moments when designers and users construct gender through product design. The product and other semiotic actants transmit specific meanings in ANT terms.

Here, the basic formula expresses the gender performativity of products and explains the semantic dimension.

$$\bullet [\text{Product (Form + Function)} + \text{Usage}] \times [\text{Context(Gender)}] \times \text{Iteration}$$

In this dimension, (Product Form x Gender Context) + (Product Function x Gender Context) variables are at the forefront.

This means that the key constitutive elements that create meaning are the form and function of the product within a given context. Form generally refers to the physical characteristics of an object, including its shape, material and texture and it is related to the purpose the product is expected to serve.

In turn, context can give meaning to a product's form and function, shaping how gender is perceived through the product. For example, if the formal shape is more curved, thin, oval, organic and smooth, it is perceived as more feminine and women prefer those products more, while angular, angled, hard, sharp-edged products are perceived as more masculine and preferred by men in a gender context (Ehrnberger *et al.*, 2012; Fenko & Drost, 2014; Ritnamkam & Sahachaisaeree, 2012). It is stated that the origin of this perception stems from the biological differences in the female and male body, particularly in their faces (Van den Hende & Mugge, 2012; Van Tilburg *et al.*, 2015). In addition scented motor oil is also used to make epilators seem more feminine to women to counteract their industrial image (Van Oost, 2003). It is additionally claimed that soft-touch product design are considered feminine, while hard-touch ones are masculine (Van Tilburg *et al.*, 2015; Veg-Sala & Nyeck, 2007). Product functions are similarly gendered according to different social norms, such as beauty tools or power tools (Bloodhart & Swim, 2020; Moshary *et al.*, 2023).

The semantic dimension thus focuses on how form and function interact with gender context to create gendered meanings in products and how these meanings are reinforced or modified through iteration - the repeated appearance or use of the product in the same or evolving contexts. Therefore, it can be stated that the perception of gender is also reinforced in a performative way by repeating the contextually preserved meaning.

5.4. Delegated task dimension

Products enable users to fulfill various tasks through “delegated performance” (Çelebi & Kaya, 2022). In other words, a product can be viewed as an instruction manual or a scenario that outlines how the user should use the product to achieve its intended function. At the same time, the product may assign the user a set of tasks to perform in accordance with a particular gender role.

Here, the basic formula expresses the gender performativity of products and explains the delegated task.

- [Product (Form + **Function**) + Usage] × [Context(**Gender** + **User**)] × Iteration

In this dimension, (Product Function + Usage) x Gender Context + (Product Function + Usage) x (User Context) variables are at the forefront.

In other words, the factors that drive this delegated task dimension are the function the product serves, its use cases and the context in which it is applied. Function refers to the purpose of a product or the task it is supposed to fulfill, directing how the user should interact with it. However, function does not exist on its own; it works through use and is shaped by context, creating a set of tasks or roles assigned to the user by the product itself. Since the structures of this dimension not only fulfill tasks but also delegate certain tasks to users, they align these tasks with broader social norms, including gender. Nevertheless, users often perceive technological products as tools that simplify their lives (Schroeder, 2010). If this perspective is considered, when a product's function (e.g., an epilator removing body hair) has gender-related implications and affects the user accordingly (considering the relationship between body hair and gender), the tasked performance of the product (the act of creating a body that aligns with gender norms) becomes significant in the balance between the product's function and utility. A product can direct its user toward certain gendered actions, even if the user intention not related gender. To illustrate, the epilator's ability to provide a practical and aesthetic solution for body hair removal demonstrates how the product creates a connection between its functional utility and the creation of a body that conforms to gender norms. The epilator reinforces and reproduces the relationship between body hair and gender while continuing to engage with other actants such as branding, commercials, packaging etc. Nevertheless, users are not obligated to use or adapt to products that embody certain gender stereotypes. However, these products may still attract or repel users because they offer specific functions (Van Oost, 2003). The interaction between the product's function and its use reflects delegated performance, whereby the product delegates an action to the user because, through that action, something is achieved that is both functionally and socially meaningful.

The interaction of function, use and context creates a system of delegated performance in which products determine the tools to be used and the behaviors to be performed. This iteration realizes the reinforcement or transformation of norms; hence, iteration contributes to the construction of gender roles. What this dimension emphasizes is that products shape behavior not only according to what the products can do but also according to how they invite users to perform certain actions.

To summarize, this dimension focuses on how a product - a design - creates various norms for its target users regarding who, when and how they should use it, rather than on how those norms are expressed. The expression of these norms is covered in the "Semantic Performance" section. Tasked performance is concerned not with how these norms are conveyed, but with how the product guides the user into a particular norm and more specifically, how it can influence gender roles. Ultimately, the product design imposes a set of tasks on the user, leading to a variety of practical effects and these tasks can result in specific gender performances.

5.5. Other performative potentials dimension

This dimension is considered as a title that covers product performativity that are outside the focus of the other dimensions, that do not directly affect the product and the social norms associated with the product and that may be implicitly related to the gender context. However, it was necessary to mention this dimension because other concepts

and contexts may indirectly affect performativity through the relationships formed by each variable in the formula, in line with its center.

Products and objects appear as a means by which individuals construct their gender. However, products do not have to carry these gender contexts directly on them (Van Oost, 2003). Designers make various assumptions and make design decisions explicitly or implicitly according to the needs and tastes of users (Akrich, 1992). The product design process is a very comprehensive and layered process that interacts and relates with cultural, political, social, environmental, legal, production, technological, economic and many other factors. In this sense, the scope of this dimension includes gender performativity or unexplored ties that are not a direct part of the gender network from the ANT perspective, but may arise from the interaction of another actants within that network through implicit and perhaps unforeseen different contexts. These contexts might emerge from cultural, economic or technological shifts, providing new dimensions to the understanding of performativity within product design

6. Empirical Investigation

The research process was designed to explore how products actively participate in the performative construction of gendered meanings through socio-material interactions. Prior to conducting this main study, a pilot study was carried out in December 2022 to refine the theoretical framework and research instruments. In this pilot study, participants were shown photos of small household appliances (e.g., hair dryers, blenders, vacuum cleaners) and then asked to select the gender related attributes and emotions these images evoked from a list of options provided under each photo. Afterwards, they were asked to evaluate the same products using a semantic differentiation scale method in terms of cheap-expensive, low-high performance, low-high technology, short-long lifespan and feminine-masculine. Additionally, participants were invited to share their opinions on the questionnaire for improvement. A total of 34 participants took part in the pilot study.

Based on the pilot study results, the decision was made to shift the focus toward the concept of gender performativity and prioritize personal care products, moving away from analyzing gender solely through emotional and semantic associations about products. The previous methodology did not yield meaningful insights into gender performativity, particularly regarding behavior and action. The shift to personal care products was based on the idea that bodily-related products provide a clearer context for understanding gender performativity. Furthermore, the scope of the survey questions was revised and new questions addressing cultural values, gender based and gender related values (regarding themselves and products) and product usage contexts etc. were added. These revisions were made to align with the theoretical framework of the “dimensions of gender performativity of products” and to ensure that the research design directly addressed key theoretical constructs.

To examine the dimensions outlined in the “Gender Performativity of Products” framework, this study employs an empirical investigation that integrates both quantitative and qualitative methods. In this study, Actor-Network Theory (ANT) was operationalized as a structuring framework for both research design (theoretical aspects) and data analysis (to find actants). ANT conceptualizes products as social entities that actively shape and influence gendered interactions through their material, symbolic and performative properties. This perspective guided the study’s methodological choices, informing both the survey design and qualitative analytical strategies. Additionally, it

guided the study through a combination of literature review, visual analysis of stores (both online and physical) to identify possible actants within the gender-product network. This perspective links non-human performativity to its role in shaping social structures. Therefore, online survey questions and qualitative methods were designed from this core perspective. For example, Likert-scale statements asked participants whether personal care products (e.g., epilators, trimmers) actively shape their grooming routines or function as part of a broader technological, cultural and gender-related network. Additionally, Gender Performativity was addressed through questions on product usage and social pressures - such as whether a product and cultural norms reinforce or challenge culturally determined gender values, in addition to its theoretical contribution to the framework. Additionally, a professional psychologist was consulted during the preparation of the survey questions. Moreover, Flemings et al. (2017) work* served as an inspiration for designing the questions in this study. In a communicative sense, products carry various types of information (functional, aesthetic, semantic, symbolic, etc.) that allows consumers to evaluate and use the designed product (Crilly *et al.*, 2004). Building on this communicative perspective, the study explores Material Semiotics by focusing on the design and branding attributes of these products (e.g., color, shape, packaging) and how those attributes communicate specific gender cues. Through this empirical investigation, this study analyzes how gender performativity is embedded within personal care products and their socio-material interactions, demonstrating how non-human actants participate in the construction and negotiation of gender norms.

As quantitative method, an online survey was conducted with a group of anonymous participants residing in Türkiye, selected through a snowball sampling method in June 2024. Firstly, the online questionnaire link was shared with the researcher's inner circle, who then forwarded it to their own networks. Through word of mouth, data was collected anonymously from participants. Since the topic involved a sensitive area for participants, this approach allowed them to feel more socially comfortable. Utilizing personal networks was considered beneficial for reaching individuals on such topics and encouraging them to share their experiences. The survey evaluated participants' awareness and familiarity with the concept of gender and included questions aimed at understanding their practices related to body hair removal and trimming. Furthermore, participants were asked whether they personally experienced gender-related social pressures, where they stored such products and their usage habits. These responses provided insights into the relationships between products, users and gendered expectations. Additionally, the survey explored whether participants had ever used products they considered inconsistent with their gender identity and their reasons for perceiving these products as such, aiming to analyze the relationships between products, users and gender. Questions were asked as multiple choice, open-ended and Likert scale.

The data were analyzed using IBM SPSS Statistics 30, employing a combination of descriptive statistics, cross-tabulation, Chi-Square tests, correlation analysis and multiple response analysis to explore patterns in product-related gender performativity. Descriptive statistics (mean, standard deviation, skewness, kurtosis) were used to summarize general trends for Likert-scale questions measuring participants' attitudes and perceptions. Cross-tabulation (crosstabs) and Chi-Square tests were applied to examine relationships between categorical variables. Multiple response analysis was applied to

*In their study the aim is to measure individuals' gender performativity, by asking questions to participants based on gender roles and actions.

identify trends in participant preferences and behaviors for multiple-choice questions that allowed more than one selection. This included questions on prioritized product features, product usage contexts. Thematic analysis was conducted on the responses to open-ended questions and the results were added to the data. Given the theory-driven yet exploratory nature of the study, statistical tests were conducted; however, they were not used for hypothesis verification but rather to explore and refine the framework on the gender performativity of products. Therefore, the theoretical framework of Actor-Network Theory (ANT), Gender Performativity Theory and Material Semiotics provided the analytical foundation for examining the performative dimensions outlined in the study. These perspectives guided the analysis of products and their positioning within socio-material networks, shaping and mediating gender performativity while ensuring the conceptual coherence of the study.

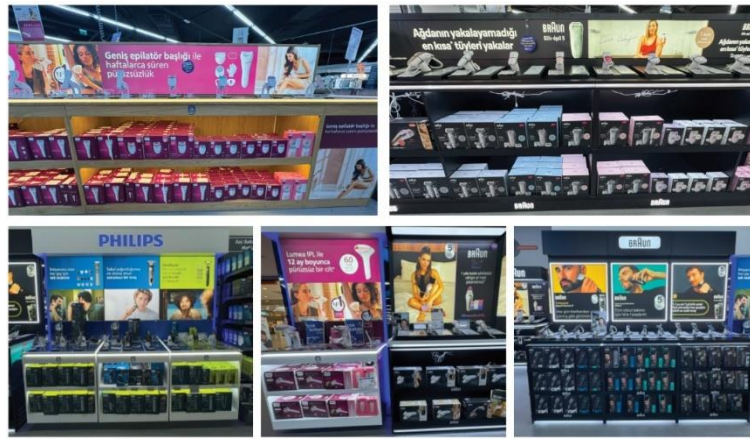


Figure 7. Physical sales spaces

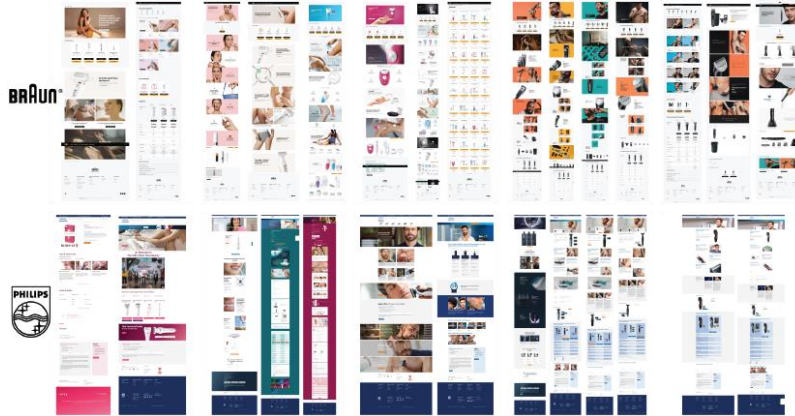


Figure 8. Screenshots from the official websites of the brands

As qualitative method, photographs of the stands displaying body hair removal and trimming products in technology retail chains in Türkiye were taken and the presentation styles of these products, as well as their relationship with the surrounding space, were

analyzed within the context of the study[†]. Furthermore, official web sites of the brands in Türkiye were evaluated within gender performativity contexts.

6.1. Survey Results

A total of 182 people participated in the online survey. The demographic information of the participants is shown in Table 1. Regarding age distribution, the largest group consists of participants aged 30-44, with 120 participants (65.9%). The majority of the participants are women with 120 (65.9%), followed by men with 57 (31.3%). Four participants (2.2%) do not want to state their gender identity and one person identifies as non-binary. In terms of marital status, 76 participants (41.8%) state that they are married, 66 participants (36.3%) are single and 36 participants (19.8%) have a partner. In terms of perceived income, 135 participants (74.2%) define themselves as middle-income, 28 participants (15.4%) as low-income and 11 participants (6.0%) as high-income. In terms of educational status, the largest group is bachelor's degree holders with 103 participants (56.6%), while the proportion of master's degree holders is 54 participants (29.7%). This situation indicates that the majority of the participants are well-educated and perceive themselves as belonging to the middle-income group.

Table 1. Demographic information

	Gender identity	Female (n=120)	Male (n=57)	Other (n=5)	Total (n=182)
Marital Status		120 (65.9%)	57 (31.3%)	5 (2.8%)	182 (100%)
	Married	49 (26.9%)	26 (14.4%)	1 (0.5%)	76 (41.8%)
	Single	42 (23.1%)	22 (12.1%)	2 (1.1%)	66 (36.3%)
	Partnered	28 (15.4%)	6 (3.3%)	2 (1.1%)	36 (19.8%)
	Prefer not to say	0 (0.0%)	2 (1.1%)	0 (0.0%)	2 (1.1%)
Income Group	Other	1 (0.5%)	1 (0.5%)	0 (0.0%)	2 (1.1%)
	Low	19 (10.5%)	9 (4.9%)	0 (0.0%)	28 (15.4%)
	Middle	88 (48.4%)	43 (23.6%)	4 (2.2%)	135 (74.2%)
	High	7 (3.8%)	3 (1.6%)	1 (0.5%)	11 (6.0%)
	Prefer not to say	6 (3.3%)	2 (1.1%)	0 (0.0%)	8 (4.4%)
Education Level	High school	6 (3.3%)	1 (0.5%)	0 (0.0%)	7 (3.8%)
	Associate's degree	5 (2.7%)	2 (1.1%)	0 (0.0%)	7 (3.8%)
	Bachelor's	65 (35.7%)	33 (18.1%)	5 (2.7%)	103 (56.6%)
	Master's	36 (19.8%)	18 (9.9%)	0 (0.0%)	54 (29.7)
	Doctorate	8 (4.4%)	3 (1.6%)	0 (0.0%)	11 (6.0)
Participants' age	Not prefer say	1 (0.5%)	2 (1.1%)	0 (0.0%)	3 (1.6%)
	18-29	31 (17%)	10 (5.5%)	3 (1.6%)	44 (24.2%)
	30-44	82 (45.2%)	41 (22.5%)	2 (1.1%)	120 (65.9%)
	45-59	4 (2.2%)	4 (2.2%)	0 (0.0%)	8 (4.4%)
	60+	2 (1.1%)	0 (0.0%)	0 (0.0%)	2 (1.1%)

Female participants most commonly prefer hair dryers, electric toothbrushes, hair straighteners and epilators among personal care products. On the other hand, male participants predominantly prefer beard trimmers, electric toothbrushes, hair dryers and body shavers. While body shavers are almost never preferred by women, epilators are rarely chosen by men (Table 3). This can be interpreted as a reinforcing finding that body hair imposes different roles on individuals within gender norms.

In addition, the majority of participants (n=161, 88.5%) state that they know what the concept of gender means. Among women, 108 participants (59.34%) report being

[†]Within the scope of this empirical study, Braun and Phillips brand epilators and body groomers were selected. This choice was based on a survey conducted as part of the doctoral research associated with this study, which revealed that these two brands were the most preferred and widely used brand among the participants.

aware of the Turkish Language Association's definition of gender, while this number is 49 (26.92%) for men (Table 2).

Table 2. Responses to “I know what gender means”

Gender Identity		Female (n=120)	Male (n=57)	Other (n=5)	Total (n=182)
		120 (65.93%)	57 (31.32%)	5 (2.75%)	182 (100.00%)
I know what gender means.	Yes	108 (59.34%)	49 (26.92%)	4 (2.20%)	161 (88.46%)
	No	9 (4.95%)	8 (4.40%)	1 (0.55%)	18 (9.89%)
	No Idea	3 (1.65%)	0 (0.00%)	0 (0.00%)	3 (1.65%)

Table 3. Most used products

Gender identity	Female (n=120)			Male (n=57)			Other (n=5)			Total (n=182)	
	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases	Responses	
	N	Percent		N	Percent		N	Percent		N	Percent
Hair dryer	112	27,3%	93,3%	37	20,8%	64,9%	4	26,7%	80,0%	153	25,4%
Epilator	55	13,4%	45,8%	1	0,6%	1,8%				56	9,3%
Laser hair removal device	33	8,0%	27,5%	4	2,2%	7,0%				37	6,1%
Body shaver	6	1,5%	5,0%	27	15,2%	47,4%	3	20,0%	60,0%	36	6,0%
Electric toothbrush	80	19,5%	66,7%	31	17,4%	54,4%	3	20,0%	60,0%	114	18,9%
Hair straightener	79	19,3%	65,8%	2	1,1%	3,5%				81	13,4%
Beard trimmer	3	0,7%	2,5%	49	27,5%	86,0%	2	13,3%	40,0%	54	9,0%
Electric skin & body care	34	8,3%	28,3%	7	3,9%	12,3%	1	6,7%	20,0%	42	7,0%
Hair clipper	8	2,0%	6,7%	20	11,2%	35,1%	2	13,3%	40,0%	30	5,0%
Total	410	100,0%	341,7%	178	100,0%	312,3%	15	100,0%	300,0%	603	100,0%

The majority of participants (n=108, 59.34%) state that they feel gender-based social pressure. Additionally, 84 (46.16%) of female participants and 23 (12.64%) of male participants indicate that gender stereotypes influence their personal care preferences. However, a slightly different trend emerges regarding the selection of electrical personal care products. While personal care preferences are shaped by gender stereotypes, it can be concluded that this influence does not extend equally to product preferences. As shown in Table 4, perceived gender-based social pressure is positively correlated with personal care preferences for both female ($r = 0.362$, $p < 0.001$) and male participants ($r = 0.360$, $p = 0.006$). This result indicates that individuals who experience greater societal pressure are more likely to engage in gender stereotyped personal care practices. Furthermore, a strong correlation between personal care preferences and the choice of electric personal care products is observed for both female ($r = 0.560$, $p < 0.001$) and male participants ($r = 0.662$, $p < 0.001$). However, gender-based social pressure does not significantly impact the product choices of male participants ($r = 0.264$, $p = 0.047$), suggesting that societal expectations may influence personal care habits but have a weaker impact on the choice of grooming devices.

According to the correlation analysis (Table 5), women feel more aligned with their gender when using personal care products and that this feeling is significantly associated with the belief that using personal care products is related to their gender identity ($r = 0.601$, $p < 0.001$). For men, this relationship is significant, but at a lower level compared to women ($r = 0.533$). This shows that the level of associating personal care product use with men's gender identities is more variable and depends on individual factors. In

addition, feeling the pressure to conform to gender roles while using personal care products is stronger in women than in men ($r = 0.456$, $p < 0.001$). In men, although this relationship is weaker, it is significant ($r = 0.326$, $p = 0.013$).

Table 4. Relationship between gender norms and personal care preferences: Pearson, Spearman and Kendall Correlations

Gender Identity	Variable 1	Variable 2	Pearson (r)	Spearman (ρ)	Kendall (τ)	p-value
Female	I personally feel the gender-based social pressure in my environment.	Gender stereotypes affect my personal care preferences	0.362	0.331	0.287	<0.001
Female	I personally feel the gender-based social pressure in my environment.	Gender stereotypes affect my preferences for electric personal care products and my purchasing behavior.	0.408	0.382	0.331	<0.001
Female	Gender stereotypes affect my personal care preferences	Gender stereotypes affect my preferences for electric personal care products and my purchasing behavior.	0.560	0.528	0.471	<0.001
Male	I personally feel the gender-based social pressure in my environment.	Gender stereotypes affect my personal care preferences	0.360	0.337	0.286	0.006
Male	Gender stereotypes affect my personal care preferences	Gender stereotypes affect my preferences for electric personal care products and my purchasing behavior.	0.662	0.660	0.591	<0.001
Other	I personally feel the gender-based social pressure in my environment.	Gender stereotypes affect my personal care preferences	-0.612	-0.612	-0.612	0.272

Table 5. Correlation analysis the relationship between the use of personal care products and gender identity and conform to gender roles when using personal care products

Gender Identity	Variable 1	Variable 2	Pearson (r)	Spearman (ρ)	Kendall (τ)	P-value
Female	I feel more align my gender when using personal care products.	I think using personal care products is related to my gender identity.	0.601	0.585	0.525	<0.001
Female	I feel more align my gender when using personal care products.	I feel pressured to conform to gender roles when using personal care products.	0.456	0.448	0.388	<0.001
Male	I feel more align my gender when using personal care products.	I think using personal care products is related to my gender identity.	0.533	0.556	0.495	<0.001
Male	I feel more align my gender when using personal care products.	I feel pressured to conform to gender roles when using personal care products.	0.326	0.357	0.308	0.013
Other	I feel more align my gender when using personal care products.	I think using personal care products is related to my gender identity.	-0.294	-0.229	-0.126	0.631
Other	I feel more align my gender when using personal care products.	I feel pressured to conform to gender roles when using personal care products.	0.134	0.177	0.134	0.83

In general, while women establish a strong link between personal care products and gender identity, this relationship is weaker and more variable for men. While the pressure to conform to gender roles when using personal care products is felt more by women, the effect of this pressure is less for men. These results provide important clues about how gender perception is shaped in the marketing and design of personal care products and how social norms affect the personal care experience as an actant.

It was also asked participants which four features prioritize most in personal care products. According to the results ergonomics and ease of use, durability and lifespan, brand recognition and price-performance ratio emerged as the most prominent factors. This indicates that users tend to focus more on the benefits the product offers them rather than its association with gender roles. In contrast, design features and sensory attributes is selected less often, indicating that aesthetic aspects may be less of a priority for participants. Although correlation results indicate that personal care product use is more

closely linked to gender identity for women (Table 5), their feature preferences still prioritize functionality over design or sensory attributes (Table 6). This suggests that while gender identity and societal expectations play a role in personal care perceptions, they may not be the foremost factors influencing which features consumers prioritize in personal care products.

Table 6. Participants' prioritized features in personal care products, categorized by gender identity and response rates

Gender identity	Female (n=120)			Male (n=57)			Other (n=5)			Total (n=182)		
	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases
	N	Percent		N	Percent		N	Percent		N	Percent	
Ergonomics and ease of use	85	20,0%	70,8%	43	21,3%	75,4%	2	10,0%	40,0%	130	20,1%	71,4%
Durability and long lifespan	77	18,2%	64,2%	45	22,3%	78,9%	2	10,0%	40,0%	124	19,2%	68,1%
Brand recognition and reliability	73	17,2%	60,8%	31	15,3%	54,4%	4	20,0%	80,0%	108	16,7%	59,3%
Formal characteristics and design	22	5,2%	18,3%	12	5,9%	21,1%	1	5,0%	20,0%	35	5,4%	19,2%
Use of up-to-date technologies	27	6,4%	22,5%	14	6,9%	24,6%	1	5,0%	20,0%	42	6,5%	23,1%
Sensory features	13	3,1%	10,8%	3	1,5%	5,3%				16	2,5%	8,8%
Energy efficiency and eco-friendly design	19	4,5%	15,8%	4	2,0%	7,0%	3	15,0%	60,0%	26	4,0%	14,3%
Services related to the product	27	6,4%	22,5%	9	4,5%	15,8%	3	15,0%	60,0%	39	6,0%	21,4%
Product's price/performance ratio	79	18,6%	65,8%	38	18,8%	66,7%	4	20,0%	80,0%	121	18,7%	66,5%
Other	2	0,5%	1,7%	3	1,5%	5,3%				5	0,8%	2,7%
Total	424	100,0%	353,3%	202	100,0%	354,4%	20	100,0%	400,0%	646	100,0%	354,9%

Table 7. Personal care products perceived as misaligned with participants' gender identity, based on gender identity responses

Gender identity	Female (n=120)			Male (n=57)			Other (n=5)			Total (n=182)		
	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
No response	89	74,2%	74,2	48	84,2%	84,2%	2	40,0%	40,0	139	76,4%	76,4%
Toothbrush	3	2,5%	76,7	1	1,8%	86,0%				4	2,2%	78,6%
Epilator	1	0,8%	77,5	3	5,3%	91,2%	1	20,0%	60,0	5	2,7%	81,3%
Hair Dryer	3	2,5%	80,0				1	20,0%	80,0	4	2,2%	85,2%
Shaver	24	20,0%	100,0				1	20,0%	100,0	25	13,7%	99,5%
Razor				1	1,8%	93,0%				1	0,5%	81,9%
Laser Hair Removal				1	1,8%	94,7%				1	0,5%	82,4%
Hair Straightener				1	1,8%	96,5%				1	0,5%	83,0%
Leggings				1	1,8%	98,2%				1	0,5%	85,7%
Facial Care Products				1	1,8%	100%				1	0,5%	100%
Total	120	100%		57	100%		5	100%		182	100%	

Participants were asked whether they use products they believe are not designed for their gender identity and if so, which products these are (Table 7). A total of 139 participants did not respond to this question. Among the 43 participants who provided an answer, the majority are female users. Women most frequently indicated that they use shavers, even though they believe these products do not align with their gender identity.

Participants were asked, in an open-ended format, why they think these products do not align with their gender identity and their responses were thematically grouped. According to the results the majority of participants cited gender norms as a primary reason (Table 8). This result followed by marketing strategies as the next most common reason.

The high frequency of these responses may be attributed to participants' awareness of gender norms and their perception that existing body hair removal products reflect these norms (Table 9). Additionally, participants state that the functional and ergonomic features of the products also contributed to their misalignment with their gender identity, as these features are often more aligned with biological sex rather than gender identity. However, participants also expressed that they do not prefer body hair removal products to reflect gender norms (Table 10).

Majority of participants consider that body hair is a taboo topic (Table 13). Although participants' perceptions of body hair are linked to gender norms, the influence of these norms is weaker among men. No one associated it only with masculinity. However, the majority of those who associated it with gender in both groups associated it either only with femininity or with both femininity and masculinity (Table 11).

Table 8. Reasons participants believe personal care products do not align with their gender identity, by category

Gender identity	Female (n=30)			Male (n=10)			Other (n=3)			Total (n=43)		
	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases
	N	Percent		N	Percent		N	Percent		N	Percent	
Product Name	1	1,5%	3,3%							1	1,1%	2,3%
Marketing Strategy	12	18,5%	40,0%	5	20,0%	50,0%	1	20,0%	33,3%	18	18,9%	41,9%
Ergonomics	7	10,8%	23,3%							7	7,4%	16,3%
Gender Norms	20	30,8%	66,7%	9	36,0%	90,0%	2	40,0%	66,7%	31	32,6%	72,1%
Functionality	10	15,4%	33,3%	1	4,0%	10,0%	2	40,0%	66,7%	13	13,7%	30,2%
Color	5	7,7%	16,7%	4	16,0%	40,0%				9	9,5%	20,9%
Product Design	10	15,4%	33,3%	6	24,0%	60,0%				16	16,8%	37,2%
Total	65	100,0%	216,7%	25	100,0%	250,0%	5	100,0%	166,7%	95	100,0%	220,9%

Table 9. Responses on the application of gender stereotypes in the design of body hair removal/trimming products

Gender identity	Female (n=120)			Male (n=57)			Other (n=5)			Total (n=182)		
	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
Yes, gender stereotypes are applied in their designs.	76	63,3%	73,1%	21	36,8%	47,7%	4	80,0%	80,0%	101	55,5%	66,0%
No, gender stereotypes are not applied in their designs.	12	10,0%	84,6%	9	15,8%	68,2%	1	20,0%	100%	22	12,1%	80,4%
I am undecided.	16	13,3%	100%	14	24,6%	100%				30	16,5%	100,0%
Total	104	86,7%		44	77,2%					153	84,1%	
Missing System	16	13,3%		13	22,8%					29	15,9%	
Total	120	100%		57	100%		5	100%		182	100%	

In addition, it can be concluded that, in the context of gender and body hair care, while women are expected to remove their body hair, this expectation is more flexible for men. This can also be observed from the functions of the products used. Women use

more products aimed at removing body hair compared to men. In men, the use of products aimed at shortening body hair rather than removing it is more common (Table 2). The reason why the majority of female participants do not find shavers suitable for their gender identities may be the effect of gender norms on products and the performative relationship created by this structure (Table 7).

Table 10. Participants' preferences regarding the application of gender stereotypes in body hair removal/trimming product design

Gender identity	Female (n=120)			Male (n=57)			Other (n=5)			Total (n=182)		
	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
Strongly disagree	27	22,5%	26,0%	8	14,0%	18,2%	1	20,0%	20,0%	36	19,8%	23,5%
Disagree	39	32,5%	63,5%	15	26,3%	52,3%	1	20,0%	40,0%	55	30,2%	59,5%
Neutral	30	25,0%	92,3%	18	31,6%	93,2%	1	20,0%	60,0%	49	26,9%	91,5%
Agree	7	5,8%	99,0%	3	5,3%	100%	2	40,0%	100%	12	6,6%	99,3%
Strongly agree	1	0,8%	100%							1	0,5%	100%
Total	104	86,7%		44	77,2%					153	84,1%	
Missing System	16	13,3%		13	22,8%					29	15,9%	
Total	120	100%		57	100%		5	100%		182	100%	

The results of the analysis show that individuals who believe that there are social expectations regarding the removal/shortening of body hair are more likely to feel social pressure in this process ($p < 0.001$). While the majority of the participants accepted the existence of social expectations, the rate of those who stated that they felt social pressure within this group was also high. However, the non-significance of the Linear-by-Linear Association test ($p = 0.273$) indicates that the relationship does not progress linearly, meaning that this effect may be more pronounced in some groups.

Gender-based analyses show that this relationship emerges in different ways; for example, female respondents are more likely to accept the existence of societal expectations, whereas for male respondents the influence of these expectations on individual preferences may be more limited. While this situation supports that social norms are effective on personal care preferences, it indicates that how gender shapes this perception needs to be examined in more detail (Table 11). These tables show that social pressure to remove body hair is felt more commonly among individuals who consider body hair as taboo. According to the crosstab results, 62 participants of those who think that body hair is taboo stated that they felt social pressure. On the other hand, only 22 participants of those who think that body hair is not taboo stated that they felt pressure (Table 13). The results of the Chi-Square test ($p = 0.107$) show that the relationship between these two variables is not statistically significant. This suggests that perceiving body hair as taboo may not be directly related to whether individuals feel social pressure or not. However, the differences between the observed frequencies suggest that the effect of social norms and individual perceptions on the feeling of oppression should be examined in more depth. Women also reported experiencing greater social pressure regarding body hair compared to men (Table 13).

When participants were asked whether the body hair removal products, they currently use were suitable for gender identities other than their own, the majority stated that the products they use were suitable (Tables 13). However, when the answers to the open-ended question 'What changes would you make to make it suitable for the opposite gender identity?' were grouped thematically, it was observed that most suggestions

focused on color and function. At the same time, suggestions that challenged gender norms were also prominent (Tables 14). It can be say that participants tended to evaluate body hair removal and hair trimmer products as functional rather than as a reflection of gender.

Table 11. Participants' preferences regarding the application of gender stereotypes in body hair removal/trimming product design

Gender Identity	Perceived Gender Association of Body Hair Removal	No Social Expectations	Yes, Social Expectations Exist	Undecided	Total
Female	Other	0	4	0	4
	Associated with Femininity	0	26	0	26
	Associated with Neither Gender	0	28	0	28
	Associated with Both Genders	2	44	0	46
	Total	2	102	3	104
Male	Other	0	1	1	2
	Associated with Femininity	0	6	1	7
	Associated with Neither Gender	6	15	0	21
	Associated with Both Genders	2	11	1	14
	Total	8	33	3	44
Other	Associated with Femininity	0	1	0	1
	Associated with Both Genders	0	4	0	4
	Total	0	5	0	5
Value		df		Sig. (2-sided)	
Pearson Chi-Square		26.796		4	
Likelihood Ratio		23.825		4	
Linear-by-Linear Assoc.		1.202		1	
N of Valid Cases		153			

Table 12. Participants' opinions on the suitability of electric body hair removal products for different gender identities

Gender identity	Female (n=120)			Male (n=57)			Other (n=5)			Total (n=182)		
	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
Other	12	10,0%	12,5	2	3,5%	4,5%	1	20,0%	20,0%	15	8,2%	10,3
Yes, I think it is suitable.	69	57,5%	84,4	32	56,1%	77,3%	3	60,0%	80,0%	104	57,1%	82,1
No, I don't think it is suitable.	15	12,5%	100,0	10	17,5%	100%	1	20,0%	100%	26	14,3%	100,0
Total	96	80,0%		44	77,2%		5	100%		145	79,7%	
Missing System	24	20,0%		13	22,8%					37	20,3%	
Total	120	100%		57	100%		5	100%		182	100%	

Table 13. Perceptions of body hair as a taboo vs. social pressure to remove body hair

Gender Identity	Perception of Body Hair as a Taboo	Felt Social Pressure	Did Not Feel Social Pressure	Undecided	Total
Female (n=104)	Yes, I think it is a taboo	53	9	3	65
	No, it is not a taboo	16	10	0	26
	Undecided	10	2	1	13
Total (Female)	-	79	21	4	104
Male (n=44)	Yes, I think it is a taboo	7	5	5	17
	No, it is not a taboo	5	16	1	22
	Undecided	2	2	1	5
Total (Male)	-	16	23	7	44
Other (n=5)	Yes, I think it is a taboo	2	0	1	3
	No, it is not a taboo	1	1	0	2
	Undecided	2	0	0	2
Total (Other)	-	3	1	1	5

Table 14. Suggested changes to electric body hair removal products for suitability across different gender identities

Gender identity	Female (n=57)			Male (n=26)			Other (n=1)			Total (n=84)		
	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases
	N	Percent		N	Percent		N	Percent		N	Percent	
No changes	13	14,3%	22,8%	11	30,6%	42,3%				24	18,8%	28,6%
Reinforcing gender norms	4	4,4%	7,0%	1	2,8%	3,8%				5	3,9%	6,0%
Challenge gender norms	11	12,1%	19,3%	2	5,6%	7,7%				13	10,2%	15,5%
Gender-inclusive	5	5,5%	8,8%	1	2,8%	3,8%				6	4,7%	7,1%
Design	5	5,5%	8,8%	4	11,1%	15,4%				9	7,0%	10,7%
Color	16	17,6%	28,1%	3	8,3%	11,5%				19	14,8%	22,6%
Ergonomics	8	8,8%	14,0%	3	8,3%	11,5%				11	8,6%	13,1%
Functionality	16	17,6%	28,1%	8	22,2%	30,8%	1	100,0%	100,0%	25	19,5%	29,8%
Marketing	8	8,8%	14,0%	1	2,8%	3,8%				9	7,0%	10,7%
Other				1	2,8%	3,8%				1	0,8%	1,2%
Not Suitable	3	3,3%	5,3%							3	2,3%	3,6%
No Opinion	2	2,2%	3,5%	1	2,8%	3,8%				3	2,3%	3,6%
Total	91	100,0%	159,6%	36	100,0%	138,5%	1	100,0%	100,0%	128	100,0%	152,4%

Table 15. Participants' storage preferences for electric body hair removal products, categorized by gender identity

Gender identity	Female (n=72)			Male (n=33)			Other (n=4)			Total (n=106)		
	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases
	N	Percent		N	Percent		N	Percent		N	Percent	
In the bathroom	44	61,1%	61,1%	25	75,8%	75,8%	2	50,0%	50,0%	71	65,1%	65,1%
In the bedroom	22	30,6%	30,6%	3	9,1%	9,1%	1	25,0%	25,0%	26	23,9%	23,9%
Other	6	8,3%	8,3%	5	15,2%	15,2%	1	25,0%	25,0%	12	11,0%	11,0%
Total	72	100,0%	100,0%	33	100,0%	100,0%	4	100,0%	100,0%	109	100,0%	100,0%

Table 16. Participants' reported locations for using electric body hair removal products, categorized by gender identity

Gender identity	Female (n=73)			Male (n=36)			Other (n=4)			Total (n=113)		
	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases	Responses		Percent of Cases
	N	Percent		N	Percent		N	Percent		N	Percent	
In the bathroom	53	58,9%	72,6%	35	94,6%	97,2%	3	75,0%	75,0%	91	69,5%	80,5%
In the bedroom	27	30,0%	37,0%	1	2,7%	2,8%	1	25,0%	25,0%	29	22,1%	25,7%
Other	10	11,1%	13,7%	1	2,7%	2,8%				11	8,4%	9,7%
Total	90	100,0%	123,3%	37	100,0%	102,8%	4	100,0%	100,0%	131	100,0%	115,9%

To better understand the spatial context of product use, participants were asked where they stored and used the products (Tables 15-16). According to the results, body hair care products were mostly stored in the bathroom. However, it was observed that women also stored these products in personal spaces such as the bedroom. Women further reported using these products in the bedroom more frequently compared to men. This difference can be attributed to the functional differences of the products used.

In light of these general demographic and gender-related responses given by the participants, the study will explore the relationships between the mentioned dimensions.

6.2. Application of the formulation: epilators and trimmers as gendered products

This section examines epilators and electric trimmers as case examples to illustrate the proposed formulation. These products have been historically gendered through design, marketing and usage norms. By applying the performativity framework, this section demonstrates how gendered meanings are embedded in these products through form, function, context and iteration. This demonstration serves as a foundation for the empirical investigation.

Products as actants (Figures 2, 7 and 8):

Epilators:

Form: Compact, sleek, typically in pastel colors (e.g., pink, white)

Function: To remove body hair.

Trimmers:

Form: Bulkier, more angular, often in darker or metallic tones.

Function: To trim body hair

Context as cultural and gendered associations:

Epilators: Gender; conforming gender roles, femininity, positioned within beauty and self-care discourse, highlights smooth skin as an ideal for women.

Trimmers: Gender; conforming gender roles, masculinity, highlights smooth skin but not removing them an ideal for men.

Usage depends on context, which may alter or reinforce meaning:

Epilators: Intended usage defined by product's function of removing body hair. However, usage also shaped by the context in which it is situated.

Trimmers: Intended usage defined by product's function of trimming body hair. However, usage also shaped by the context in which it is situated.

Iteration as repetition and reinforcement:

Epilators: The repeated exposure of performative sign to femininity via advertising, cultural expectations and product placement.

Trimmers: The repeated exposure of performative sign to masculinity via advertising, cultural expectations and product placement.

This examination demonstrates how these personal care products become gendered through their repeated contextualization in usage, product (form and function), context, as well as in marketing, advertising and cultural expectations. Yet, the performativity of these personal care products is not static, rather, it has dimensional dynamics. The following section on findings related to the dimensions of gender performativity of products section presents empirical findings that explore these dynamics in depth.

6.3. Findings related to the observed space dimension

This dimension analyzes the performative effects of the spaces in which products are used within the context of gender. A product's appearance, form and itself remain constant; however, it also gains meaning through the environment in which it is placed. As a result, the interpretation of the product changes depending on where the observer encounters it. The transformative effects of these changes will be discussed in the transformative section, while this section will identify the points at which these changes occur. The formula is as follows:

- [Product(Form + Function) + User + Usage] x [Context (Gender + Space)] x Iteration

The (Usage) × [Context (Gender + Space)] variables emphasize how space influences the gender performance of products when they are not actively used by a person. If actively used, the User variable is added in the context.

Photos and observations from the empirical investigation revealed that epilators and razors reproduce gender norms starting from their points of sale. Before product is actively used by a user, sales shelves, stands and websites define the spaces where these products are used, often through highly gendered elements. These spaces represent the digital and physical areas where the products are presented. For example, products in physical sales spaces reflect gender stereotypes through colors, human figures and

descriptions (Figure 10). Similarly, a clear binary division is evident in digital sales spaces, such as websites, where products are explicitly categorized under specific gender labels (Figure 8). Additionally, while men's body hair is visibly shown when using the product, women's body hair is not depicted even during product usage (Figure 9). These analyses are explained through the semantic dimension; however, they become visible in the observed space.



Figure 9. Differences in body hair representation (images from the official websites of the brands)



Figure 10. Braun (top), Philips (bottom)

This further reinforces the societal perception that body hair visibility is more flexible and acceptable for men, whereas for women, it emphasizes the opposite - an expectation of complete hairlessness. This situation is also related to the findings from the online research (Tables 11, 12). It can be stated that the social expectations individuals feel regarding body hair removal or trimming are reinforced by the visuals used during product usage. An exception to this is Braun brand's hair clippers, which feature a short-haired female figure, breaking the traditional norms (Figure 10). These findings are also related to the semantic dimension. In the observed space, these actors become visible, while at the same time, they are semantically reinforced.



Figure 11. Short-haired female figure (image from the official websites of the brand)

According to survey responses, body hair care products are mostly used in personal spaces such as bathrooms and bedrooms (Tables 15, 16). This suggests that the spatial context of product use is associated with hygiene and personal spaces.

Until the product reaches the end user, it remains surrounded by gendered elements in the spaces it occupies. However, once it reaches the user, it is no longer experienced in defined spaces like sales environments but instead in personal spaces. Consequently, users' expectations for personal care products primarily focus on functional attributes such as ergonomics, ease of use, cost-performance balance and durability, rather than reflecting the gendered performativity of the product (Table 6, 9). This situation reveals a conflict between the initially constructed gendered performativity of the product and its performativity when used by the consumer. Before reaching the user, the usage of the product is framed and idealized through a gendered performative set of meanings conveyed to the consumer via marketing, branding and product presentation or placement. However, once the product is in use by a user, this presented context no longer exists. Instead, the user's experience with the product reshapes and reinterprets its gendered performativity by their observed space context which is related to transformative dimension.

The Observed Space Dimension not only make the meanings visible through key actants in gendered product but also highlights how they are positioned through display, marketing and contextual framing. Adopting functionality-based classifications instead of gender-based categories in the sales processes of personal care products can provide a more inclusive consumer experience (Drake & Radford, 2018; Petersson McIntyre, 2018). The norm-critical design approach has the potential to transform gender norms by questioning not only the physical forms of products but also their presentation and marketing strategies (Isaksson, 2024; Yetiş & Bakırlioğlu, 2024). Especially on digital sales platforms, the use of neutral filtering systems such as skin type, intended use and ergonomics, rather than presenting products in gender-based categories, can encourage a more flexible approach in consumer perception. Although consumers evaluate products based on individual hygiene and function, current marketing strategies shape these preferences with gender norms (Lieven, 2018). A practical application of this perspective would be reconsidering how personal care products are categorized in retail and digital spaces - focusing on function rather than gender-to create a more inclusive and less norm-reinforcing consumer experience.

6.4. Findings related to the transformative dimension

The transformative dimension explores how both products and users interact in a continuous cycle, reshaping meaning through affordances, contextual engagement and iteration, leading to either the reinforcement or disruption of gender norms. The formula is as follows:

$$[\text{Product}(\text{Form} + \text{Function}) + \text{User} + \text{Usage}] \times [\text{Context}(\text{Gender} + \text{Space})] \times \text{Iteration}$$

Survey data from the empirical investigation revealed that female participants used electric shavers (typically perceived as products designed for men) even though they believed these products did not align with their gender identity (Tables 7, 14). This highlights the potential for gender norms to be transformed by users. In this process, the product can take on a supportive role to be more inclusive or resist this transformation.

The formula $[(\text{Product Form} + \text{User}) \text{ and } (\text{Product Function} + \text{User})]$ explains this bidirectional relationship. For example, female participants stated that they used shavers to trim body hair for various reasons and found them effective (Tables 7, 8). The transformative dimension impacts both the user and the meaning of the product through repeated use (iteration). Users have the potential to adapt the functionality of products to their own contexts, thereby challenging or reconstructing gender norms.

A similar reflection of this dynamic can be observed in the Observed Space Dimension, where the figure of a woman using a shaver is analyzed. In the Observed Space, the usage practices and interpretations of such a figure are tied to the Semantic dimension, as the source of this knowledge originates from the Observed Space dimension, where information distributes. However, its impact relates to the Transformative Dimension.

The conflict here emerges at this point. Participants ascribed meaning to products through performatively defined frameworks until they began actively using them. This is enabled by the mediating role of the Observed Dimension. Additionally, fixed gendered product designs constitute another element of this conflict. As will be discussed in the Semantic Dimension, reinforced gender codes are perpetuated through semantic means. User suggestions for making products more suitable for other genders also highlight this tension. Participants' responses mainly focused on color and function, while some also challenged gender norms (Table 14). These findings suggest that participants perceive body hair removal and trimmer products primarily in terms of functionality rather than as gendered objects. These suggestions indicate links to the Semantic Dimension, Observed Dimension and Delegated Tasks.

Furthermore, the observed tension between the gendered design of the products and the functional expectations of users reveals a broader negotiation of meaning. While users view these products largely through a functional lens. It is seen that they associate body hair and gender with femininity and masculinity, mostly femininity and also express that more women are subjected to social pressure related to body hair (Tables 11, 12), but that they evaluate product preferences through a functional lens rather than prioritizing product form (which is an actor reflecting gendered expressions) (Tables 6, 9). In addition, female users express that they feel more align the gender they belong to when using these products (Table 5). In contrast, participants' responses on how they would change the products to make them more inclusive (Table 14) further emphasize this contradiction. While their suggestions are predominantly focused on color and function, some actively question gender norms.

These findings suggest that although gendered design and marketing strategies attempt to impose certain performative roles on users, the actual user experience does not always align with these expectations. This mismatch creates a critical space at the intersection of the Transformative, Semantic and Delegated Task Dimensions as users navigate between predetermined gender roles and their own practical needs. Users can transform these patterns and subvert binary gender norms by using products beyond prescribed gender boundaries. Denz and Eggink (2019) address the integration of non-normative gender perspectives into industrial design, while Kaygan et al. (2022) show that seemingly neutral designs actually carry implicit gender biases and that users interact with these biases. The fact that users evaluate products on the basis of functionality and adapt them to their own contexts reveals that gender is not fixed in design, but a structure that is constantly reproduced through use.

6.5. Findings related to the semantic dimension

The semantic dimension addresses how the physical features of products (form and function) and their associated elements gain meaning within the context of gender. The formula is as follows:

- **[Product (Form + Function) + Usage] × [Context(Gender)] × Iteration**

This semantic relationship is also supported semiotically through associated elements such as advertisements, sales environments and branding. These meanings are not only embedded in the products themselves but are also reinforced and shaped through their representation and context.

Nevertheless, within the scope of this study, the physical features of products were not directly evaluated through an in-depth semantic analysis. However, as illustrated in Figure 1, a clear distinction in design elements is observable across product categories. Additionally, prior research has already established the semantic associations between form and gender, demonstrating how specific design characteristics are linked to femininity and masculinity (Ehrnberger *et al.*, 2012; Fenko & Drost, 2014; Ritnamkam & Sahachaisaeree, 2012; Van Oost, 2003). However, participants were asked whether they believed personal care products in general reflected gender norms. According to survey findings, a significant portion of participants believe that the physical features of products are reproduced within the context of gender (Tables 9, 10). However, this semantic relationship is also supported semiotically through associated elements such as advertisements, sale stores etc. For example, as seen in Figures 7 and 8, epilators are advertised with female models and pastel tones, reinforcing their perception as feminine products. Similarly, shavers are marketed with male models and dark color tones, which strengthen their perception as masculine.

This supports the formula $[(\text{Product Form} \times \text{Gender Context}) + (\text{Product Function} \times \text{Gender Context})]$. In other words, the product form generates specific meanings in the context of gender, while the product's function (e.g., the epilator's body hair removal purpose) reinforces these meanings by associating them with its form. The relationship between these elements will be further detailed in the delegated task dimension.

6.6. Findings related to the delegated task dimension

The dimension of delegated tasks addresses how products assign specific gender roles to their users. The formula is as follows:

$$[\text{Product (Form + Function) + Usage}] \times [\text{Context(Gender + User)}] \times \text{Iteration}$$

In the study, it was found that products like epilators and lasers encourage users to fulfill gender-related tasks. For example, epilators encourage women to undertake socially imposed tasks, such as the removal of body hair, through their design being exclusively targeted at women. This reinforces the societal norm that smooth, hair-free skin is a gendered beauty ideal rather than simply a functional aspect of personal care. This can be explained with the components $(\text{Function} + \text{Usage}) \times [\text{Context (Gender + User)}]$.

However, observations reveal a conflict - while the design and marketing of these products enforce gendered body expectations, user engagement suggests a more functional and pragmatic perspective. Participants emphasized practicality and efficiency as their primary reasons for using the products, rather than adherence to gender norms (Tables 6, 9 and 11). This suggests that, although the products impose gendered tasks through their design, users may reinterpret their functionality in ways that either conform to or challenge these tasks.

When breaking down this context while keeping the gender context fixed, three different variables and scenarios emerge. First, the use of a product by a user outside its intended gendered audience. Second, the use of the product within its target audience but for a different purpose or intent, facilitated by its affordances - this aspect also relates to the transformative dimension as users reinterpret functionality beyond its original design.

Third, as participants suggested in their design change recommendations, functional diversification (Table 14). For example, if the product is modified to address broader needs, making it more inclusive. Participants highlighted that epilators are not only associated with their functionality but also with their structural design, which reinforces societal norms. However, designers play a major role here. Okudan and Mohammed (2006) suggest that designers may perceive certain design tasks as innately gendered due to institutional, functional and cultural connections. This perception shapes how products are designed and marketing processes, reinforcing, but not questioning, existing gender norms.

7. Concluding discussions

By developing a framework and performative formula that emphasizes the importance of context and paying attention to users, design features and the environment, conditions and times in which the products are situated, the study analyzes how products exhibit, do or perform gender within the network of relationships they establish with structures in the gender context. The simplified formulation of performativity is intended to facilitate the understanding of the concept of actant, act and contexts relations. The formulation of performativity also allows for the use of products as a tool to explain gender performativity. This use need not be exclusively gender-specific. As the formulation allows for the incorporation of other contexts, it can be applied in different ways in future work. However, this study was carried out on epilators and shavers from personal care products as a sample group. Another product groups (such as cars or digital products or even personal care products) can be studied in different contexts and improvements can be made on the formulation.

This holistic approach, which is one of the main contributions of the study, provides a framework for understanding how both people and objects relate to gender performance.

The five dimensions of gender performativity of the products should not be considered independently. Each dimension can influence the others and function within a complex web of interactions.

As can be seen, the repetitions of gender performativity in products across different dimensions do not provide opportunities for users to demonstrate varied performative approaches in the context of gender. In particular, the repeated relationship between personal care and gender, shaped by certain gender roles through body hair, shows that individuals are unable to diversify due to the dependent relationship created between the product and gender. However, women perceive the complete removal of body hair as a burden due to binary gender norms, while men tend to prioritize the shortening of body hair over its complete removal. Products also reinforce the distinction that users make between body hair and gender.

In addition, it was understood that body hair was seen as a taboo among the participants. Taboos are cultural constructs rooted in historical contexts and are therefore resistant to change. In this context, difficulties may arise in achieving change due to the existence of a cultural taboo regarding body hair. However, these difficulties can be addressed through more inclusive products, which can help alleviate gender-based pressures experienced by individuals or reduce their perceived effects. Furthermore, by viewing products as performative objects with social effects, we can explore potential new design ideas. However, the continuity of performative meaning is tied to the

frequency and multiplicity of repetitions and is further reinforced by the existence of similar structures across multiple areas. As a result, the norm that is formed tends to be perceived as inherent or natural and the emergence of features that are open to change is somewhat hindered. An example of this situation is the commonly recurring structure in products within the context of gender.

Products are not passive objects: Past studies and traditional approaches often viewed products as passive objects that reflect gender norms. However, this model shows that products are actants that actively shape or reinforce norms.

The existence of a dynamic relationship between humans, non-humans and objects: The gender performativity of products is shown to be influenced not only by their design but also by broader gender systems through the establishment of different contexts and relationships between humans and products, such as user interaction, the environment in which they are used, time, culture and marketing.

The focus is on the construction of gender: All five dimensions recognize that gender is not an innate characteristic, not a static state, but socially constructed with a fluid and performative nature.

This five-dimensional model provides designers and researchers with a systematic framework for analyzing the gender performativity of products. The dimensions addressed by the framework facilitate the identification and evaluation of different factors as an actant by combining specific situations and conditions in context. Thus, it is thought that it will help more critically and consciously inclusive design solutions to emerge. These five dimensions provide material that can be used not only in product design but also in marketing, education and research; however, a validation test was not conducted for this. Instead, they were considered to offer methodological advancements and a framework for identifying key actants, potentially inspiring further studies.

For future studies, different cultures and design practices can be analyzed comparatively to reveal the different dynamic relationships of gender performativity in products.

In conclusion, this study provides a foundational ground for research and analysis. In this way, it is believed that presenting a critical perspective on the gender performativity of products will contribute to the establishment and discovery of more fair, inclusive and egalitarian products and other contexts related to products.

References

- Akrich, M. (1992). The de-scription of technical objects. In *Shaping Technology/Building Society: Studies in Sociotechnical Change*, 205-224. MIT Press.
- Allison, N.K., Golden, L.L., Mullet, G.M. & Coogan, D. (1980). Sex-typed product images: The effects of sex, sex role self-concept and measurement implications. *Advances in Consumer Research*, 7(1), 604-609.
- Alreck, P.L. (1994). Commentary: A new formula for gendering products and brands. *Journal of Product & Brand Management*, 3(1), 6-18. <https://doi.org/10.1108/10610429410053059>
- Austin, J.L. (1962). *How to Do Things with Words*. Oxford University Press, 174.
- Barthes, R. (2006). Myth today. In *Cultural Theory and Popular Culture: A Reader*, 3rd edition. Pearson, 293-302.
- Bekkum, P. (2020). The city as performative object. In *The Routledge Companion to Mobile Media Art*, 426-437. Routledge.
- Bloodhart, B., Swim, J.K. (2020). Sustainability and consumption: What's gender got to do with it? *Journal of Social Issues*, 76(1), 101-113.

- Bourdieu, P. (2006). *Distinction a Social Critique of the Judgement of Taste*. Routledge, 32. <https://doi.org/10.4324/9780429499838-20>
- Butler, J. (1988). Performative acts and gender constitution: An essay in phenomenology and feminist theory. *Theatre Journal*, 40(4), 519-531.
- Butler, J. (2002). *Gender Trouble*. New York, Routledge, 256.
- Butler, J. (2004). *Undoing Gender*. New York, Routledge, 288.
- Butler, J. (2008). *Gender Trouble: Feminism and the Subversion of Identity*. Translated by O. Keskin. Metis Publications, 248.
- Butler, J. (2011). *Bodies That Matter: On the Discursive Limits of Sex*. Routledge, 256.
- Caruelle, D. (2024). Are brands that perform gendered product differentiation perceived as sexist? An experimental investigation. *Journal of Product & Brand Management*, 33(5), 576-589.
- Cash, P.J. (2018). Developing theory-driven design research. *Design Studies*, 56, 84-119.
- Çelebi, G., Kaya, Ç. (2022). A framework towards understanding the performativity of products. *Diid Disegno Industriale Industrial Design*, 76.
- Çelikel, S.B. (2015). *Paradigm Shifts in Industrial Design: With Special Attention to Bruno Latour*. Nobel Academic Publishing. (In Turkish).
- Corrigan, L.T., Mills, A.J. (2012). Men on board: Actor-network theory, feminism and gendering the past. *Management & Organizational History*, 7(3), 251-265.
- Crilly, N., Moultrie, J. & Clarkson, P. J. (2004). Seeing things: Consumer response to the visual domain in product design. *Design Studies*, 25(6), 547-577. <https://doi.org/10.1016/j.destud.2004.03.001>
- Debevec, K., Iyer, E. (1986). The influence of spokespersons in altering a product's gender image: Implications for advertising effectiveness. *Journal of Advertising*, 15(4), 12-20.
- Denz, S., Eggink, W. (2019). Queer-sensible designing: Challenging normative gender through an industrial design practice. In *Academy for Design Innovation Management Conference 2019: Research perspectives in the era of Transformations*, 15.
- Derrida, J. (1988). *Limited Inc*. Northwestern University Press, 160.
- Doğanay, G. (2021). Views of married men on the use of home appliances. *Mediterranean Journal of Gender and Women's Studies*, 4(2), 154-175. (In Turkish).
- Drake, C., Radford, S.K. (2018). [Softly Assembled] Gender performance through products: Four practices responding to masculine and feminine codes in product design. In *Consumer Culture Theory*, 19, 123-144. Emerald Publishing Limited. <https://doi.org/10.1108/S0885-211120180000019008>
- Ehrnberger, K., Räsänen, M. & Ilstedt, S. (2012). Visualising gender norms in design: Meet the mega hurricane mixer and the drill dolphia. *International Journal of Design*, 6(3), 85.
- Fenko, A., Drost, W. (2014). A study in pink: What determines the success of gender-specific advertising?. In *13th International Conferences on Research in Advertising, ICORIA 2014*.
- Fleming, P.J., Harris, K.M. & Halpern, C.T. (2017). Description and evaluation of a measurement technique for assessment of performing gender. *Sex Roles*, 76, 731-746.
- Gentile, D.A. (1993). Just what are sex and gender, anyway? A call for a new terminological standard. *Psychological Science*, 4(2), 120-122.
- Golden, L.L., Allison, N. & Clee, M. (1979). The role of sex role self-concept in masculine and feminine product perceptions. *Advances in Consumer Research*, 6(1), 599-605.
- Horan, C., Finch, J. & Reid, E. (2014). The Performativity of Objects: The Sociomaterial role of 'imaginal others'. *European Group for Organisation Studies (EGOS) Conference*, Rotterdam. <https://doi.org/10.21427/D7Z20K>
- Isaksson, A. (2024). The potential of incorporating norm-critical design objects as a pedagogical tool in sociology courses. *Frontiers in Sociology*, 9, 1405374.
- Kay, A.C., Wheeler, S.C., Bargh, J.A. & Ross, L. (2004). Material priming: The influence of mundane physical objects on situational construal and competitive behavioral choice. *Organizational Behavior and Human Decision Processes*, 95(1), 83-96.
- Kaygan, H. (2016). Material semiotics of form giving: The case of the electric Turkish coffee

- pot. *Design Issues*, 32(2), 78-90.
- Kaygan, H., Kaygan, P. & Demir, Ö. (2019). A pen that ‘looks like a CEO in a business suit’: gendering the fountain pen. *Journal of Gender Studies*, 28(1), 86-96.
- Kaygan, P., Kaygan, H. & Özgür Keysan, A. (2023). Gendered interactions mediated by design: Sexual harassment on public transport. *Design and Culture*, 15(3), 345-366.
- Krippendorff, K. (2005). *The Semantic Turn: A New Foundation for Design*. CRC Press.
- Lagesen, V.A. (2012). Reassembling gender: Actor-network theory (ANT) and the making of the technology in gender. *Social Studies of Science*, 42(3), 442-448.
- Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford University Press.
- Law, J. (2008). Actor-network theory and material semiotics. In *The New Blackwell Companion to Social Theory*, 141-158. John Wiley & Sons. <https://doi.org/10.1002/9781444304992.ch7>
- Lieven, T. (2018). Product gender and product evaluation. In *Brand Gender: Increasing Brand Equity through Brand Personality*, 143-176).
- McCracken, G.D. (1990). *Culture and Consumption: New Approaches to the Symbolic Character of Consumer Goods and Activities*, 1. Indiana University Press.
- McLuhan, H.M. (1951). *The Mechanical Bride*. Routledge & Kegan Paul London.
- Milner, L.M., Fodness, D. (1996). Product gender perceptions: The case of China. *International Marketing Review*, 13(4), 40-51. <https://doi.org/10.1108/02651339610127248>
- Moshary, S., Tuchman, A. & Vajravelu, N. (2023). Gender-based pricing in consumer packaged goods: A pink tax? *Marketing Science*. <https://doi.org/10.1287/mksc.2023.1452>
- Norman, D.A. (1988). *The Psychology of Everyday Things*. Basic Books, 272.
- Okudan, G.E., Mohammed, S. (2006). Task gender orientation perceptions by novice designers: Implications for engineering design research, teaching and practice. *Design Studies*, 27(6), 723-740. <https://doi.org/10.1016/j.destud.2006.07.003>
- Paek, H.J., Nelson, M.R. & Vilela, A.M. (2011). Examination of gender-role portrayals in television advertising across seven countries. *Sex Roles*, 64, 192-207.
- Petersson McIntyre, M. (2018). Gender by design: Performativity and consumer packaging. *Design and Culture*, 10(3), 337-358.
- Ritnamkam, S., Sahachaisaeree, N. (2012). Cosmetic packaging design: A case study on gender distinction. *Procedia-Social and Behavioral Sciences*, 50, 1018-1032. <https://doi.org/10.1016/j.sbspro.2012.08.102>
- Schroeder, K. (2010). Gender dimensions of product design. In *Gender, Science and Technology Expert Group Meeting of the United Nations Division for the Advancement of Women (UN-DAW)*, 28, 93-200.
- Sismondo, S. (2011). *An Introduction to Science and Technology Studies*. John Wiley & Sons.
- Tang, K.S., Jeppsson, F., Danielsson, K. & Bergh Nestlog, E. (2022). Affordances of physical objects as a material mode of representation: A social semiotics perspective of hands-on meaning-making. *International Journal of Science Education*, 44(2), 179-200.
- Thorpe, H. (2009). Bourdieu, feminism and female physical culture: Gender reflexivity and the habitus-field complex. *Sociology of Sport Journal*, 26(4), 491-516.
- Van den Hende, E., Mugge, R. (2012). The role of gender congruity for anthropomorphized product perception. *ACR North American Advances*, 667-669.
- Van Oost, E. (2003). Materialized gender: How shavers configure the users’ femininity and masculinity. *How Users Matter: The Co-Construction of Users and Technologies*, 193-208.
- Van Tilburg, M., Lieven, T., Herrmann, A. & Townsend, C. (2015). Beyond “pink it and shrink it” perceived product gender, aesthetics and product evaluation. *Psychology & Marketing*, 32(4), 422-437.
- Veg-Sala, N., Nyeck, S. (2007, April). Brand gender and cross-gender extensions. In *Thought Leaders International Conference on Brand Management*.
- Wehrle, M. (2019). Doing gender differently?: The embodiment of gender norms as between

- permanence and transformation. In *Political Phenomenology*, 300-324. Routledge.
- Wolin, L.D. (2003). Gender issues in advertising - An oversight synthesis of research: 1970-2002. *Journal of Advertising Research*, 43(1), 111-129.
- Wortzel, L.H., Frisbie, J.M. (1974). Women's role portrayal preferences in advertisements: An empirical study: Has women's liberation changed women's attitudes toward female role portrayals in ads?. *Journal of Marketing*, 38(4), 41-46.
- Yetiş, E.Ö., Bakırlıoğlu, Y. (2024). Dis/re-orienting design through norm-critical gender lenses: an educational case in Turkey. *Frontiers in Sociology*, 9, 1341091.