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Communicating Inclusivity: A study on
Inclusive Design in digital products

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Abstract

This thesis explores the topic of inclusivity in the field of digital product design by examining how major technology companies use and advocate for it in their messaging. Through interviews with professionals in the field and critical discourse analysis of design guidelines from Apple, Google, Adobe, and Microsoft, the study explores how inclusivity is framed, how strategies for communicating a commitment to inclusive design are implemented, and how these principles are understood and applied in real-world scenarios.

The research employs Fairclough's three-dimensional model of Critical Discourse Analysis, integrating theories from disability studies, cultural studies, and design theory. The results reveal significant differences in the way businesses define and present inclusivity; ranging from Apple emphasizing accessibility and personalization, while Microsoft employs a broader definition of inclusive design. The study uncovers a mismatch between corporate discourse and practical implementation, highlighting the challenges designers face in balancing inclusivity with business priorities and resource limitations.

Key findings include the evolving nature of inclusivity, which has expanded beyond traditional concepts of disability to incorporate characteristics such as socioeconomic level and cultural background. The study also highlights contradictions between presenting technology as a solution to accessibility issues and professionals' awareness of both its potential and limitations.

This thesis contributes to the field by linking theoretical frameworks with real-world implementation. It emphasizes the importance of more feasible, context-specific guidelines and organizational support for inclusive design initiatives. The paper concludes by suggesting future research possibilities, such as looking at the interaction of legal frameworks and inclusion practices, as well as the impact of emerging technologies in supporting more inclusive design practices.

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1. Introduction

1.1. Background and context

In today's increasingly diverse and interconnected world, visual communication permeates every aspect of our lives, shaping our perceptions, experiences, and the narratives we engage with daily. As Felten (2008) defines, visual messages are omnipresent, molding our understanding of the world around us. At the core of this visual landscape lie digital products: from websites to mobile applications, and social media platforms, all of which serve as direct spaces through which individuals interact with information, services, and each other (Williams, 2019). The creation and maintenance of these products take immense effort, not only affecting their aesthetics and functionality but also holding the capacity to include or exclude, represent or misrepresent, and empower or disempower the users who engage with them (Holmes, 2018).

1.2. The evolution of inclusivity in design

The concept of inclusive design has undergone significant evolution over the past few decades (Clarkson et al., 2003). Initially, inclusivity was implanted in accessibility concerns, primarily focusing on aiming and supporting only individuals with disabilities. Through the last decades, as Clarkson and Coleman (2015) describe it, the concept has expanded to include a broader understanding of human diversity. This shift recognizes that inclusive design's main goal is to allow the same opportunities and resources to the widest possible range of users, regardless of their age, ability, or background (Clarkson et al., 2003).

In recent years, the importance of inclusive design has gained considerable attention, particularly in the context of digital products. The examples range from multi-million dollar corporate initiatives to apply inclusivity to every company product, such as Microsoft's AI for accessibility 5-year program (Microsoft, 2018), to institutional initiatives such as the Diversity and Inclusion program set by the Nordic Council of Ministers, which emphasizes the economic and social benefits of inclusive design practices (Diversity and Inclusion, n.d.). Furthermore, even higher-level government

action plans have been developed, such as the European Union Action Plan on Integration and Inclusion 2021-2027, underscoring the larger commitment to creating an inclusive society through collaborative efforts and strategic interventions (Action Plan on Integration and Inclusion, n.d.).

All these examples demonstrate the shift in the interpretation of what inclusivity means. As defined by Clarkson & Coleman (2015), inclusivity symbolizes a new approach to design that attempts to address the diverse needs of the entire population. By understanding the relationship and the dependency of Inclusivity and Design, one can assume that more and better design corresponds to a more inclusive society. This approach acknowledges the innate differences in human capabilities, perceptions, and experiences, seeking to create products and environments that are accessible and user-friendly for everyone (Holmes, 2018).

1.3. Digital products and societal participation

In the digital age, products such as websites, mobile applications, and social media platforms have become integral to how we experience the world (Selwyn, 2009). They serve as gateways to information, services, social connections, and cultural participation. The design of these digital interfaces, therefore, plays a crucial role in shaping societal dynamics and individual experiences.

As Selwyn (2009) notes, the impact of digital products extends far beyond mere functionality. They influence social interactions, cultural norms, and even political discourse. Moreover, as Williams (2019) depicts it, these digital interfaces have become the primary means through which many individuals engage with the world around them. Consequently, the design choices made in creating these products have far-reaching implications for social inclusion, representation, and empowerment, since they play a crucial role in shaping and defining societal dynamics and individual experiences.

Furthermore, design itself has evolved into a powerful medium of communication. As Barnard (2013) argues, design is more than just art and aesthetics; it is a form of communication, an instrument for conveying messages and shaping perceptions. As Raven and Elahi (2015) note, while art revels in subjectivity and creative freedom,

design operates within predefined parameters and objectives. Unlike artists, designers are " beholden to the telos" (p.50), defined as the intended purpose of their projects, which is often dictated by clients or stakeholders. This distinction underscores the nature of design, where the ultimate goal is to meet specific needs and achieve predetermined outcomes. Therefore, design should be "treated as a language rather than a form of art" (Barnard, 2013, p. 2).

If design is perceived as a form of communication, one can assume the existence of a shared visual grammar. Just as writers attach to grammatical rules, designers navigate a set of conventions and principles that support their craft. This visual grammar forms the basis of how we interpret and understand visual messages. It encompasses elements such as composition, color, typography, and imagery, all of which work together to convey meaning. In the context of crafting digital products, design choices communicate values, priorities, and assumptions about users. They can either reinforce existing social structures or challenge them, making the role of designers increasingly significant in shaping societal narratives.

Recognizing that the outcomes of design efforts are essentially narratives shaped by human creators underscores the reality that not all narratives are well-crafted, and not all well-crafted narratives convey positive messages. At the heart of design practices lies storytelling, an activity that "transcends cultural boundaries and connects individuals through shared experiences" (Raven & Elahi, 2015, p.49). Regrettably, certain narratives perpetuate societal challenges including exclusion, underrepresentation, marginalization, and stereotyping. It is in response to these shortcomings that the concept of inclusive design emerges as a critical solution.

1.4. Current challenges in inclusive design

Despite the growing recognition of the need for inclusivity, many digital products still fall short of representing and accommodating the diversity of their user base (Holmes, 2018). This gap between inclusive design principles and practice arises from several challenges.

On the one hand, underrepresentation and stereotyping appear. Many digital products continue to perpetuate narrow representations of user groups (Rubegni et al., 2022), often relying on stereotypes or excluding certain demographics entirely. This issue is particularly prevalent in visual elements such as illustrations and stock photography used in interfaces.

On the other hand, the lack of diversity in design teams limits the capacity to bring varied perspectives to digital products. As Rubegni et al. (2022) explain, this homogeneity can lead to blind spots in understanding and addressing the needs of diverse user groups.

Lastly, the lack of diversity can lead to misunderstandings of what Inclusivity truly means, falling under the original misconception that inclusive design is solely about accessibility for people with disabilities (Clarkson & Coleman, 2015).

These challenges often result in digital products that, while functional, fail to create truly inclusive and empowering experiences for all users. The consequences of exclusionary visual communication in digital products go further than usability issues, carrying significant social, cultural, and political implications (Beene et al., 2020).

1.5. The role of the designer in creating inclusive products

As Bühring and Moore (2018) argue, in the pursuit of inclusive design, the role of the designer extends far beyond making aesthetic and strategic decisions. Designers are increasingly recognized as key players in shaping not just products, but societal narratives and experiences around them. Central to this expanded role is the concept of "Inclusivity by Design," (Buehring & Moore, 2018, p.9) which challenges designers to create products and environments that are accessible and usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (Clarkson & Coleman, 2015).

However, achieving true inclusivity requires more than just technical skills or design principles. Bühring and Moore (2018) propose that emotional and social intelligence are crucial factors in innovation, describing them as the "'magic key' toward competitive resilience and long-term survival" (p. 6). They argue that these qualities, including self

and social awareness, empathy, and social skills, can boost employee performance, therefore improving diversity and adaptation to the wide range of human diversity. Moreover, as Holmes (2018) notes, inclusive design requires designers to step outside their own experiences since it is this emotional and social intelligence that translates into a deeper understanding of diverse user needs and experiences.

In addition, the role of the designer in creating inclusive products is inherently collaborative. Williams (2019) emphasizes the importance of participatory design approaches, where diverse user groups are actively involved in the design process, leading to more inclusive outcomes. In essence, the modern designer's role in creating inclusive products is multifaceted: they are innovators, advocates, collaborators, and ultimately, shapers of societal narratives.

1.6. Research questions and objectives

This thesis seeks to explore the role of design as a means of communication in shaping product narratives, with a specific focus on inclusivity. It aims to analyze how companies advocate for inclusivity in digital product design and how these principles are implemented in real life scenarios. Specifically, it seeks to address the following research questions:

RQ1: How do companies discuss and frame inclusive design principles in their communications about digital products?

RQ2: What strategies do companies and designers employ to communicate their commitment to inclusivity?

RQ3: How do industry professionals perceive and implement inclusive design practices?

The primary objective of this study is to critically analyze the current state of inclusive design discourse in digital products, identifying both best practices and areas for improvement. Building on this analysis, the research aims to propose practical strategies for designers and organizations to enhance the inclusivity of their design practices. Furthermore, this study seeks to explore the potential benefits of inclusive design for

both users and organizations, examining its impact on business practices. By investigating how companies and professionals discuss and approach inclusive design, the research aims to provide insights into more effective design processes. Ultimately, this thesis aspires to contribute to the broader discourse on design ethics and social responsibility in the digital age, emphasizing the crucial role of design in creating a more equitable digital landscape.

1.7. Significance of the study

This thesis holds significant value for both academic research and design practice in visual communication and digital media. From an academic perspective, it contributes to the growing literature on inclusive design by bridging theories and concepts from multiple disciplines, such as design studies, media studies, cultural studies, and business studies.

At its core, this study aims to highlight the relationship between design and communication, emphasizing how design choices influence the narratives conveyed by digital products and, in turn, shape user experiences and societal discourse. By recognizing design as more than mere aesthetics but as a conduit for conveying messages (Fruchter et al., 1996) and shaping perceptions, this research seeks to consolidate the role of design as a powerful medium of communication.

Furthermore, by providing a critical analysis of the current state of inclusive visual design, this thesis aims to inspire further research. It addresses important gaps by focusing specifically on the inclusive aspects of digital products, which have been less explored than other dimensions such as usability and accessibility (Williams, 2019).

From a practical perspective, this thesis has the potential to make a significant impact on how digital products are designed and developed. Identifying barriers, challenges, and best practices, provides valuable guidance for designers and organizations committed to creating diverse, representative, and empowering visual narratives.

This thesis also highlights the importance of participatory and collaborative approaches in fostering inclusivity. By engaging diverse user groups and leveraging their insights

and creativity, designers can create narratives that are more authentic, relevant, and meaningful (Williams, 2019).

Lastly, this work reflects a belief in the power of design for social good. Design has the potential to contribute to positive change by promoting diversity, representation, and empowerment in visual communication. By raising awareness of the importance of inclusive visual design and providing practical tools and strategies, this study can help create a more just digital landscape that benefits all users equally.

2. Previous research

The concept of inclusivity in digital product design has gained significant attention in recent years, with researchers and practitioners recognizing its importance in creating more accessible experiences. This section reviews the existing literature on inclusivity in digital product design, focusing on its definition, implementation, and perception within organizations.

Even though commonly associated with disability and intersectionality, Inclusivity in design goes beyond merely accommodating marginalized users. It encompasses a more overall approach to creating products that can be used by the widest possible range of users. As Holmes (2018) illustrates with the example of the seatbelt, inclusivity often leads to innovations that benefit all users, not just a specific segment of the population. Initially developed for airplanes during World War I, early seatbelts were notoriously unreliable (Stepback & Jesiek, 2023). Upon investigation, it was found that the seatbelts were installed at a uniform height, disregarding the varying statures of pilots. This oversight led to a pivotal realization: the need for adjustability to accommodate pilots of different heights. Implementing adjustable seatbelts resulted in significantly improved safety outcomes. Today, seatbelts are an essential feature in automobiles, highlighting the impact of inclusive design.

On the other hand, Emmanuel and Polito (2024) emphasize that inclusivity must consider intersectionality, a concept defined as understanding how multiple forms of inequality or disadvantage can create obstacles, even if they are not immediately apparent. Factors such as race, ethnicity, culture, gender, and class intersect and play a

significant role in shaping user experiences. These authors illustrate their findings with real-world examples of exclusion, such as the failure of oxygen readers to accurately measure blood oxygen levels in individuals with darker skin tones (Emmanuel & Polito, 2024). Such cases underscore the necessity for designers to consider a diverse range of users and their unique characteristics when developing products. They conclude their analysis by asserting that, to create digital products that include the majority of people, it is essential to center users in the design process. The initial step in ensuring inclusivity is to understand how race, gender, and class intersect and impact user interactions with the product.

To expand on the concept of centering the user in the design process, known as User-Centered Design, Zoltowski et al. (2012) introduce a design framework they call Human-Centered Design (HCD), which aligns more closely with the principles of inclusivity. By conducting an extensive literature review, Zoltowski et al. (2012) propose an HCD model that incorporates several pre-existing concepts, constituting a framework that leads to the creation of products for a broader range of user needs and experiences:

1. Empathic Design: This involves using empirical research techniques to understand how users experience their environments and interact with products.
2. Participatory Design: Originating in Norway in the 1970s (Björgvinsson et al., 2010), it involves users directly in the design process, aiming to balance power relations between them, technical experts, and managers.
3. Contextual Design: This approach focuses on understanding the context in which a product is used, employing ethnographic research to build models that capture user behaviors and patterns.

The concept of design thinking has been closely associated with human-centered approaches to product development. Kimbell (2011) provides a critical literature review of design thinking, analyzing various perspectives on the subject. Their work critiques designers' sometimes simplistic approach to using design thinking for solving complex social issues, emphasizing the need for closer collaboration with experts from other fields when addressing such challenges.

The implementation and perception of inclusive design practices within organizations have also been subjects of research. Amant et al. (2024) conducted a systematic

literature review to understand the perceived value of User-Centered Design (UCD) in organizations. Their findings reveal a correlation between an organization's User Experience (UX) maturity and its perception of UCD practices. In organizations with low UX maturity, designers often need to invest significant effort in educating both clients and colleagues about the value of UX to gain the necessary buy-in. The study also highlights that organizational buy-in typically occurs after successful project contributions become evident to a wider range of stakeholders, mainly when management recognizes the positive impacts. This suggests that demonstrating the tangible benefits of inclusive design is crucial for its adoption within organizations. Furthermore, Amant et al. (2024) note that a UX culture or mindset within an organization stems from the realization that addressing user needs leads to better products and competitive advantages. This underscores the importance of fostering a culture that values inclusivity and user-centered approaches.

While the benefits of inclusive design are increasingly recognized, its implementation often faces challenges. Lourenço et al. (2024) conducted a qualitative study involving 16 interviews with representatives of disability-inclusive spaces. Their findings reveal that even when initial plans for inclusive design are well-structured and approved, the final results often fall short of expectations due to various challenges, including lack of strategic planning, limited time and financial resources, operational capacity constraints, and lack of communication skills. The study concludes by highlighting the need to equally address the design process and organizational and resource-related factors to successfully implement and develop inclusive products.

Bozzi et al. (2024) argue for expanding the scope of research on inclusive design beyond immediate user interactions. They propose that to fully understand the influence of digital products, research must consider more complex social, physical, economic, and technological systems. This approach suggests moving beyond laboratory tests to field observation methods, shifting from a psychological to a sociological perspective on human work and activity. This expanded scope aligns with the idea of including users in the creation process, which is often overlooked. Bozzi et al. (2024) consider this inclusion a shift towards a more sociological perspective, emphasizing the importance of field observations over purely literature-based studies.

Education plays a crucial role in advancing inclusive design practices. Through an extensive literature review and interviews with professionals in the field, Emmanuel and Polito (2024) developed a syllabus aimed at educating designers about common design errors related to race and ethnicity. Their work emphasizes the importance of gaining insights into intersectional identity representation, highlighting that education is the foundation of inclusivity. The authors argue that designers have a significant responsibility not only in creating better products but also in raising societal awareness about inclusivity. This educational approach starts with designers who can then educate their colleagues and stakeholders within organizations, creating a ripple effect of awareness and implementation of inclusive practices.

The review of literature and previous studies reveals the multifaceted nature of inclusivity in digital product design. From the organizational perception of its value to the integration of intersectionality in design processes, and from the evolution of human-centered design approaches to the challenges in implementing inclusive practices, the field is constantly evolving and revealing opportunities for further research, such as the gap regarding the social implications of its implementation in organizations. As Amant et al. (2024) highlight the scarcity of studies on this topic, the lack of established measures and tools to evaluate the perceived value of User-Centered Design within organizations becomes more relevant, suggesting the need for further research to develop metrics and evaluation methods that can quantify the social and organizational impacts of inclusive design practices.

Furthermore, while much research has focused on the theoretical aspects and implementation challenges of inclusive design, there is a growing recognition of the importance of stakeholder perspectives. Understanding how professionals perceive and interact with inclusive design initiatives becomes essential. This thesis aims to address this gap by incorporating stakeholder views through interviews, providing a better understanding of the real-world impact of inclusive design.

3. Theoretical framework

This study uses a multi-faceted theoretical framework to analyze the evolving concept of inclusivity in visual design and its implications. The backbone of the analytical process is formed by integrating theories from disability studies, cultural studies, design theory, discourse analysis, and business ethics.

3.1. Fairclough's Three-Dimensional Model of Critical Discourse Analysis

CDA's multidisciplinary approach allows for a critical evaluation of the relationship between language and social behaviors (Gölbaşı, 2017). By applying this framework, power dynamics, societal implications, and potential discrepancies between stated values and actual practices in inclusive design communications are uncovered (Wodak & Meyer, 2015). Furthermore, this study adopts Fairclough's three-dimensional Critical Discourse Analysis (CDA) model to examine the concept of inclusivity in visual design and its implications. This framework, created by Norman Fairclough (1995), offers a method to examine the relationships between language, power, and social behaviors in inclusive design communications.

Fairclough's model integrates three interconnected levels of analysis: textual analysis, discursive practice, and social practice. The textual dimension focuses on the linguistic features of communications about inclusive design, examining vocabulary choices, grammatical structures, and textual organization (Gölbaşı, 2017). The discursive practice level, also known as interaction (Fairclough, 1995), explores how inclusive design discourse is produced, distributed, and consumed. It considers the processes of text creation and interpretation within specific institutional contexts. Lastly, the social practice dimension situates the discourse within broader sociocultural contexts, and how narratives reflect and shape societal attitudes. Using Fairclough's three-dimensional model, this research investigates how tech companies frame inclusivity through discourse, the channels through which these messages are disseminated, and how various stakeholders, including designers, interpret and engage with these communications and potentially uncover social practices related to technology use and design.

3.2. The Social Model of Disability (SMD)

The Social Model of Disability (SMD) introduces a framework for understanding disability in contrast to the traditional medical model (McBee-Black, 2022). The medical model attributes disability to the individual, considering it as a deficiency or irregularity that requires treatment and rehabilitation. This perspective implies that the individual must adapt to fit into societal norms and structures. Historically, this model influenced the development of policies and inclusive initiatives, which focused on addressing the impairments rather than the societal and environmental factors that provoked them (Griffo, 2014).

In contrast, the SMD, first theorized by Michael Oliver in 1981, shifts the focus to the societal structures that create barriers for people with disabilities (PWDs) (Oliver, 1981). This model suggests that mismatches arise from the interaction between a person's impairments and the environmental barriers they encounter (Holmes, 2018). Societal attitudes, physical barriers, and institutional policies contribute significantly to the disabling experience, rather than the impairments themselves (McBee-Black, 2022). Therefore, it is society's responsibility to remove these barriers to enable full participation for every member of society.

Over the years, the SMD has become the foundational perspective among disability rights advocates and scholars, highlighting the need for inclusive societies where everyone has equal opportunities (Griffo, 2014). Despite its overall acceptance, it has faced criticism for not fully addressing the complexities and diverse experiences of disability, arguing that it cannot tackle some of the current challenges facing the disability community (McBee-Black, 2022).

In response to these criticisms, the model has evolved into the bio-psycho-social model of disability. This contemporary model emphasizes the relationship between a person's health condition and the contextual factors, especially environmental ones, that can either facilitate or restrain their social participation. It reflects a broader understanding of disability, recognizing the interplay of biological, psychological, and social factors (Griffo, 2014). As the model evolves, it remains an essential framework for addressing disability rights and fostering inclusive environments (McBee-Black, 2022).

3.3. Cultural Encoding Theory (CET)

Stuart Hall's Cultural Encoding theory (CET) provides another framework for understanding the communication of inclusivity in digital product design. This theory suggests that meaning is not inherent in objects, but is constructed through cultural processes of representation. As Hall states, "Representation is the production of meaning through language" (Hall, 1997, p. 16). In the context of digital products, the "language" includes visual design, user interface elements, and interaction patterns.

The core of the theory is the idea that meaning is not fixed or universal, but culturally and historically specific. This concept of cultural relativism underscores the importance of context in interpreting and understanding representations, particularly relevant when considering both users' and designers' opinions towards inclusivity in digital products.

The CET proposes that representation operates through a complex interplay between three elements: "the world of things, people, events and experiences; the conceptual world – the mental concepts we carry around in our heads; and the signs, arranged into languages, which 'stand for' or communicate these concepts" (Hall, 1997, p. 45). This concept of cultural relativism is particularly relevant to inclusive design, which must consider different user groups with varying cultural backgrounds and abilities, that will all end up interacting with the same digital products and design elements. Therefore, a shared language exists, consisting of cultural codes and shared conceptual maps that members of a culture interpret similarly.

Furthermore, Hall's theory incorporates the concepts of discourse and power. He argues that representation is not just about language, but about "the production of knowledge through language" (Hall, 1997, p. 44). This perspective acknowledges that systems of representation are heavily linked to power relations and contribute to the construction of social reality. Consequently, the communication of inclusivity is not just about functional accessibility, but about the broader cultural meanings conveyed through design choices and practices.

3.4. Accessible User Experience Model (AUX)

The Accessible User Experience (AUX) model represents a paradigm shift in user experience (UX) design, aiming to integrate accessibility and inclusivity into UX

practices. Originally proposed by Sushil K. Oswal (Willers, 2024), AUX seeks to bridge the gap between traditional UX design and the needs of users with disabilities, particularly those who rely on assistive technologies like screen readers (Oswal, 2019). This model challenges the conventional approach to accessibility, which often treats it as an afterthought or "relegates it to an exercise in compliance with standards" (Oswal, 2019, p.5).

At its core, the model is founded on six key components that emphasize the active participation of users with disabilities throughout the design process to create “genuinely inclusive high-quality digital experiences for everyone, regardless of disability or age.” (Graham & Chandrashekar, 2016, p.60). These components include examining ableist attitudes, recognizing the autonomy and diversity of disabled users, educating designers about disabled people's lived experiences, building a disciplinary knowledge base, recognizing and privileging disabled users' knowledge, and engaging with disabled users during the decision-making process (Oswal, 2019). As with the social and bio-psycho-social, model of disability, this approach shifts the focus from the old-fashioned and proven wrong medical to a participatory and social model that includes disabled users as design collaborators.

The AUX model has gained popularity among researchers and practitioners seeking to create more inclusive digital experiences. Graham and Chandrashekar (2016) proposed the CLAAP (Comfort, Likability, Autonomy, Agency, and Pleasure) framework as a tool for evaluating AUX. This framework introduces the concept of pleasure points as a counterpoint to traditional pain points in usability testing, emphasizing positive user experiences for individuals with disabilities.

Despite its potential, implementing AUX requires a fundamental shift in design thinking and practices. It challenges designers to move beyond compliance with accessibility guidelines to create truly inclusive user experiences, which requires a reevaluation of design processes, tools, and methodologies to ensure they are inclusive from the outset (Willers, 2024). By integrating the perspectives and expertise of users with disabilities throughout the design process, AUX aims to transform digital products, making them more inclusive, usable, and accessible for all users, regardless of ability (Oswal, 2019; Graham & Chandrashekar, 2016; Willers, 2024).

3.5. Stakeholder Participation Theory

Stakeholder participation theory offers a framework for understanding and implementing inclusive decision-making processes in various contexts. This approach recognizes that decisions and projects often affect multiple groups with diverse interests and seeks to incorporate their perspectives and knowledge (Luyet et al., 2012). The theory challenges traditional top-down decision-making models by emphasizing the importance of involving all relevant parties in the process.

At its core, stakeholder participation theory suggests that involving diverse stakeholders can lead to improved trust in decisions, enhanced project design through the integration of local knowledge, better understanding of issues, optimized plan implementation, and increased public acceptance of outcomes (Schulz et al., 2003). Furthermore, the theory suggests that participatory processes foster social learning among participants, contributing to long-term community engagement (Sansone et al., 2023).

The implementation of stakeholder participation theory typically involves several key steps. As described by Luyet et al. (2012), the first step involves the identification of the different stakeholders based on their level of involvement. Next, these are characterized based on their interests, influence, and relationships. The third step involves structuring stakeholders and determining their levels of involvement, which can range from simple information sharing to full empowerment in decision-making as in the work of Sansone et al. (2023).

Despite its potential benefits, stakeholder participation theory faces several challenges in practice. These include increased costs and time requirements, potential stakeholder frustration if expectations are not met, and the risk of empowering already influential stakeholders (Schulz et al., 2003). In response to these criticisms, the theory has evolved to emphasize the importance of early stakeholder involvement, clear communication of process goals and limitations, and the use of skilled facilitators (Luyet et al., 2012; Sansone et al., 2023). Recent studies have also explored the potential of digital technologies, including blockchain, to enhance transparency and accessibility in participatory processes (Sansone et al., 2023).

4. Methodology

This study employs a qualitative approach to explore how different companies discuss inclusivity, and how these principles are implemented in product design. To answer the research questions, this study uses discourse analysis as the primary method, supplemented by semi-structured interviews with industry professionals. This methodological approach allows for a comprehensive examination of the discursive framing of inclusive design practices by companies. The supplementary interviews provide first-hand context and insights into the decision-making processes behind inclusive design implementations.

4.1. Research paradigm

This research is based on a constructivist paradigm, which aligns with the chosen methodologies of discourse analysis and semi-structured interviews. According to the constructivist paradigm, reality is created through language, interactions, and shared meanings (Creswell & Poth, 2018). This viewpoint is especially relevant to the study of inclusive design, as it emphasizes the significant role of communication and representation in forming social realities.

The constructivist approach mirrors the idea of inclusivity in design is not a static, universal truth, but rather a socially constructed and constantly evolving concept. This paradigm allows for an in-depth exploration of how companies create and convey notions of inclusivity through their communications and related discourse. It acknowledges that the textual components of company communications are not neutral, but are filled with cultural meanings and assumptions about users and their needs.

Discourse analysis recognizes that meanings are not intrinsic to textual elements but are constructed through cultural processes of representation and interpretation (Hall, 1997). This approach facilitates a critical analysis of how inclusive design principles are discursively framed, and how these representations might influence societal perceptions of inclusivity.

The inclusion of semi-structured interviews not only further supports the constructivist approach by recognizing multiple interpretations, but also serves as a crucial method to

mitigate potential researcher bias. By integrating the views of industry professionals, the study acknowledges that the practice of inclusive design is shaped by various factors, such as individual experiences, organizational cultures, and broader societal contexts.

By adopting this paradigm, it is necessary to recognize that the study's findings are not objective truths. The interpretations are influenced by multiple perspectives, including those of the researcher. The researcher is a product designer whose professional focus is on creating digital products aimed at improving people's lives. Daily work involves leveraging technology to develop user-friendly solutions, with accessibility and inclusivity being core principles of their design philosophy. This background provides insider knowledge of the tech industry, which can be both an asset and a potential source of bias in this research.

While the interpretation of the findings will inevitably be shaped by the researcher's professional background, the inclusion of diverse viewpoints through interviews, coupled with rigorous reflexive practices throughout the process, aims to mitigate potential biases. By openly acknowledging this positionality and incorporating multiple perspectives, readers are encouraged to consider the conclusions as a synthesis of insights from both a researcher-practitioner in the field of inclusive digital design and a range of industry professionals.

4.2. Adopted methodology

This study employs Critical Discourse Analysis (CDA) as a primary methodological approach to examine how companies discuss inclusivity and implement these principles in product design. Specifically, the research follows Fairclough's three-dimensional model, which considers text, discursive practice, and social practice as interconnected elements in the analysis of discourse (Fairclough, 1995, as cited in Gölbaşı, 2017), and examines the texts' production, consumption, and distribution (Fairclough, 1995). This framework allows for a comprehensive examination of how companies' text production and design practices are influenced by and contribute to the broader social context surrounding inclusivity in the landscape of digital products.

The selection of CDA is based on its ability to "critically evaluate the relationship between language and social behaviors" (Gölbaşı, 2017). As Fairclough (1995) states, the purpose of CDA is to "systematically question the open or latent mutual determination relations between discursive practices and social structure" (Fairclough, 1995, p.135) In the context of this study, this means examining how companies' discourse on inclusivity both shapes and is shaped by broader social structures and power relations in the field of product design.

Unlike content analysis, CDA offers a qualitative exploration of discourse's linguistic features, rhetorical strategies, and contextual factors (Fairclough, 1995; Gölbaşı, 2017). This makes it particularly suitable for analyzing the complex narratives of inclusivity in the chosen materials, which encompass a selection of design guidelines from companies known for their inclusive design efforts, including Apple's Human Interface Guidelines on Accessibility, Google's Designing for Global Accessibility, Adobe Inclusive Design Workshop, and Microsoft Inclusive 101 Toolkit Manual. As stated by Gonzalez (2024), these materials represent the primary channel through which companies disseminate their inclusivity and accessibility messaging. The analytical process begins with contextualizing the materials, followed by an examination of the textual elements, including "word choices, the way words are used together, whether controversial words are used or not, and positive and negative expressions" (Gölbaşı, 2017, p.9).

The next stage involves analyzing how the guidelines are produced by corporate teams and consumed and employed by designers and developers. Finally, the discourse is contextualized by considering "the economic, political, and cultural factors" (Fairclough, 1995, as cited in Gonzalez, 2024) under which companies' discourse of inclusivity relates to broader societal discussions on accessibility and inclusive design.

Moreover, to enhance the analytical framework and focus on digital products, elements from the Accessible User Experience (AUX) model will be incorporated (Willers, 2024). This involves examining the texts for evidence of ableist attitudes, recognition of the autonomy and diversity of disabled users, efforts to educate about the lived experiences of people with disabilities, recognition and privileging of disabled users' expertise, and inclusion of disabled users throughout the design process.

The integration of these AUX principles into the CDA framework allows for a more nuanced analysis specifically tailored to issues of accessibility and inclusivity in design.

It enables the research to not only examine how companies construct their narratives but also to evaluate how well these narratives align with best practices in accessible and inclusive design, as depicted in the case study of Willer's analysis of Microsoft's corporate discourse (2024).

Furthermore, as Willers (2024) describes, the AUX framework offers several valuable opportunities. It allows for a "systematic comparison of different approaches to inclusive design" (Willers, 2024, p.4) in digital products across multiple companies. This comparison can lead to the identification of best practices and areas for improvement in current inclusive design efforts. Furthermore, it provides a means to uncover concrete examples of how inclusive design principles are, or in some cases are not, being implemented in practice.

Semi-structured interviews are employed as a complementary method to enrich the critical discourse analysis of company design guidelines. This approach, as noted by Sansone et al. (2023) in their study of blockchain for social good, "allows for a more comprehensive understanding" (p.5) when examining emerging practices and technologies. Additionally, Brinkmann and Kvale (2018) highlight that conversations have historically been a fundamental means of obtaining systematic knowledge, emphasizing that an interview is essentially an interchange of views between individuals discussing a theme of mutual interest.

The semi-structured interview format is chosen for its flexibility and ability to provide "in-depth and robust understandings of an evolving phenomenon" (Sansone et al., 2023). This method used as a supplement to the critical discourse analysis, allows for a balance between structure and open-ended exploration, acknowledging the lack of consensus to define what inclusivity is and means. As Brinkmann and Kvale (2018) explain, qualitative methods, including interviews and discourse analysis, have become key methods in social research, highlighting the need for such approaches.

Guided by the AUX model and Stakeholder Participation Theory, semi-structured interviews with a diverse range of designers are be conducted to understand their experiences with and perceptions of inclusive design in digital products. Interviewees are selected using purposive sampling, aiming to include designers with varying levels of experience, from different types of companies (startups to established corporations), and across various sectors within the tech industry. These interviews include topics such

as decision-making processes behind inclusive design implementations, challenges and opportunities in implementing inclusive design principles, and the relationship between published products and actual design practices. Brinkmann and Kvale (2018) assert that qualitative interviews are pivotal for exploring "how individuals experience and comprehend their world, providing unique access to their lived experiences and opinions" (p.2).

The interviews are recorded and transcribed for analysis. As suggested by Sansone et al. (2023), an inductive procedure is applied to the transcripts, aggregating the gathered insights into more abstract categories. While semi-structured interviews offer a powerful framework, **it is** important to acknowledge their potential limitations to understand why they are employed as a complementary method in this study. Brinkmann and Kvale (2018) caution that such interviews might sometimes reproduce common opinions and prejudices rather than generate new substantial knowledge about a topic, due to the potential influence of leading questions.

4.3. Sampling

This study adopts a purposive sampling technique to align with the qualitative scope of the research and the methodology. According to Martínez-Angulo et al. (2024), purposive sampling is ideal for qualitative studies because it allows researchers to select cases with significant data to gain a broad understanding of the phenomenon under examination.

For the CDA section, the sample consists of design guidelines from companies known for their inclusive design efforts, including Apple, Google, Adobe, and Microsoft. These materials are selected based on their relevance to the research questions, since each document represents the primary channel through which these corporations disseminate their inclusivity and accessibility messaging to designers and developers. The sample included:

1. Apple's Human Interface Guidelines on Accessibility: A step-by-step manual detailing Apple's recommendations to create accessible design, extracted and transcribed from the company's website.

2. Google's Designing for Global Accessibility: A three-part series exploring principles for building globally accessible products, extracted and transcribed from the company's website.
3. Adobe's Inclusive Design Workshop: An educational resource introducing inclusive design concepts and practices, downloaded from the company's website.
4. Microsoft's Inclusive 101 Toolkit Manual: A guidebook outlining Microsoft's inclusive design methodology and principles, also downloaded from the company's website.

Moreover, it is important to note that this study focuses on analyzing the guidelines rather than the products themselves for two primary reasons. Firstly, these guidelines serve not only as recommendations but also as frameworks, implying that products created by these companies since the guidelines' publication adhere to these principles. Secondly, guidelines offer a more stable subject for analysis compared to digital products, which are constantly evolving and being updated. This stability allows for a more comprehensive and consistent evaluation of inclusivity principles over time.

For the semi-structured interviews, a small sample is selected, which Belali (2023) and Martínez-Angulo et al. (2024) consider "a key feature of qualitative data" (Belali, 2023, p.24). The study aims to conduct 4-5 interviews, with a sample size determined by considering the feasibility of the study's timeframe and resources. The inclusion criteria for interview participants are:

- a. Product designers with experience in digital product design
- b. Familiarity with at least one of the design guidelines

The recruitment was conducted through professional networks and online forums dedicated to product design. Potential participants were provided with information about the study's objectives before giving consent.

The analytical process focuses on the critical discourse analysis of the guidelines, with insights from interviews serving as complementary data. Each set of guidelines is examined through Fairclough's three-dimensional model, emphasizing textual features, discursive practices, and social contexts. The AUX framework is applied to identify specific elements related to inclusivity and accessibility. This analysis uncovers

patterns, themes, and discursive methods used to frame inclusivity. The insights gained from the semi-structured interviews are then used to contextualize and validate the CDA findings, providing real-world perspectives on how these recommendations are interpreted and applied in practice.

5. Ethics

The legitimacy and credibility of research are heavily dependent on researcher integrity. As Merriam (2009) describes, this includes self-reflection, robust methodology, rigorous research methods, and an ethical research procedure. This study, adopting a constructivist paradigm, recognizes that its findings are interpretations affected by multiple perspectives, including those of the researcher and interview participants, rather than objective truths.

To mitigate any bias greater focus is placed on keeping open to different points of view. As Simons (2009) indicates, steps are made to ensure that the analysis does not have a persuasive effect. Ongoing reflexivity is performed throughout the research process, with the researcher constantly assessing how their expertise as a product designer may influence the study. Self-awareness is critical for maintaining the integrity of the scientific knowledge created (Brinkmann & Kvale, 2018).

The study aims to contribute to the improvement of inclusive design practices, keeping in mind the potential societal benefits of the research beyond its scientific value. It is vital to ensure that potential consequences arise for those participating in the research and the groups they represent (Flick, 2018).

Securing informed consent from interview participants is a major ethical consideration (Brinkmann & Kvale, 2018). Before the data collection, all participants were thoroughly informed about the research aims, the confidentiality of personal data, the processing of information, and how the results will be presented. Participants were informed that their information will only be used for research purposes and that they could withdraw from the study at any time.

To protect the participants' privacy, all identifying information was anonymized. However, as Brinkmann & Kvale (2018) argue, anonymity can be a double-edged

sword, potentially depriving individuals of a voice in the investigation. As a result, participants are offered the choice of being named if they want to present themselves publicly. Furthermore, transcribed texts adhere to the interviewees' statements, and data storage processes were designed to maintain the confidentiality of collected information. These practices aim to achieve a balance between protecting participants' identity and their entitlement to be acknowledged in the research.

The examination of publicly available corporate documents presents its own ethical concerns. The information chosen for analysis is sourced from publicly accessible online databases of corporate blog postings that are available for academic and research use. The study seeks a balanced approach, recognizing both strengths and opportunities for development in corporate inclusiveness efforts. Moreover, while ownership rights are not an issue due to their public dissemination, it is important to document all the analyzed materials. They are included in the appendix of this paper and referenced following the structure for citing a webpage or online document.

By addressing these ethical considerations, this study intends to maintain high ethical standards while also giving significant insights into the field of inclusive digital product design. As new considerations occur during the research process, ethical practices must be continually reflected on and adapted.

6. Presentation of results

This section presents the findings from the critical discourse analysis of design guidelines from four major technology companies, as well as insights gathered from interviews with industry professionals, in order to understand the current landscape of inclusivity framed by big corporations and contrast it to how it is perceived by industry professionals. To systematically analyze the discourse and address the research questions, two tables were developed. The analysis consists of Fairclough's three-dimensional model of CDA, integrated with principles from the Accessible User Experience (AUX) framework.

Table 1 focuses on the textual elements present in each company's guidelines, categorizing and comparing key aspects such as terminology, main themes, and

representation of diversity and disability. This comparative approach directly addresses RQ1 by revealing how each company constructs its discourse of inclusivity through language choices and framing. It aligns with Fairclough's textual dimension, examining vocabulary choices and textual organization. Furthermore, it illuminates the varying strategies employed by these companies to communicate their commitment to inclusivity, which is central to RQ2. By highlighting differences in emphasis - from Apple's focus on personalization to Google's global perspective, Adobe's historical context, and Microsoft's "Persona Spectrum" - the table provides insight into how each company positions its approach to inclusive design within the broader industry landscape. This analysis is informed by the Social Model of Disability and Cultural Encoding Theory, examining how these guidelines reflect or challenge traditional notions of disability and inclusivity.

Table 2 examines the discursive practices surrounding these guidelines, including their production context, target audience, and distribution strategies. This analysis aligns with Fairclough's discursive practice level, exploring how inclusive design discourse is produced, distributed, and consumed. It is crucial to understand how these companies are positioning themselves as leaders in inclusive design, directly addressing RQ2. Moreover, by exploring aspects such as intertextuality and unique features of each guideline, the table offers insights into how these documents might influence industry practices and perceptions of inclusivity, which is key to answering RQ3. This analysis is informed by the Accessible User Experience (AUX) model and Stakeholder Participation Theory, examining the extent to which these guidelines reflect principles of user involvement and diverse stakeholder engagement in the design process. The comparison of discursive practices across these influential companies provides a foundation for understanding the potential impact of these guidelines on shaping the future of inclusive design in the tech industry and beyond, situating the discourse within broader sociocultural contexts as per Fairclough's social practice dimension.

6.1. Textual analysis

Table 1. Comparison of textual elements in the design guidelines

Aspect	Apple	Google	Adobe	Microsoft
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Primary Terminology	"Accessibility"	"Global Accessibility"	"Inclusive Design"	"Inclusive Design"
Main Theme	Personalization and adaptation	Global diversity and contextual factors	Human diversity as a resource	Recognizing exclusion and solving for one, extending to many
Focus of Diversity	Personalization of device interaction	Cultural, linguistic, and economic diversity	Full range of human diversity	Spectrum of permanent, temporary, and situational disabilities
Representation of Disability	Focuses on capabilities and personalization	Intersectional approach, including situational disabilities	Challenges notion of "normal", emphasizes mismatches	Introduces "Persona Spectrum" concept
Ableist Language and Attitudes	Generally avoids, but occasionally frames features as "support"	Emphasizes global diversity and contextual factors	Directly addresses the issue of ableism and how it is avoided in the text	Examines biases and encourages learning from diversity
Technical vs. Conceptual	Highly technical, specific implementation advice	Balance of technical advice and conceptual understanding	Conceptual, focus on mindset shift	Conceptual with practical applications

Note. Table created by the author.

Language and Terminology:

All four companies use language that emphasizes the importance of inclusive design. However, there are notable differences in their approach, starting with the differences between “Accessibility” and “Inclusivity”.

Apple's guidelines consistently use the term "accessibility," framing it as a core design principle: "An accessible app or game supports accessibility personalizations by design and helps everyone have a great experience, regardless of their capabilities or how they use their devices” (Apple, n.d., p.1). This language positions accessibility as beneficial for all users, not just those with disabilities. In contrast, Google's guidelines frequently use the term "global accessibility," broadening the scope beyond disability: "No two users are exactly alike. Accessibility is almost always intersectional; norms of gender, religion, or class may further include or exclude people from technology” (Google, n.d.,

p.5). Both these framings align with the Social Model of Disability, acknowledging how creating accessible products can help remove multiple forms of inequality or disadvantage that become obstacles for people with disabilities.

On the other hand, Adobe and Microsoft use the term "inclusive design" prominently, and specify how Accessibility is different from Inclusivity. For instance, Microsoft's toolkit states "inclusive design is not about accessibility. Yes, accessibility is one small tenet of it, but inclusive design is about designing a diversity of things so everybody finds something to do" (Microsoft, n.d., p. 32). This language shift reflects a broader conceptualization of design that considers diverse user needs from the outset.

Representation of Diversity:

All guidelines emphasize the diversity of users but with different focuses. Apple highlights the variety of ways people interact with devices, highlighting the importance of personalization to adapt to each user and empower their "autonomy and individual preferences" (Apple, n.d., p.9). On the other hand, Google's guidelines place a strong emphasis on global diversity, considering cultural and linguistic differences alongside disabilities. Not only that, these are the only guidelines that talk about class differences and how important it is to include people with lower resources who have access to more modest or older technology: "It's critical to consider logistics like network cost and reliability, different generations and models of devices, and accessibility settings during the design process" (Google, n.d., p.5). Adobe starts recognizing historical exclusion when designing products, and concludes with the solution of including more diverse teams in the creation stage, stating that "we have to integrate the full range of humanity not just into the work we produce, but the systems we build to produce them. This is inclusive design" (Adobe, n.d., p.21). Lastly, Microsoft's toolkit introduces the concept of a "persona spectrum," illustrating how designs for people with permanent disabilities can benefit those with situational limitations: "Designing for people with permanent disabilities can seem like a significant constraint, but the resulting designs can actually benefit a much larger number of people." (Microsoft, n.d., p.19), broadening the understanding of who benefits from inclusive design.

Ableist Language and Attitudes:

While all guidelines generally avoid overtly ableist language, there are instances where the medical model of disability subtly emerges. For example, Apple's guidelines occasionally frame features as "helping" disabled users, which could be interpreted as reinforcing a helper/helped dynamic. Adobe's workshop manual makes a conscious effort to challenge ableist assumptions, stating: "Examine the word 'disabled.' The word itself is passive, implying something else has done the disabling. But what?" (Adobe, n.d., p.2) This framing aligns closely with the Social Model of Disability, encouraging designers to consider how their work might create or remove barriers.

Technical vs. Conceptual Focus:

Even though all guidelines are intended to be educational resources, Apple and Google's guidelines are more technically focused, providing specific implementation advice such as "a hit target needs to measure at least 44x44 pt" (Apple, n.d., p.7) or "test your layout and rendering on 480 x 800 px and screen sizes smaller than 4 inches" (Google, n.d., p.6)

In contrast, Adobe and Microsoft's guidelines are more conceptual, focusing on shifting mindsets. Microsoft's toolkit introduces the idea of "recognize exclusion" as a key principle. This approach aims to change how designers think about inclusivity, rather than just providing technical solutions. Moreover, Adobe's manual positions itself away from specific guidelines and standards, describing how these are good to ensure all stockholders work towards the same direction, but it is possible to meet these standards without creating truly inclusive products. As stated in the manual, "Inclusive design does not seek to do the technical minimum, but to improve products and services for everyone by listening to and partnering with marginalized users" (Adobe, n.d., p.8).

6.2. Discursive practice Analysis

Table 2. Comparison of discursive practices in the design guidelines

Aspect	Apple	Google	Adobe	Microsoft
Production Context	Part of developer documentation	Series of blog posts	Workshop manual	Standalone toolkit

Target Audience	Developers and designers on Apple platforms	Designers and developers with global focus	Broad audience, including non-digital fields	Designers and anyone interested in inclusive products
Distribution Strategy	Integrated into developer resources, available online	Blog series, freely available online	Downloadable workshop materials	Downloadable toolkit
Tone and Style	Technical, instructional	Educational, conversational	Historical, conceptual, interactive	Narrative, conceptual with practical examples
Intertextuality	References to Apple's design principles	Connects to global development issues	References historical context of design	Draws on inclusive design history and research
Unique Aspect	Platform-specific guidance	Global accessibility and economic considerations	Interactive workshop format	Emphasis on "solving for one, extending to many"

Note. Table created by the author.

Production:

All four guidelines are produced by large, influential technology companies, lending them significant authority in the field of digital design. However, the production process and authorship differ across the guidelines.

Apple's guidelines are presented as part of their developer documentation, suggesting they are produced by internal teams with a focus on technical implementation. This is evident in statements like: "You already design your experience to adapt to environmental variations" (Apple, n.d., p.8), which directly addresses the readers as the people responsible for the creation of digital products. The use of technical language, such as "UIAccessibilityCustomAction" and "accessibilityDragSourceDescriptors" (Apple, n.d., p.3), and frequent references to developer guidance underscore its focus on technical implementation. In contrast, while still aimed at developers and designers,

Google's guidelines are presented as a series of blog posts, adopting a more conversational tone and the inclusion of personal perspectives. This is present in quotes like "As UX researchers, we often find similar issues that impact users' ability..." (Google, n.d., p.16). Once again, the intended receptors are either designers developers, or any other agent involved in the creation of these products, which indicates an intention to foster a more comprehensive understanding of accessibility beyond technical implementation.

Conversely, Adobe's workshop manual and Microsoft's toolkit are presented as standalone resources, seemingly produced by inclusive design advocates and targeting a wider audience. Adobe's Inclusive Design Workshop stands as an educational resource and begins with a historical context of design thinking including group exercises. The introduction of conceptual frameworks like the "Persona Spectrum" (Adobe, n.d., p.37) positions it as a tool for design thinking rather than a set of technical guidelines. Microsoft's toolkit, for instance, opens with acknowledging contributions from external experts and establishes a philosophical foundation for inclusivity. In addition, it introduces broad principles such as "Recognize exclusion" (Microsoft, n.d., p.15) and its applications beyond software development.

This variation in production contexts influences how inclusivity is framed and what aspects are emphasized, reflecting different organizational priorities and expertise. While Google and Apple construct pieces to educate workers around the world through more specialized content, Adobe and Microsoft produce educational content that goes beyond the production of digital products and extends to other production fields.

Distribution:

All guidelines are freely available online, but their distribution strategies vary, reflecting different approaches to influencing industry practices, from platform-specific guidance to broader advocacy for inclusive design principles. For instance, to convey this analysis both Apple and Google's manuals had to be transcribed to offline text files from both company's main websites, while Microsoft and Adobe's were available for download as text files. Apple and Google integrate their guidelines into their broader developer resources, positioning inclusive design as an integral part of their development ecosystems. This integration suggests an expectation that all developers working on

their platforms should engage with these principles. The same applies to Adobe and Microsoft, with the difference that they also distribute their guidelines as downloadable toolkits, encouraging wider use beyond their own platforms. This is clearly visible in Microsoft's kit, which explicitly states: "We offer these guidelines as simple starting points for meaningful change" (Microsoft, n.d., p.2) positioning their toolkit as a catalyst for industry-wide transformation.

Consumption:

The consumption of these guidelines is also influenced by the companies' market positions. As industry leaders, their guidelines likely shape design education and professional development practices, influencing how new generations of designers understand and implement inclusive design. As already stated in the production section of this chapter, Apple and Google's guidelines are primarily aimed at developers and designers working on their platforms, as evidenced by their technical focus and integration with other development resources. Adobe and Microsoft's guidelines appear to target a broader audience of designers, potentially including those working across various platforms or even in non-digital design fields. Microsoft's toolkit, for instance, states: "Inclusive design is for those who want to make great products for the greatest number of people" (Microsoft, n.d., p.2) suggesting a wide potential readership.

Intertextuality:

The intertextual elements reveal how the discourse of inclusive design, including concepts and frameworks, is heavily linked from one resource to another, and shaped through dialogue between major industry agents, academic institutions, and broader social movements.

For example, Microsoft's toolkit draws heavily on the history of inclusive design, situating its approach within a longer tradition. It explicitly acknowledges a wider community, stating, "We wish to thank the many people who contributed to this toolkit... It reflects a wide community of people across Microsoft and beyond" (Microsoft, n.d., p.58). The toolkit specifically mentions "Jutta Treviranus, head of Inclusive Design at OCAD University, director and founder of the Inclusive Design Research Centre and the Inclusive Design Institute" (Microsoft, n.d., p.58), demonstrating a connection to academic research in the field.

Google's guidelines explicitly connect to global development discourses, referencing challenges faced in emerging markets. For example, they discuss how "In Uganda, for example, internet access typically costs 11 percent of the average person's income" (Google, n.d., p.5), linking their approach to broader socio-economic considerations.

Apple's guidelines, while more technically focused, still reference broader accessibility standards. They mention the "Web Content Accessibility Guidelines (WCAG) color contrast formula" (Apple, n.d., p.7), indicating alignment with international web standards.

Lastly, Adobe's manual references historical figures and concepts that have shaped inclusive design thinking, and incorporates contemporary academic concepts from fields like legal studies and sociology. For instance, it mentions Adolphe Quetelet, stating, "Quetelet is known as the founder of the field of anthropometry, literally translated as the measuring of humans" (Adobe, n.d., p.2). This reference situates their approach within a broader historical context of human measurement and categorization. The manual also draws on more recent academic work, referencing "Kimberlé Crenshaw, a law professor at Columbia and the University of California, coined the term 'intersectionality'" (Adobe, n.d., p.5).

6.3. Social practice analysis

All four guidelines position inclusive design as a response to and a shaper of societal attitudes towards disability and diversity. Microsoft's toolkit explicitly frames inclusive design as a tool for social change: "Every decision we make can raise or lower barriers to participation in society. It's our collective responsibility to lower these barriers through inclusive products, services, environments, and experiences" (Microsoft, n.d., p.10). They all converge in the Social Model of Disability, shifting focus from individual impairments to societal barriers.

However, the degree to which the SMD is consistently applied varies. Apple's guidelines, while advocating for accessibility, sometimes revert to a more medical model in their language, potentially reinforcing existing power structures that position disabled people as passive recipients of help.

Google's guidelines emphasize global inclusivity, challenging Western-centric design norms: "Living in an increasingly globalized world means that there's an opportunity to proactively build ethical and meaningful products that are inclusive of societies and cultures worldwide" (Google, n.d., p.1). This approach acknowledges and attempts to address global power imbalances in technology design.

The Accessible User Experience (AUX) framework provides valuable insights when applied to these guidelines. All four sets of guidelines show evidence of efforts to examine ableist attitudes and recognize the diversity of disabled users. For example, Microsoft's persona spectrum concept aligns well with AUX's emphasis on recognizing diverse user needs, as seen in their statement: "Designing for people with permanent disabilities can seem like a significant constraint, but the resulting designs can actually benefit a much larger number of people" (Microsoft, n.d., p.19).

However, the guidelines vary in their alignment with other AUX principles. While all emphasize the importance of understanding user needs, they differ in the extent to which they advocate for the direct inclusion of disabled users in the design process. Microsoft and Adobe's guidelines more explicitly call for user participation throughout the design process, aligning closely with AUX principles. For instance, Adobe's manual positions itself away from specific guidelines and standards, stating that "Inclusive design does not seek to do the technical minimum, but to improve products and services for everyone by listening to and partnering with marginalized users" (Adobe, n.d., p.8).

The AUX framework also highlights areas where the guidelines could be improved, particularly in more explicitly recognizing and privileging disabled users' expertise. This analysis reveals opportunities for companies to further enhance their inclusive design practices in line with AUX principles.

In addition, the guidelines reveal one of the biggest concerns when it comes to inclusive design, which is the tension between inclusive design as a moral imperative and as a market opportunity. Microsoft's toolkit explicitly frames inclusivity as good for business, stating that "designing for inclusivity not only opens up our products and experiences to more people with a wider range of abilities" (Microsoft, n.d., p.10). This dual framing reflects broader societal debates about corporate social responsibility and the role of businesses in advancing social goals. It also raises questions about the

potential commodification of inclusivity and whether market-driven approaches can fully address systemic inequalities or are just profit-driven strategies.

Interestingly, none of the guidelines prominently feature discussions of legal requirements or regulations around accessibility. This absence might reflect a desire to frame inclusive design as a proactive, values-driven practice rather than a compliance issue. However, it also potentially downplays the role of disability rights movements in driving legal changes that have made accessibility a requirement in many contexts.

All guidelines implicitly promote technology as a solution to accessibility challenges, reflecting a broader societal trend of technological solutionism, as can be seen in sentences like "We aim to build experiences that unify people and embrace individuality" (Adobe, n.d., p.45) or "it's what drives us to create a world that makes lives better. The result is technology that's inclusive" (Microsoft, n.d., p.58). Conversely, there is a remarkable exception inside Microsoft's toolkit, that suggests that building inclusive technology is not the only way to achieve inclusive societies, stating that "at an individual level, how much money we have at our disposal determines a lot about how (or whether) we interact with technology...It is worth noting how often we talk about reaching everyone in the world in technology" (Microsoft, n.d., p.20). While this solutionist approach has the potential to create more inclusive products, it also risks overlooking systemic barriers that technology alone cannot solve, as it is particularly evident in Google's guidelines, which acknowledge broader societal issues like poverty and lack of education but primarily focus on technological solutions. Furthermore, Google's guidelines, with their focus on global accessibility, raise important questions about the role of large, primarily Western tech companies in shaping global design standards. While aiming for inclusivity, there's a risk of imposing Western design norms on diverse global contexts.

Regarding power dynamics between designers and users, all guidelines convey the need for including users in the design process, which aligns with the AUX principle of including disabled users throughout production. However, the language often positions designers as the primary agents of change, potentially reinforcing existing power structures in the tech industry that may not always match reality. This reflects a broader challenge in implementing AUX principles, which call for a more collaborative and equitable relationship between designers and users.

The variation in how closely each set of guidelines aligns with AUX principles reflects broader societal debates about the role of technology in addressing social issues, the balance between profit motives and social responsibility, and the most effective ways to achieve true inclusivity in design. As the field of inclusive design continues to evolve, these guidelines and their alignment with frameworks like AUX will likely play a crucial role in shaping industry practices and societal attitudes toward inclusivity and accessibility.

6.4. Interview findings

This study draws on insights from three product designers with diverse backgrounds and experiences in the technology industry. The participants include a senior designer with seven years of experience in onboarding and engagement at a fintech startup, a product designer with over four years focused on UX/UI design for startups and blockchain technology, a lead product designer specializing in SaaS health tech products and a senior designer managing mobile app development for a well-established digital agreement platform. These perspectives span early-stage startups to established organizations across fintech, blockchain, health tech, and digital document management, offer a broad view of how inclusivity is understood and implemented in various product design contexts.

The interviews reveal a range of interpretations and approaches to inclusivity among designers. One participant defines inclusion as "designing with people, not for people," aligning with Microsoft's guidelines and emphasizing the importance of working with diverse user groups throughout the design process. Another designer views inclusion through the lens of accessibility, focusing on ensuring that every user can access the products to effectively achieve their goals. These varying concepts illustrate the evolving nature of inclusion in design, reflecting the diverse interpretations found in previous corporate guidelines.

Despite a general consensus on the need for inclusive design, the interviews identify several persistent barriers to its implementation. A common issue is the lack of organizational maturity in inclusive design standards, particularly in startup environments. One designer highlights that, despite their company's size, accessibility is

not prioritized, indicating a disconnect between theoretical understanding and practical execution of inclusive design in many firms. On the other hand, one interviewee highlighted their company's structured approach to inclusivity, including a chief inclusivity officer and dedicated diversity, equity and inclusion (DEI) groups. This formal structure extends to their product development process, demonstrating a more systematic approach to inclusivity in more mature companies.

The tension between business priorities and inclusivity emerges as another significant challenge. Designers often navigate the line between applying inclusive design principles and meeting immediate business needs. One participant notes the impact of economic concerns, mentioning that budget cuts in their company, including within the product design department, often force difficult decisions between inclusivity and other pressing business concerns.

A lack of specific data and metrics to support inclusive design projects further complicates these efforts. Convincing leadership of the value of inclusivity without clear evidence is challenging, as one interviewee explains. The difficulty in quantifying the benefits of inclusive design often limits its acceptance and implementation at the organizational level.

Technical limitations also present significant obstacles to inclusion. Designers encounter challenges such as supporting older devices and accommodating intermittent internet connections, which are critical for achieving true inclusivity. These technical constraints often require creative problem-solving and sometimes necessitate compromises in the pursuit of inclusive design.

Despite these challenges, the interviews highlight various strategies designers employ to promote diversity in their work. User research is consistently identified as a crucial element of inclusive design, with all participants emphasizing its importance. One designer discusses how research findings are used to advocate for inclusivity, with data-driven insights serving as an effective strategy for building support. In addition, a designer shared specific practices, such as mandatory accessibility reviews and checklists before design handoff that ensure that inclusivity and accessibility are considered throughout the design process.

Education and advocacy are also key factors in promoting inclusive design within organizations. Designers frequently find themselves educating their teams and leadership about the importance and benefits of inclusion, aligning with insights from previous research by Emmanuel and Polito (2024). One participant underscores the difficulty of convincing leadership, who often require quantifiable evidence, and the significant knowledge required to do so. This educational aspect of a designer's role highlights the ongoing need to raise awareness of inclusive design principles.

While all participants demonstrate an understanding of inclusive design principles, their familiarity with specific corporate guidelines varies. One designer is "very familiar with the Microsoft Inclusive Design Toolkit," while others rely on general accessibility principles or internal guidelines. This variation suggests that while corporate standards can influence industry practices, their direct impact on individual designers may be less consistent than anticipated.

Participants express optimism about the future of inclusive design, with a shared belief that inclusion will become more integrated into mainstream design practices. One designer observes a growing recognition of inclusion as an essential component of effective design, rather than an optional extra. Furthermore, one designer speculated on the potential of AI and automation in accessibility testing, suggesting that these technologies could lower the barrier to implementing inclusive design practices, particularly for smaller companies with limited resources. However, interviewees stress the need for leadership to prioritize diversity and for technical teams to be more involved in implementing accessible solutions. This call for a comprehensive approach to inclusiveness, engaging all levels of an organization, reflects a mature understanding of what is required to create truly inclusive digital products and experiences.

6.5. Connections to CDA findings

The interview findings both confirm and challenge aspects of the corporate discourse examined in the Critical Discourse Analysis (CDA). While corporate guidelines make clear distinctions in terminology, such as Apple's focus on "accessibility" and Microsoft's emphasis on "inclusive design", the designers interviewed tend to use these terms interchangeably. This ambiguity suggests a potential disconnect between

corporate messaging and practical application in the field, highlighting the need for more consistent language around inclusion in design.

The CDA identifies a range of approaches in corporate guidelines, from highly technical (as seen in Apple's standards) to more conceptual (as in Microsoft's approach). Interestingly, the interviewed designers favor practical, implementable techniques, regardless of the conceptual frameworks provided by companies. This preference indicates a possible need for more concrete guidance in corporate inclusion resources, bridging the gap between theoretical frameworks and everyday design practices.

Both corporate guidelines, particularly from Microsoft and Adobe, and the interviewed designers emphasize the importance of involving a diverse range of users in the design process. However, the designers note significant practical challenges in achieving this ideal, such as budget constraints and difficulties in recruiting diverse participants. This gap between ideals and reality underscores the need for more practical guidance on effectively involving diverse users within real-world limitations.

While corporate guidelines often present inclusivity as aligned with business goals, the interviews reveal a more complex reality. Designers frequently struggle to justify inclusive design efforts when faced with immediate business demands, particularly in startup environments. The tension between long-term inclusivity efforts and short-term business needs emerges as a significant barrier to implementing inclusive design practices.

Some designers reflect Google's global approach to accessibility, considering implications for users with limited internet access or outdated devices. This alignment suggests that a broader, more comprehensive understanding of accessibility is gaining traction in practice, reflecting a growing awareness of the diverse contexts in which digital products are used.

Both the CDA and the interviews indicate that the concept of inclusion in design is continuously evolving and expanding. While corporate standards portray this evolution as a straightforward progression, the interviews depict a more complex reality in which designers are actively negotiating the definition and implementation of inclusivity in their daily work. This ongoing debate about what inclusion means in practice

underscores the dynamic nature of the field and the importance of maintaining a dialogue between theory and practice.

Finally, while corporate guidelines often emphasize technology as a solution to accessibility challenges, the interviews suggest a more cautious approach. Designers acknowledge both the potential and limitations of technological solutions in creating truly inclusive experiences, indicating a more nuanced understanding of technology's role in achieving inclusion.

7. Discussion and conclusion

7.1. Interpretation of key findings

The theoretical frameworks employed in this study serve primarily as an educational foundation for the analysis. However, the research findings also challenge and extend these theories, highlighting the need for theoretical frameworks that can keep pace with the rapidly evolving field.

The Social Model of Disability (SMD), for instance, as described by McBee-Black (2022), is crucial for understanding inclusivity concepts, but is also challenged by the findings. While corporate guidelines like Microsoft's "Persona Spectrum" align with SMD principles, the analysis reveals the limitations of the model in addressing the full spectrum of accessibility needs in digital product design. This suggests a need to expand SMD to better account for the intersectionality of disability with factors like technological access and economic status.

Secondly, Cultural Encoding Theory soothes the limitations of the SMD. It enables a deeper analysis beyond surface-level terminologies, revealing how cultural contexts influence the framing of inclusivity, as seen in the contrast between Google's global perspective and Apple's focus on individualism and personalization. However, this theory could be extended to consider how global tech companies influence and potentially homogenize cultural interpretations of accessibility, as seen in the work of

Beene et al., 2020, which highlights the social, cultural, and political implications of exclusionary visual communication.

The Accessible User Experience (AUX) model, used as an educational foundation and an analytical tool, identifies the discrepancies between idealized principles and practical realities reported by designers. This analysis pushes the model beyond its current focus on individual product experiences to consider broader organizational factors that influence accessible design practices. For instance, the model could be expanded to address how company size, maturity, and market position impact the implementation of inclusive design practices, as revealed in the work of Amant et al. (2024) that analyzes the perceived value of User-Centered Design in different organizations.

Stakeholder Participation Theory emerges not only as a foundation and an analytical tool but also as a crucial insight in this study. The theory's emphasis on diverse stakeholder involvement aligns strongly with the findings from both corporate guidelines and designer interviews. There is a clear consensus that inclusivity requires the participation of a wide range of stakeholders, as stated by Williams (2019), who emphasizes the importance of collaboration during the design process. However, while this study acknowledges the importance of diverse stakeholder involvement, it is primarily conducted through the lens of designers due to time and resource constraints. This focus on designers' perspectives aligns with Rubegni et al. (2022) discoveries, and can potentially create blind spots in understanding the full spectrum of inclusive design challenges and opportunities. Future studies could significantly enhance the findings by incorporating perspectives from a wider sample. This could include users with diverse abilities, corporate decision-makers, developers, and even policymakers.

These theoretical insights serve as a starting point to navigate the insights revealed in the analysis. They highlight significant tensions and opportunities in the field, setting the ground for further investigation on the topic. Although these limitations and future directions are further expanded in the upcoming sections, the following analysis delves into these findings, depicting how the theoretical frameworks manifest in practice and where they fall short in addressing real-world challenges of implementing inclusive design in digital products.

The analysis of corporate guidelines and interviews with industry professionals reveals an intricate landscape of inclusive design in digital products. On one hand, the language

mismatch between the manuals and practical usage is a notable finding. Although Microsoft stresses "inclusive design" and Apple concentrates on "accessibility," practitioners frequently use both concepts indiscriminately. This disparity points to a disconnect between corporate discourse and practical application, potentially resulting in inconsistent implementation of inclusive design principles.

Furthermore, there is a significant spectrum in inclusive design approaches. On the one side, corporate policies might be very conceptual (like Microsoft's toolset) or very technical (like Apple's documentation). Conversely, designers make it apparent that they prefer workable, achievable methods. This discrepancy highlights the need for more specific guidelines in corporate inclusion materials to close the knowledge gap between conceptual models and day-to-day design practices, which aligns with Apple and Google's guidelines.

Interestingly, despite their preference for more pragmatic methods, designers all agree that there is a serious deficiency of inclusive design knowledge among stakeholders at all levels. Because of this, designers frequently find themselves acting as advocates and educators for inclusive design within their organizations. This dual role of practitioners and educators highlights the necessity for training programs that address not only designers but also managers, developers, and other important stakeholders, which aligns with Adobe and Microsoft's guidelines. Moreover, it implies that in order for designers to successfully promote inclusive design and secure buy-in from their companies, they need more help and resources.

User involvement appears as a critical component of inclusive design for both guidelines and practitioners alike. However, designers face significant challenges in implementing this ideal, primarily due to budget constraints and recruitment difficulties. This outcome emphasizes the necessity of innovative, cost-effective methods for involving a variety of users in the design process.

Additionally, a tension emerges between business priorities and inclusivity efforts. Even though corporate rules portray inclusion as a priority in line with business objectives, practitioners, especially in startup organizations, frequently find it difficult to defend inclusive design efforts against pressing business demands. This disagreement emphasizes the need for more metrics and argumentation to show the real-world benefits of inclusion for business.

On the other hand, it is revealed that the concept of inclusivity itself is evolving, as reflected in the Social Model of Disability. Both guidelines and interviews reflect a more intersectional definition that goes beyond traditional notions of disability to include factors like economic status, cultural background, and technological access. This trend points to the emergence of a more comprehensive approach to inclusivity while presenting new challenges for designers and businesses to overcome.

Lastly, a notable finding is the contrasting views on both technology's role in inclusive design and the positioning of designers within this context. Corporate guidelines often present technology as the primary solution to accessibility challenges, while simultaneously positioning designers as the key agents of change in implementing inclusive design practices. However, practitioners demonstrate a more nuanced understanding, acknowledging both technology's potential and limitations in achieving inclusivity. This discrepancy not only emphasizes the need for a more balanced approach to technology but also highlights a potential misalignment in how the role of designers is perceived. While the emphasis on the designers' crucial role is important, this framing reinforces existing power structures in the tech industry that may not always match reality. It overlooks the collaborative nature of inclusive design and the importance of organizational buy-in at all levels. Moreover, it risks placing disproportionate pressure on individual designers to drive systemic change, overlooking the need for broader institutional and cultural shifts within organizations. This finding underscores the importance of a holistic, organization-wide approach to inclusive design that goes beyond technological solutions and individual designer efforts, recognizing the interplay of technology, design practices, and organizational culture in creating inclusive products.

7.2. Relation to research questions

RQ1: "How do companies discuss and frame inclusive design principles in their communications about digital products?"

There are notable differences in company strategies, according to the findings. Businesses use a variety of language elements to build an inclusive discourse. On one hand, companies like Apple and Google focus on "accessibility" with a more technical emphasis. On the other hand, Adobe and Microsoft promote "inclusive design" with a broader, more conceptual approach. Despite these differences, all companies position

inclusivity as a core design principle, though their framing ranges from personalization (Apple) to global diversity (Google) to human diversity as a resource (Adobe and Microsoft). This diversity in framing reflects the complex and multifaceted nature of inclusivity in digital product design.

RQ2: "What strategies do companies and designers employ to communicate their commitment to inclusivity?"

The study uncovers a range of approaches at both corporate and individual levels. Companies employ diverse discursive practices, including integrating inclusivity principles into developer documentation, creating standalone toolkits, and using narrative approaches. These strategies position companies as leaders in inclusive design and shape the industry discourse. Conversely, designers often resort to data-driven arguments and practical demonstrations to advocate for inclusivity within their organizations, highlighting a potential disconnect between corporate communication strategies and on-the-ground realities.

RQ3: "How do industry professionals perceive and implement inclusive design practices?"

Although inclusive design is typically valued by designers, organizational goals and budget limitations can make it difficult to implement it. These recommendations may have an impact on company operations and public perceptions of inclusivity, according to the social practice analysis. It is common for designers to become involved in training and campaigning for inclusive design, which suggests that more extensive assistance at all organizational levels is required.

7.3. Connections to theoretical framework

The findings of this study both support and challenge some aspects of the theoretical framework, revealing a complex interplay between theory and practice in the field. Fairclough's Three-Dimensional Model of Critical Discourse Analysis provides a crucial lens for understanding this complexity, exposing significant disparities between corporate discourse and practical implementation. For instance, while Apple's guidelines use technical language focused on "accessibility," designers report using terms like "accessibility" and "inclusive design" interchangeably, highlighting a disconnect between textual representation and discursive practice.

This disconnect extends to the application of the Social Model of Disability (SMD). While it is evident in Microsoft's "Persona Spectrum" concept, which emphasizes how designs for people with permanent disabilities can benefit also those with situational limitations, interviews reveal that practitioners frequently struggle to fully implement this model. Resource constraints and organizational priorities, particularly in startup environments, often impede the practice of SMD principles. In addition, the Cultural Encoding Theory (CET) is reflected in the varying approaches to inclusivity, demonstrating how cultural codes shape the interpretation and implementation of inclusive design principles across different contexts. Google's emphasis on global accessibility and economic considerations reflects a broader cultural encoding of inclusivity, while Apple's focus on device personalization represents a more individualistic cultural approach.

In addition, the Accessible User Experience Model (AUX) and Stakeholder Participation Theory reflect the challenges in translating inclusive design theory into practice. While Adobe and Microsoft's guidelines strongly emphasize user involvement, aligning with AUX principles, interviews uncover significant challenges in implementation. Designers often lack the resources or organizational support to include diverse users in the design process, challenging the practical application of Stakeholder Participation Theory. Moreover, the findings suggest that models like AUX could be expanded to address global design concerns more explicitly. The emphasis on global accessibility in Google's guidelines, for instance, highlights the need for theoretical frameworks that can accommodate diverse cultural, economic, and technological contexts. An expanded AUX model could incorporate principles for navigating cross-cultural design challenges and addressing the needs of users in resource-constrained environments globally.

These interconnected theoretical perspectives reveal a fundamental tension between idealized inclusive design principles and the practical realities of implementation. While corporate guidelines often align with theoretical models like SMD and AUX, the experiences of designers reflect a more complex reality shaped by resource constraints, organizational priorities, and global cultural factors.

7.4. Implications for design practices

The findings of this study reveal significant implications for the field of product design. On the one hand, there is a clear need for more practical, context-specific guidelines on inclusive design given the gap between corporate guidelines and actual implementation. Although conceptual frameworks are useful, businesses should continue to create more detailed, industry-specific rules that address the particular difficulties faced by designers in different fields. This could involve practical approaches for putting inclusive design into practice with limited resources, especially for new and smaller businesses.

Second, the study emphasizes how crucial organizational support is to the success of inclusive design initiatives. The difficulties that designers have found in promoting diversity indicate that businesses should cultivate an inclusive culture that extends to all organizational levels. This could involve offering all staff members continual training, dedicating resources for accessibility initiatives, and incorporating inclusive design principles into evaluation systems.

Thirdly, the results highlight the need for more accurate evaluation tools and measurements for inclusive design. The difficulty of assessing inclusivity's benefits to stakeholders shows an opportunity for creating standardized measurements that can show inclusive design's economic value. This could assist in bridging the gap between immediate business needs and long-term inclusion goals.

From a broader perspective, this study emphasizes how inclusion in design is constantly changing. Design techniques need to change as the concept broadens to include a wide spectrum of human variation and expands beyond traditional notions of disability. This involves a more intersectional approach to design that takes into account complex relationships between different elements that impact the user experience, such as access to technology, economic status, and cultural background.

In terms of corporate communication, the study reveals a potential mismatch between how companies frame their commitment to inclusivity and how it's perceived and implemented by professionals. This suggests that companies should strive for should aim for increased transparency and honesty in their messaging. Rather than presenting inclusivity technical challenge with an obvious solution, corporate messaging could

acknowledge the ongoing nature of this work and the organizational and cultural shifts required to achieve it.

Furthermore, the findings imply a need for more collaborative efforts. Even though current discourse often positions designers as the primary agents of change, a more effective approach could recognize the role of diverse stakeholders including users, developers, business leaders, and policymakers in building truly inclusive digital products.

7.5. Contributions to existing literature

This study integrates theoretical frameworks with real-world implementation, adding to the existing literature on inclusive design in digital products. Expanding upon Emmanuel and Polito's (2024) research on intersectionality in design, the findings reveal major tech companies are changing their approach toward inclusivity. For example, Google's guidelines show a thorough recognition of diversity around the world, taking into aspects like different internet connectivity speeds and economic backgrounds.

Additionally, the study offers empirical proof for the conclusions of Amant et al. (2024) about the connection between inclusive design principles and corporate maturity. Designer interviews reveal a considerable divide between well-established businesses with strong inclusive design procedures and startups that are finding it difficult to give these practices priority because of financial limitations. This study also addresses the suggestion made by Bozzi et al. (2024) for a deeper evaluation of inclusive design that goes beyond direct user interactions, by analyzing how corporate discourse, designer advocacy, and real-world limitations interact with each other.

While the findings generally support Zoltowski et al.'s (2012) Human-Centered Design model, they also highlight the practical challenges in its implementation. For instance, financial and labor limitations make it difficult for designers to include a variety of consumers in the design process. This conflict between ideal practices and practical constraints is consistent with the findings of Lourenço et al. (2024) about the mismatch between early inclusive design plans and final results, offering more context into the reasons behind these.

7.6. Limitation of the study and future research directions

While this study provides valuable insights, several limitations should be acknowledged. This study focused on guidelines from four major Western tech companies (Apple, Google, Adobe, and Microsoft) and interviews with four designers. This limits the scope of the results outside of the field of digital product design. Future research could expand on this by including a larger sample of companies and practitioners across different geographical areas and industry sectors.

Additionally, the study focuses primarily on the perspectives of designers and corporate communications, which may not capture the full picture of inclusive design practices. Future research could incorporate the views of other stakeholders, including users with diverse abilities, developers, and business leaders, to provide a more holistic view of inclusive design practices. Additionally, while semi-structured interviews support in-depth discussions, they may not capture all aspects of designers' experiences and perceptions.

On the other hand, the limitations also reveal several opportunities for future research. An area for exploration is the intersection of legal frameworks and inclusivity practices. Analyzing existing regulations could reveal the extent to which companies are obligated to implement inclusivity in their digital products, assess their efficiency and their impact on corporate practices, potentially informing policy recommendations.

Secondly, as technology continues to advance, the role of new technologies presents a new branch for exploration contributing to the literature on the evolution of inclusivity. As highlighted by one interviewee, leveraging AI could significantly contribute to ensuring inclusivity. Future studies could investigate how AI can be integrated into design processes, from automated accessibility checks to AI-powered personalization catering to diverse user needs.

Another crucial area for investigation is the effectiveness of inclusivity audits and post-design inclusive practices. Research into these afterthought processes could provide valuable insights into how well they contribute to inclusivity when it's not initially part of the design process. To strengthen the business case for inclusive design,

further analysis of its tangible returns is essential. Research exploring metrics such as user engagement, customer loyalty, and market expansion resulting from more inclusive products could provide compelling evidence for its adoption. This economic perspective could help bridge the gap between inclusivity ideals and business priorities.

By pursuing these interconnected research directions, future studies can continue to advance our understanding of inclusive design in digital products, ultimately fostering a more inclusive digital future.

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Appendices

1. Inclusive Design Guidelines

- Adobe's Inclusive Design Workshop:
https://drive.google.com/file/d/1N8OAu4JEdf2JOZBIWQwJK3_b3p0nER1E/view?usp=sharing
- Apple's Human Interface Guidelines on Accessibility:
<https://drive.google.com/file/d/1V0s1uKI4rZwFzD92LbkMxMfx7uPynp-e/view?usp=sharing>
- Google's Designing for Global Accessibility:
https://drive.google.com/file/d/1URTIcL8x2Ch0zvdMq9CmHtEbk_-0k6bQ/view?usp=sharing
- Microsoft's Inclusive 101 Toolkit Manual:
<https://drive.google.com/file/d/1wysoKRSL3BPmAkT-2rv7dzYccJ5hH5vC/view?usp=sharing>

2. Interview transcripts

- Interview 1:
https://docs.google.com/document/d/1CDjHWsa78rv4VN_wkPcKImN8MafM4qkVyFD1QZThCTE/edit?usp=sharing
- Interview 2:
https://docs.google.com/document/d/1mVBncYE7P5KEeerBEg7ml99Lb_my-SE0wrx2_tccKpI/edit?usp=sharing
- Interview 3:
<https://docs.google.com/document/d/1g7PU-V9xfRitKzqu2ZggUtO055kHJKM2hJxb8VMrTDC/edit?usp=sharing>
- Interview 4:
https://docs.google.com/document/d/1x0-wOofpms7OCuAtO9vT_JzfmK6fV11ZeCIArzLHQLw/edit?usp=sharing

3. Interview scripts

Introduction

Thank you so much for taking the time to participate in this interview. The purpose of this interview is to explore the concept of inclusivity in product design and understand how designers interpret and apply inclusive principles in their work. In the end, it is the sum of every designers' efforts that creates the concept, and my goal is to identify what it is and how industry trends influence these practices.

I want to assure you that your participation will be kept confidential, and your responses will be anonymous. Your name will not be disclosed, and your answers will be used only for academic research. With your permission, I would like to record this interview. The recording will be accessible only to me and my thesis supervisor.

If you have any questions or concerns about the study or the interview process, please feel free to ask at any time. Before we begin, do you have any questions?

Background

1. Can you tell me about your role as a designer?
2. What types of products or projects do you typically work on?
3. Are you familiar with any specific company guidelines or toolkits for inclusive design? If so, which ones, and how do you use them in your work?

Inclusivity and product design

4. How do you personally define inclusivity?
5. When you hear the term "inclusivity" in the context of product design, what comes to mind?
6. In your opinion, what are the key aspects of inclusivity that every designer should consider? How do these align with or differ from official company guidelines you're familiar with?
7. How do you see the relationship between accessibility and broader inclusivity in design? Are these treated as separate or interconnected concepts in your work?

Inclusivity and the design process

8. How do you incorporate inclusivity into your design process? Can you share an example?
9. In your experience, how are users with disabilities involved in the design process? Can you give an example?
10. Have you encountered any challenges when trying to design for inclusivity?
11. How do you balance inclusivity with other design aspects, such as aesthetics, functionality, and business requirements? Have you ever experienced tension between these different priorities?
12. Some argue that inclusive design is both a moral imperative and a market opportunity. How do you see this balance playing out in your work

Evaluating inclusivity

13. How do you know when a product is inclusive?
14. What tools, if any, do you use to evaluate inclusivity?
15. In your opinion, what steps can designers take to implement inclusivity in product design?

The future of inclusivity in design

16. How do you think the concept of inclusivity in design has evolved over time? How has this evolution been reflected in the guidelines or practices of the companies you've worked with?
17. What would you like to see more of in terms of improving inclusivity in product design?

Closing

18. Is there anything else you'd like to add or discuss?

Thank you so much for sharing your thoughts. Your insights have been incredibly helpful and inspiring. As for the next steps, I will be conducting interviews with other designers and analyzing the collected data. If you're interested in staying informed about the progress, I would be happy to share the thesis with you once it is complete.

Once again, thank you so much for your time and insights!