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HOW SOCIAL MEDIA USES UX DESIGN TO KEEP USERS ENGAGED – CASE STUDY: TIKTOK

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ABSTRACT

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The role of user experience (UX) design in social media can be a controversial topic, especially when its purpose is to increase user engagement and engagement with the platform. The purpose of this thesis is to examine the relationship between social media, UX design and engagement, focusing specifically on the TikTok platform as a case study. The study analyzes how TikTok uses UX design to keep users engaged. To investigate this, the thesis examines the features of the TikTok platform, such as personalized pages, addictive algorithms, and seamless transitions between content. Design principles are examined from the perspective of psychological theory in order to clarify their underlying logic. The research is based on previous studies and news articles on the topic.

The studies used found significant correlations with TikTok's UX design principles and user engagement. The For You page (FYP), as well as deeper online community building experiences had a strong impact on user engagement.

TikTok's "For You" page is based on users having very limited options. This eases the user's cognitive effort in using the platform, which thus enables longer use of the platform. The user experience of TikTok is therefore very effortless on a cognitive level.

The thesis is not only limited to technical aspects, but also extensively deals with the ethical dimensions of UX design in social media. Issues such as mental health and digital addiction are raised, explored, and offered solutions. The final section introduces the concept of ethical UX design and offers practical strategies for UX designers to promote more responsible and sustainable social media experiences.

This research not only provides an in-depth understanding of the TikTok platform, but also provides valuable insights for UX designers, social media designers, and policy makers who strive to develop a healthier and more ethical digital ecosystem. The results of the study can serve as a basis for future studies and practical measures that promote a positive user experience and responsible design in the digital environment.

Keywords: social media, ethical UX design, user experience, human computer interaction, TikTok, social media engagement

TIIVISTELMÄ

Syrjälä, Markus
Kuinka sosiaalinen media käyttää UX suunnittelua pitääkseen käyttäjät sitoutuneina – Case study: TikTok
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Käyttäjäkokemuksen (UX) suunnittelun rooli sosiaalisessa mediassa voi olla kiistanalainen aihe, erityisesti silloin kun sen tarkoituksena on lisätä käyttäjien sitoutumista ja koukuttomista alustaan. Tämän opinnäytetyön tarkoituksena on tarkastella sosiaalisen median, UX-suunnittelun ja sitoutumisen välistä suhdetta, keskittyen erityisesti TikTok-alustaan tapaustutkimuksena. Tutkimuksessa analysoidaan, kuinka TikTok käyttää UX-suunnittelua pitääkseen käyttäjät sitoutuneina. Tämän tutkimiseksi opinnäytetyössä selvitetään TikTok-alustan ominaisuuksia, kuten personoituja sivuja, koukuttavia algoritmeja ja saumattomia siirtymiä sisällön välillä. Suunnitteluperiaatteita tarkastellaan psykologisen teorian perspektiivistä niiden taustalla olevan logiikan selvittämiseksi. Tutkimus pohjautuu aikaisempiin aihetta koskeviin tutkimuksiin ja uutisartikkeleihin.

Käytetyissä tutkimuksissa löytyi merkittäviä korrelaatioita TikTokin UX-suunnitteluperiaatteideN ja käyttäjien sitoutumisen kanssa. For You -sivu (FYP), sekä syvemmät verkkoyhteisön rakentamiskokemukset vaikuttivat voimakkaasti käyttäjien sitoutumiseen.

TikTokin ”For You” -sivu rakentuu sille, että käyttäjillä on hyvin rajalliset vaihtoehdot. Tämä helpottaa käyttäjän kognitiivista vaivaa alustan käytössä, joka siten mahdollistaa alustan pidemmän käytön. TikTokin käyttäjäkokemus on täten hyvin vaivatonta kognitiivisella tasolla.

Opinnäytetyö ei rajoitu pelkästään teknisiin näkökohtiin, vaan käsittelee myös laajasti UX-suunnittelun eettisiä ulottuvuuksia sosiaalisessa mediassa. Mielenterveyden ja digitaalisen riippuvuuden kaltaiset kysymykset nousevat esiin, ja niitä tarkastellaan ja tarjotaan ratkaisuvaihtoehtoja. Viimeisessä osiossa esitetään eettisen UX-suunnittelun käsite ja tarjotaan käytännön strategioita UX-suunnittelijoille, jotta he voivat edistää vastuullisempia ja kestävämpiä sosiaalisen median kokemuksia.

Tämä tutkimus ei ainoastaan tarjoa syvällistä ymmärrystä TikTokin alustasta vaan myös antaa arvokkaita näkemyksiä UX-suunnittelijoille, sosiaalisen median suunnittelijoille ja poliittisille päättäjille, jotka pyrkivät kehittämään terveellisempää ja eettisempää digitaalista ekosysteemiä. Tutkimuksen tulokset voivat toimia perustana tuleville tutkimuksille ja käytännön toimenpiteille, jotka edistävät positiivista käyttäjäkokemusta ja vastuullista suunnittelua digitaalisessa ympäristössä.

Asiasanat: sosiaalinen media, eettinen UX-suunnittelu, käyttäjäkokemus, ihmisen ja tietokoneen välinen vuorovaikutus, TikTok

FIGURES

TABLES

TABLE OF CONTENTS

1 INTRODUCTION

Social media has become an integral part of our lives, revolutionizing the way we communicate and interact with each other over the internet. With over one third of the world population now using at least one social media platform regularly (Ortiz-Ospina, 2023), social media platforms have become a crucial source of entertainment and information for many people. User engagement has therefore become increasingly important, especially with the growing competition for user attention. This is where User Experience (UX) design plays a vital role.

UX design is the process of creating products, in this case social media platforms, that provide meaningful and relevant experiences to users. This makes the platform more user-friendly and enjoyable to use. Understanding the role of UX design in keeping users engaged on a platform is essential to develop engaging platforms that provide a positive user experience. In this study, we will examine the role of UX design in keeping users engaged on a platform, with TikTok serving as an excellent case example. This will provide insights into the relationship between UX design and user engagement on social media platforms.

To understand this relationship, it is necessary to briefly define social media platforms. Social media platforms, according to Kaplan and Haenlein's (2010) definition, are internet-based applications that allow the creation and exchange of user-generated content. Moreover, the study will focus on those platforms that allow users to interact with content, for example, through commenting or liking.

It may be beneficial to also define Human Computer Interaction (HCI), as the term appears a few times in this paper. HCI, while similar to UX, is a separate term. HCI studies how users interact with a system and attempts to find better approaches for humans to interact with computers (Keenan & Shiri, 2009). UX is a much broader term, examining the entire process, system, and user. The goal of "good" UX design is to improve customer satisfaction and loyalty to a specific company or product.

TikTok has become one of the most downloaded smartphone apps in the world, with a user base that has grown exponentially since early 2020 (Iqbal, 2022). Despite the controversies surrounding it (see Maheshwari & Holpuch, 2023), its success has been monumental. TikTok's AI-powered algorithm for showing users newly recommended short videos is a large draw for many of its users. This makes it a valuable case study as the platform has a comparatively similar user experience for all users, unlike most other social media platforms where users are more "spread out" in their own communities on the platform.

This study's significance lies in its ability to provide insights into the relationship between UX design and user engagement on TikTok. It also discusses potential anti-social risks involved with social media use. The findings of this study can also inform the development of future social media platforms, enhancing the overall user experience and improving customer satisfaction and loyalty.

The research questions this study attempts to answer can therefore be summarized as follows:

What are the main features used on the TikTok platform?
How do these features affect the user experience of the platform?
Why do these features affect user experience in the way they do?

The study comprises several chapters that contribute to understanding the role of UX design in social media platforms. The first chapter is the introduction, introducing concepts and the study. The second chapter examines UX design and defines it more comprehensively. The third chapter takes a more in-depth look at TikTok, discussing some of the problems facing the platform. The fourth chapter, the longest, examines TikTok's UX design principles and the psychological theories that they base upon. The entire fifth chapter is reserved for discussion about the ethics of these practices and introduces ethical UX design. The conclusion chapter then summarizes the study and its results.

The study was done as a literature review. Sources were searched using JYKDOK and Google Scholar using keywords such as "TikTok", "UX design", "social media UX", and "ethical UX design". Sources were then analyzed using Jufo grading and cite information. The study includes parts showing how the topic is being discussed in popular media, where newspaper opinion pieces may have been used as sources. These parts are clearly labeled.

2 UX DESIGN

This chapter will introduce the concept of UX design. It includes a few differing definitions and commonly used frameworks. It will also open the term of user experience (UX). Lastly, it will touch up on how user experience design is seen in the field of social media.

2.1 UX design in short

User experience (UX) is a concept that has gained significant importance in recent years. According to the International Organization for Standardization (ISO), UX refers to a person's perceptions and responses to the use or anticipated use of a product or service (ISO, 2010). Law et al. (2009) argue that user experience is a more individual concept with it being a dynamic, context-dependent, and subjective concept that varies from person to person.

Despite varying definitions, most agree that user experience is at its core about how a user experiences a product or service. It encompasses all aspects of a user's interaction with a product, system, or service. Don Norman, a co-founder of The Nielsen Norman Group originally coined the term "user experience" in 1995. The original meaning of Norman's new term was more related to human interface research and application (Norman et al., 1995). However, it has evolved into a broader concept that includes all aspects of a user's experience.

As user experience and user experience design are relatively recent additions to the field of research, a clear-cut definition may be difficult to agree on. Berni and Borgianni (2021) attempt to create a shared definition by comparing different popular definitions of user experience and combining aspects of them together. They have created a framework comprising of four aspects based on what dimension the user is being affected in: *Ergonomic, Cognitive, Emotional*, and *Other*. This framework helps designers understand which dimension the user is being affected in and design products that cater to those aspects. Berni and Borgianni emphasize how the term has become misused by showing that Norman himself admits that his original definition of UX was overused to the point that

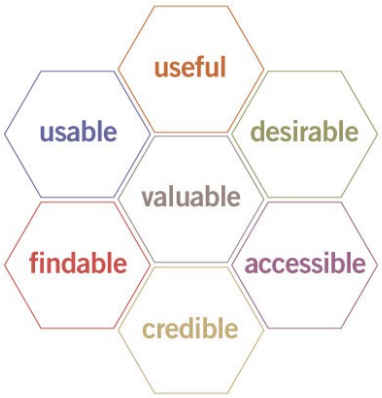
it has been largely misinterpreted. UX includes the whole system, not just the designed product, such as the interface of an app, though it is often misrepresented that way. (Berni & Borgianni, 2021)

In 2004, designer Peter Morville created the user experience honeycomb model (Figure 1) using current UX theory. The model includes seven separate but connected aspects of user experience. These aspects are as follows:

- *Useful,* which is concerned with the question: is the product or system useful for the user?
- *Usable*, which is concerned with the product's ease-of-use.
- *Desirable,* which shows how much a user desires to buy/use the product.
- *Findable*, which strives to create a product in a way in which the user can easily find what they need on a website for example.
- *Accessible,* which in concerned in designing a product which is accessible even to users with disabilities or impairments to normal use.
- *Credible*, meaning how much a user trusts in the brand or product.
- *Valuable*, meaning improving customer satisfaction and creating value to stakeholders.

Morville claims his model works particularly well as a modular approach to user experience, as each "honeycomb" is its own aspect and can be viewed entirely separately. It also helps explain the vastness of the term "user experience" and advances the conversation away from the basics. (Morville, 2004).

FIGURE 1 Morville's user experience honeycomb (Morville, 2004)



These all originated as ways to further the conversation about UX, expanding upon the more "obvious" aspects. This study will, however, be discussing user experience in a broader definition, rather focusing on TikTok design aspects and how they are perceived by a user.

2.2 UX design's appearance in social media

In its most basic form, UX design refers to the process of designing a product or service with a good user experience in mind. This often means designing the product or service to be pleasant to use, which is particularly important in social media platforms. There are several aspects to UX design often found in social media, including User Interface design and accessibility design. They also often include aspects of design which are not as easily seen, such as community building, trends, or personalization.

The topic of UX design used in social media can be a controversial one. Current practices seem to prioritize growth of the platform over the benefit of users. This has caused worries in many parents of young internet users, but more visibly, governments (see Maheshwari & Holpuch, 2023). While the role of UX design is to make an engaging user experience for users, it is not necessarily to keep users on the platform for as long as possible. In chapter 5 we will discuss ethical UX design as a solution to these issues and disagreements between social media companies and governments.

User experience on social media often bases around the need for social interaction from the user (Keenan & Shiri, 2009). Therefore, social media user experience design is usually based around the interaction that the platform can provide. The UX for most social media platforms is mostly, in its core, quite comparable. Core features usually include posted content, as well as public and private interaction with other users. Public interaction includes commenting features and the use of icons to show a particular feeling (eg. heart, like, laughing face). Private interaction is often a private direct-messaging feature, where messages can be sent between two or more users without anybody else seeing them.

UX design features can be further divided into subcategories based on different filters. Madden et al. (2013) categorize YouTube comments into three distinct categories based on their relevance to the actual content posted: comments related to video content, comments related to video context, and general comments that do not relate to video content or context. The theory was expanded on by Qiyang and Jung (2019), who introduce social media user types: *Content Browser*, *Learner*, and *Creator.* The *Content browser* group, meaning passive users who rarely create content or interact in meaningful ways despite consuming content on the platform, makes up the majority of users on the platforms studied. Social media platforms often try to use UX design to guide users into certain behaviors, most notably guiding *Content Browser* types to become *Creator* types.

3 TIKTOK

This chapter gives a brief introduction to our case study, TikTok. It explains what TikTok is, how it has grown so quickly, and what are some potential future challenges for the platform.

3.1 An introduction to TikTok

TikTok is a short-form-video social media platform, which has gained exponential popularity in the past few years. The platform has popularized the "Chinese style" short-form-video format in western markets.

Though TikTok is a relatively young platform in the competitive field of social media, its rapid growth has certainly proven it to be capable of surviving among competitors. As of this time, it is currently the most used social media platform by users under the age of 18, beating YouTube and Snapchat by a considerable margin. Users under 18 globally spend an average of 107 minutes daily on TikTok as stated on Qustodio's (2022) annual report.

TikTok's success can be partly attributed to its unique user experience design and the principles it stands upon. TikTok has no homepage or start button; instead, its videos play automatically when the app is opened, and users can only view content as curated by the recommendation algorithms (Zhao & Wagner, 2022). TikTok already has a higher amount of time spent per user on the platform when comparing it to competitors (Perez, 2022). This is a widely used statistic in the measurement of engagement online.

TikTok's UX design was quite unique at the time of its release, and its services clearly had, and still have, a large demand. Despite many other platforms now having functions with similar functions and user experience, most users prefer to keep using TikTok. TikTok's unique user experience is based largely off the fact that the app has less of a focus on "following" or "friending" other users to see only what they post on the platform, which has traditionally been what social media has been about. TikTok's appeal is more in diving straight into the near infinitely large "sea of content". When a new user opens

the app for the first time, they are welcomed by the infinite scrolling *For You* page of recommended short-form video. The algorithm then decides what kind of content it thinks the user would enjoy and personalizes the main feed in accordance with this data.

Another large draw to TikTok is the sense of community and creating trends (Bhandari & Bimo, 2022). Many of the features on TikTok, such as the tags written in a post's description, the *For You* page, and the use of background music or "sounds" all work together to create a space where new trends can spread, and users can find communities to join.

3.2 The rise (and challenges) of TikTok

TikTok's rapid growth began just as the first Covid lockdowns were being introduced ("TikTok's Rapid Growth", 2021). This is partly because TikTok could connect people in ways that were different from any other social media platform on the market at the time. TikTok's sudden surge in popularity meant that it became the second most downloaded application globally in 2019. Growth has not halted either, as it was also the most downloaded app globally in the three years since then (Statista, 2023, 2023).

This rapid rise in popularity has evidently been noticed by competitors. Meta, the parent company of both Facebook and Instagram has been struggling for years to attract and retain users under 25, who have been increasingly uninterested in these platforms (Hamilton, 2022). Shortly after the sudden rise in popularity of TikTok, both Facebook and Instagram implemented similar functions to their platforms. YouTube, Snapchat, and Pinterest all have implemented similar functions now as well.

Due to TikTok's huge success in a younger audience, it has become a target for worried parents, schools, and politicians. These concerned stakeholders have all noticed the increased time that is being spent on TikTok by children and have started pushing back in many ways (see Levin, 2022; Reed, 2023). Simply put, the morality of these social media platforms is being questioned when it comes to trying to keep young users on the platform for extended periods of time.

The pushback has been addressed by the company and on March 1, 2023, TikTok announced a new feature on the app, which would add a 60-minute daily screen time limit for users under the age of 18. This is after a 40-minute daily limit on the Chinese sister app, Douyin was added for users under 14 back in 2019 (Yang, 2023). However, the effectiveness of this change has been met with doubt and skepticism, as there are many ways to avoid these limits (Maheshwari, 2023; Yang, 2023). The limitations now placed on TikTok are also considerably less strict than the ones placed on Douyin. Underage users can simply lie about their age when creating an account or add more time to this limit with a passcode, which 13–17-year-olds will have chosen themselves regardless.

This is not the only controversy that TikTok has faced however, as the app has continuously been threatened to be banned abroad. The app has been

permanently banned in India since 2020 due to security concerns (“India Bans TikTok", 2020). The US government has also recently threatened to completely ban TikTok’s usage in the US unless a change in ownership from the Chinese-based ByteDance is agreed upon (Kharpal, 2023).

The Chinese government has historically been extreme in its measures to keep young people off social media (Yang, 2023). It also looks as though the rest of the world may be starting to follow some of these examples. An alternative approach, instead of simply limiting user access, could be ethical user experience design. Ethical UX, which will be further discussed in chapter 5, is designed to keep user’s best interests in mind sustainably.

4 TIKTOK DESIGN PRINCIPLES AND PSYCHOLOGICAL THEORY

This chapter will look at TikTok design features and examine them from the lens of psychological theory. These theories include ones used commonly in UX design, such as Hick's law, as well as broader ones not so commonly used in the field, such as flow theory.

4.1 Trends and community building

TikTok utilizes many small-scale design principles that are based upon psychological theory. TikTok's captivating design has been a crucial factor in its popularity, with the app's use of visual elements, as well as deeper ingrained ones playing a significant role in engaging users. Drawing on psychological theories, it is possible to examine how TikTok leverages these design elements to create an immersive and stimulating user experience.

One of the reasons for TikTok's extensive popularity might be its strong sense of community. The *For You* page (FYP) algorithm is a major factor in promoting this sense of community, as it personalizes content for the user based on their interactions and preferences. The more the app is used, the better it is at suggesting interesting content to the user. This algorithm enables the platform to showcase new content from various creators, who are often part of a specific group, thereby facilitating the creation of virtual communities of like-minded users with shared interests (Hiebert & Kortes-Miller, 2021).

According to Hammond (2017), online communities are defined as groups of individuals who gather to achieve goals, collaborate, and communicate using internet technology. The members must identify themselves as belonging to the group and feel a connection to other members. Hiebert and Kortes-Miller (2021) study how TikTok has been the medium for gender and sexual minority youth to create their own virtual communities. These communities allowed members to support one another, especially during the COVID-19 lockdowns when many had lost their regular external support systems. The results were

positive in showing the strong sense of community within these groups. (Hiebert & Kortes-Miller, 2021)

Omar and Dequan (2020) use the Uses & Gratification theory (UGT) to examine the influence of personality traits and user motivations on user behavior on TikTok. Katz et al. (1973) define UGT as a communication theory that investigates why and how people actively choose specific media to fulfill specific needs. It suggests that audiences are not passive, but rather have power over their own media consumption (Katz et al., 1973). Omar and Dequan found that TikTok users have different motivations when consuming and participating on the platform. Users mainly consume TikTok for escapism, social interaction, and archiving purposes, while they participate on TikTok for self-expression, interaction with others, and escaping daily pressure. The study also emphasizes the significant contribution of users' motivations in predicting TikTok usage behavior. (Omar & Dequan, 2020).

Another factor contributing to TikTok's sense of community is the interactive nature of the platform. Users can collaborate with each other by "duetting" or "stitching" other users' videos (explained in chapter 4.3), creating a sense of participation and engagement. These features have been used in various creative ways, such as musicians collaborating on virtual duets, or users co-creating skits. The platform often features trends or challenges in which this feature is used to create new content.

TikTok trends are an essential feature that further solidifies the feeling of community among users. A trend can be defined as a challenge or a piece of content that a whole community does together and spreads throughout the platform (*How Do Trends Start on TikTok?*, 2023). It is often something relatively small, harmless, and stays on the platform, such as a dance to a particular song or a new recipe. However, it can also be something potentially detrimental to society and even spread off the platform. An example of this is the "devious lick" trend, which involved stealing or vandalizing school property and posting the results on TikTok (Heyward, 2021).

However, it is worth noting that not all TikTok trends are negative or harmful. Many trends are simply meant to be fun and lighthearted, often having a positive impact by promoting self-expression and community building. During the COVID-19 pandemic when TikTok was at its most popular, users created a variety of trends that encouraged people to stay connected and engaged while social-distancing (see Kaye, 2022).

The power of TikTok trends to influence younger audiences is not a coincidence or a byproduct of the platform's design, but rather a deliberate feature of the TikTok user experience. One of the reasons why TikTok has been so successful in capturing the attention of younger generations is social media's ability to tap into their desire for social validation and peer acceptance (Guadagno et al., 2013). Trends on the platform are often seen as a way to signal belonging to a particular community or subculture. Participating in a trend can also be a way to gain social status and recognition from one's peers.

Another psychological theory that TikTok's, as well as other social media's, UX design draws from is the theory of social proof (Naeem, 2020). This theory suggests that people are more likely to follow the actions of others when

they are unsure of what to do themselves (Cialdini et al., 1999). TikTok's "likes" and "views" metrics as well as trends serve as social proof, indicating how other users are behaving and interacting on the platform. TikTok's algorithm is also designed to promote videos that are already popular (Klug et al., 2021), further amplifying their social proof and increasing their visibility to users. The spreading of trends can also be partly explained using this theory.

TikTok trends can even help push political messages forward (Literat, 2019), with users often creating trends with the intent to deliver a message to other users. These political movements include the #BlackLivesMatter movement, which gained significant momentum on TikTok (Janfaza, 2020), or LGBTQ+ rights movements, which have also become quite popular on the platform (Ohlheiser, 2020). Social media and trends have been proven to be surprisingly effective in changing people's views (Helberger, 2020). There has, however, been a growing concern that TikTok may use its power to alter the *For You* algorithm to push its own agenda, or that of the Chinese Communist Party (CCP), onto the young user base abroad ("TikTok Censors References", 2019).

TikTok's success can therefore be attributed to its captivating and immersive design that draws on psychological theories to create an engaging user experience. The app's personalized FYP algorithm and sense of community foster a strong connection between users, while trends and social proof leverage the desire for social validation and acceptance. The next chapter will dive deeper into TikTok's personalized For You page and how it contributes to the platform's success.

4.2 Personalization and the *For You* page

Possibly the most vital aspect that sets TikTok and its user experience apart from other social media platforms is its *For You* page (FYP). The entire platform is centered around the algorithm used to recommend its users new content to watch on the *FYP*, which has been vital to the success of TikTok. TikTok prefers its users to stick to watching what is recommended to them via the *FYP* and most users usually don't stray from this page despite the platform having other functions and pages (Bhandari & Bimo, 2022).

The inner workings of the *FYP* and its algorithm were for long unknown, with many users hypothesizing how it functions. The algorithm has naturally interested many users, as it could mean the difference between a video that goes "viral" and receives a high number of views, or one that fails expectations and is seen by only a handful of people (see Klug et al., 2021). As social media usage increases and *the fear of missing out* grows with it (Oberst et al., 2017), having a video go viral is becoming increasingly appealing for users. The algorithm has been since studied and is now understood on a theoretical level.

TikTok uses language processing and computer vision technology to classify text, audio, and visual components in each TikTok video. This information, along with the analysis of hashtags and video captions, is then utilized to evaluate a video for recommendation by the algorithm. New videos are first

shown to a small group of users who are likely to engage with it, and if successful, the video is then shown to a larger audience. As a result, any video from any user has the potential to appear on the FYP, regardless of its popularity or recency. According to TikTok, the algorithm prioritizes the sound, hashtags, and captions of videos that a user engages with and recommends similar content. (Klug et al., 2021). Concretely, this means that aspiring TikTok content creators can realistically believe in their videos potentially going "viral". This creates a somewhat unique user experience for creators, as they can always be chasing a goal without becoming too demotivated. This is not necessarily the same on many other social media platforms, where aspiring small creators have slim chance of getting featured on an explore page.

TikTok's algorithm plays a key role in promoting trends and ensuring that they spread quickly and widely throughout the platform. When a video starts to gain traction and garner likes and shares, the algorithm takes notice and begins to promote it to a wider audience. This can lead to a snowball effect, with more and more users jumping on the trend and creating their own versions of the video. This amplification of trends through the algorithm behaves as "viral" or "buzz-worthy" content, spreading rapidly and unpredictably across the platform.

According to Kang and Lou (2022), machine agency has a strong influence on the way users consume, create, and connect on AI-powered social media platforms like TikTok. The study's findings support previous research that suggests personalization plays a significant role in users' attraction to TikTok, as it provides content that is relevant to them with minimal effort required. However, the study also found that users often prefer not to engage with user agency features on TikTok, instead passively consuming content rather than interacting with it. These results somewhat contradict self-determination theory's core idea, which proposes that people want to feel in control of their actions, as well as other studies that show that people tend to be wary of algorithm-based decisions, preferring human-made ones. One possible explanation suggested is that users use social media as a form of relaxation and escape, which makes them more inclined to act differently from normal circumstances and perhaps more passively. The study also suggests that some user agency features like customization may not always be welcome since taking active control can consume cognitive energy. (Kang & Lou, 2022). The study highlights the extent to which AI algorithms underpin the TikTok user experience and how users perceive it.

Users can see the *FYP* as a "breath of fresh air" from traditional social media, as this method significantly lowers the cognitive effort required to browse and lets the user enjoy content without deliberately searching for it. In a way, there is no "skimming though" in TikTok, as they have eliminated the buffer between watching content and choosing it. A user cannot "speed-scroll" either in a sense, passing through content at high-speed searching for content they would want to watch like in traditional social media.

Zhao and Wagner (2022) theorize about a TikTok user's *state of flow* and how TikTok works toward strengthening it while using the app. The *state of flow* is a term often used in psychological theory and is defined by Csikszentmihalyi (1990) as being fully engaged and immersed in a given activity. Many

design principles TikTok uses are specifically intended to keep users in this *state of flow*, as claimed by Zhao and Wagner. They look at TikTok through the lenses of *Perceived recommendation accuracy, perceived recommendation serendipity*, and *perceived effortlessness.* These are all "technology affordances", meaning a possibility for action enabled by a technological artifact. (Zhao & Wagner, 2022).

Perceived recommendation accuracy measures how accurate the user feels that the recommendations made by TikTok's algorithm are to what the user would like to watch. They expand by noting that TikTok's recommendation algorithms use extremely complex factors. These factors include historical usage data and peripheral data, such as user device and settings. These are what allow TikTok to provide users with such a personalized feed. The article also references existing literature that suggests users prefer content that matches their preferences because of limited time available. Such content can promote a positive flow experience. Based on this, the article introduces a hypothesis that TikTok's recommended content and its accordance with user preferences promote a positive flow experience. This hypothesis is then shown to be true in the study. Algorithms which become too accurate at personalizing content may, however, cause other issues. This may cause an "information cocoon", where content becomes "stale" for a user and too predictable, which then harms the users state of flow. Here is where *Perceived recommendation serendipity* comes into play. (Zhao & Wagner, 2022).

Perceived recommendation serendipity in this context is used by Zhao and Wagner (2022) to measure the degree to which recommended videos exceed user expectations and elicit feelings of surprise. These experiences are desirable because they generate the "surprise and delight" feelings that heavily influence flow experience. Flow is a crucial aspect of user engagement, with curiosity and enjoyment identified as significant components in the social media context. Unexpected recommendations influence user flow experience positively, which is why TikTok also may offer content to a user that may not fit the user preferences. Users then act as "passive information receivers". Zhao and Wagner claim that perceived recommendation serendipity correlates the most with user flow experience, showing that the primary correlation with user engagement on short-video platforms is the unpredictability of recommended videos. (Zhao & Wagner, 2022)

Perceived effortlessness is a measure of how easy the user feels the usage of the platform is. The less cognitive effort that must be made on unnecessary aspects of the platform, the better the score. Zhao and Wagner (2022) find that video length weakens the correlation between *perceived effortlessness* and user flow experience on TikTok, as short-form video requires higher-frequency browsing and more cognitive effort than long form. However, TikTok's *FYP* delivers recommended videos to users without requiring a cognitive selection process, which then lowers the effort required in browsing. Zhao and Wagner conclude by proving that all three technology affordances discussed in the study significantly alter user experience, especially for newer users. (Zhao & Wagner, 2022)

TikTok's use of personalized content recommendations also pushes the psychological principle of confirmation bias. This principle suggests that people tend to seek out and favor information that confirms their existing beliefs and

values (Nickerson, 1998). TikTok's algorithm uses user data such as engagement history to generate personalized recommendations that are more likely to align with their interests or beliefs. By doing so, TikTok creates a user experience that feels tailored and personalized, increasing the likelihood that users will continue to use and engage with the app. This, however, can also have unintended negative consequences.

While the TikTok algorithm has been praised for its effectiveness in promoting content, social media algorithms that recommend content to users have also faced criticism in recent years. For example, YouTube's algorithm has received much disapproval since the company altered it in 2012 to focus on increasing the time spent on the platform. The change increased the amount and effectiveness of echo-chambers and conspiracy theories, creating what popular media has referred to as a widespread "radical alt-right pipeline" (Roose, 2019). This highlights the importance of responsible algorithm design and management, which considers not only engagement but also diversity and quality of content. As social media continues to evolve, it will be important for designers and developers to continue to prioritize user experience and to create algorithms that promote responsible content and engagement.

The FYP and its algorithm have been a vital component of TikTok's success, and it plays a crucial role in promoting trends and ensuring their spread across the platform. TikTok's algorithm is extremely effective in recommending personalized videos for the user. This creates a unique user experience for both passive content consumers, as well as creators.

4.3 Interaction

Generally, interaction is one of the core features of most social media. TikTok has industry standard interaction features that function both publicly, as well as privately. Public interaction is interaction which other users can see, such as commenting, dueting, or liking. Private interaction features are the private messaging (PM) feature, as well as most share options.

TikTok features such functions as a like function (heart), a comment section, a share option, and a "follow" feature. The platform also includes a few other features, hidden behind the share button. These include the unique duet feature, which allows a TikTok user to "duet" with another user, creating a split-screen video with another user's video. This often functions as a sort of video reply, response to a challenge, or a way to collaborate with other users.

Unlike some other platforms, such as Instagram or Facebook, where users can choose from a variety of emojis to express their reactions to a post, TikTok only has the heart button. This simplicity is deliberate, as it creates a uniformity of interaction and emphasizes the power of positive feedback (Burrow & Rainone, 2017). The heart function serves as a valuable tool for creators as well in measuring the success of their content. By tracking the number of hearts a video receives, creators can gain insights into which types of content are resonating

with their audience, allowing them to refine their content and increase engagement.

Through *social comparison theory*, people judge and evaluate themselves in comparison to particular individuals, groups, or social categories (DeLamater & Ward, 2013). In TikTok we can see this theory come into play, for example, through the ability to see engagement metrics on videos. Self-esteem and social identity theories are also both related to these metrics.

TikTok's interaction features play a crucial role in the platform's user experience. Interaction features promote user engagement and facilitate connections between users. The uniformity in interaction coupled with the "randomness" of the FYP create a strong user flow experience.

4.4 UI design

The User Interface (UI) of TikTok is designed with a focus on simplicity, usability, and engagement. The design aims to provide a seamless and intuitive experience for users, encouraging them to spend time and upload content to the platform.

One of the primary features of TikTok's UI is the navigation bar, which is situated at the bottom of the screen. This bar consists of five icons; Home, Discover, Create, Inbox, and Profile. The Home icon takes the user to the main feed, which includes the FYP, as well as a following page with videos uploaded by users that the original user has followed. The Discover icon takes the user to a page where they can explore trending videos, hashtags, and challenges. The Create icon allows users to record their own videos, while the Inbox icon takes the user to their private messages. Finally, the Profile icon displays the user's profile, where they can view their own videos and profile information.

Much of the success of the *For You* page UI is based on the psychological principle of *Hick's law*. *Hick's law* is commonly used in the field of UX design and states that the more options that are available to a person, the longer it will take for him or her to decide which option is best (Hick, 1952). Though there has been debate on the use of Hick's law in HCI (see Liu et al., 2020), it is still a popular rule-of-thumb used in UI and UX design. TikTok's *For You* page removes almost all the options usually given on social media platforms on what content to watch, and instead gives the user only a handful of options. The user can scroll forward (down), back (up), view a creator's profile, or interact with the video. When the guesswork of selecting something to watch is removed, the cognitive effort required to scroll is significantly reduced and the user will stay engaged for longer.

In terms of visual design, TikTok makes use of bright colors, bold fonts, and dynamic animations to create a visually appealing and engaging experience. TikTok's use of vibrant colors and hues, including those in content created by users is rooted in the principles of color psychology. Color psychology proposes that colors can profoundly impact our feelings, cognition, and conduct (Elliot & Maier, 2014). Various colors can elicit varying emotions, and employing

particular colors or hues can shape people's perceptions and engagement with a product or service.

TikTok attempts to keep its UI as minimal as possible, while also keeping core functions easy to use. A common phrase used in UX theory and human behavior study, which is based on the physical principle of least resistance, is as follows:

> "Lowering the difficulty of the desired behavior will increase the likelihood of that behavior occurring." (see Yu & Kong, 2016)

TikTok takes this into account by creating a UI experience which attempts to make the usage of the app as easy as possible. One commonly used template in UI design shows how comfortable it is to reach and tap a certain spot on a phone screen. TikTok keeps most of its features in a comfortable area without overcrowding buttons together.

TikTok also has integrated features to ensure that the app is easy to navigate and use for users with motor or cognitive disabilities. The app's touch and swipe gestures are intuitive and easy to use, making it simple for users to scroll through videos and interact with the app. Additionally, TikTok's user interface is designed with simple and clear icons that make it easy for users to understand and navigate the app's various functions.

TikTok's UI design is therefore focused on simplicity, usability, and engagement. The navigation bar, For You page, and use of bright colors and bold fonts all contribute to creating a visually appealing and intuitive experience for users. By implementing the principles of color psychology, TikTok elicits positive emotions and engagement from its users. The UI is also designed to be easy to use for all types of users, including those with disabilities.

4.5 Sounds and hashtags

Like most other social media platforms, TikTok features a hashtag function, where users can categorize their video to a specific searchable keyword. Setting itself apart from other platforms however, TikTok also features a "sound" function. TikTok sounds are typically short audio clips that can be sourced from songs or created directly on the platform by users. These sounds can be used as background music or as the focus of a video, allowing users to create a wide range of content. Like hashtags, sounds also play a critical role in creating trends on TikTok. Users use the same sound and create similar content, working into spreading a trend. Other users can then filter videos based on the sound used, making it easier to find and engage with content that is part of a particular trend.

Saxton et al. highlight the significance of hashtags as an advancement in social media communication. The way they indicate topics or themes and provide a participatory element creates a unique type of interaction. Unlike predetermined categories, hashtags are a user-generated system used for organization and classification. This enhances message classification, searchability, and

linking to existing communities. They claim that the community aspect of hashtags is their key strength, enabling the formation of networks that develop around them. Using hashtags allows movements to spread organically and virally to like-minded users on a social media platform. (Saxton et al., 2015).

Hashtags therefore are an essential part in furthering trends and conversation about a specific topic. These features also link with political power and movements on the platform. Many movements feature a hashtag to differentiate from the rest of the platform's content, such as the previously mentioned #BLM (BlackLivesMatter).

The power of sounds can also be measured by the size of the audience that hears a trending sound. A popular TikTok sound can make an otherwise relatively unknown song into a globally known one (Perkins & Croke). There have been countless examples of a song "blowing up" on TikTok, meaning the song becoming suddenly popular from being relatively niche or unknown. This is also a large feature in the user experience of TikTok. Many users report using the app largely in part for finding new music to listen to (see Stassen, 2021; Whateley, n.d.).

5 ETHICAL UX DESIGN

This chapter is about ethical UX design. It proposes a framework for examining the ethical aspects or "morality" of UX design choices. The chapter addresses the ethical implications of UX design aspects previously analyzed and attempts to find a solution to the linked ethical problems.

5.1 The power of UX design and ethical dilemmas

The topic of UX design in social media, specifically the kind to keep users engaged on the platform, is difficult to discuss without also discussing the aspects of morality. With an increasing amount of people experiencing negative effects from excessive use of social media, social media platforms may have a moral obligation to help combat social media addiction (see Wells et al., 2021). It may therefore be beneficial to briefly discuss the concept of ethical UX design.

UX design can be a powerful tool in creating engaging products and services, but unethical use of it, benefiting stakeholders rather than users, may be quite problematic. Studies have found that it may be easier than one might think to influence users on a social media platform (see Foster et al., 2010; Y. Wang, 2020). This makes UX designed to keep users on the platform especially dangerous.

An increasing number of experts agree that the impact of social media usage will vary depending on individual characteristics. Several studies have shown support to the "rich-get-richer" theory of online communication, suggesting that people who already have strong offline relationships may benefit the most from digital interactions. Those then with a vulnerability to mental health problems may be more prone to experiencing negative effects. (Orben et al., 2020).

Tandoc and Goh (2021) study the links between Facebook usage and depression. Their findings show that higher Facebook usage is correlated to higher rates of depression. The depressed users show high rates of envy toward other users and further increased Facebook usage. The case in this study worked as a sort of cycle, where a user would become increasingly depressed the more

they used Facebook, which would then cause the user to further increase their Facebook usage. (Tandoc & Goh, 2021).

The previously mentioned *social comparison theory*, in which people judge and evaluate themselves in comparison to others (DeLamater & Ward, 2013), plays a dangerous role in social media. This social comparison, already present in day-to-day life is significantly more present using social media as a medium. Facebook researcher's leaked studies, which have studied the harmful effects of social media usage shows that Facebook has known of the harmful effects Instagram has for young users, but has failed to combat them (Wells et al., 2021).

Internet addiction has been a highly debated topic for years. Though *internet addiction disorder* is not officially recognized by the WHO, *gaming disorder*, though controversially (see Q. Wang et al., 2019), is (WHO, 2020). *Gaming disorder* in this context can be adapted to cover social media as well. WHO defines gaming disorder as follows:

> Gaming disorder is defined in the 11th Revision of the International Classification of Diseases (ICD-11) as a pattern of gaming behavior ("digital-gaming" or "video-gaming") characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences.

Hou et al. discuss how social media addiction can cause serious issues for its sufferers. Many studies on social media usage and mental health have shown that the prolonged use of social media strongly correlates with mental health problems such as stress, anxiety, and depression and is negatively associated with long-term well-being. (Hou et al., 2019).

Another worry among popular media has been the potential shortening of young people's attention spans through the use of short-form-video social media (see McSpadden, 2015). Though this theory has also received widespread criticism (see Maybin, 2017), it is still a growing concern for many. TikTok has begun attempting to lengthen content by allowing videos on TikTok to be up to 10-minutes long. However, almost half of all users surveyed by TikTok said videos longer than a minute long were stressful and a third of users watched TikTok videos at double speed (Stokel-Walker, 2022).

Research has shown that using social media can stimulate the brain and increase the production of dopamine, also creating a so-called "dopamine loop". The effect on the brain from this constant stream of dopamine has been shown to be harmful, especially in children. (Macit et al., 2018).

A coalition of US state attorneys general have launched an investigation into TikTok for providing and promoting its social media platform to a young audience, despite the associated physical and mental health risks. The inquiry will examine the harmful effects of such usage on young users and TikTok's awareness of those harms. Specifically, the investigation will concentrate on TikTok's strategies to enhance young user engagement, including prolonging the time spent on the platform and increasing engagement frequency. (McKinnon, 2022).

The term "dark patterns" is used in UX research to define instances where designers use their knowledge of human behavior and psychology to implement deceptive functionalities that may not be in the user's best interest (Gray et al., 2018). Grey et al. (2018) study how designers can use these dark patterns to undermine end-user value in favor of shareholder value. The strategies can affect user perception, as well as user's action possibilities and communicative expectations. The article argues that designers have a responsibility to balance value and user interest, but the use of dark patterns creates ethical dilemmas. The article argues that designers must be aware of their ethical responsibility to avoid manipulating users or negatively impacting their experiences. (Gray et al., 2018).

Simply banning a social media platform, or banning social media altogether is not a solution to a problem of *internet addiction* becoming increasingly common. The issue with banning a platform is that another will simply take its place. Meta, for example, has been campaigning against TikTok and trying to sway the public against the platform in an attempt to take back market share in their shared field (Lorenz & Harwell, 2022). This is why ethical UX design may be the most sustainable way forward for the field.

5.2 Characteristics of "ethical" UX design

UX design can have unintended consequences that negatively affect users and society. Ethical UX design involves creating digital products that prioritize the well-being of users and society as a. whole. Ethical UX design considers the impact of design decisions on individuals and society and seeks to create experiences that are transparent, user-friendly, and respectful of users' privacy and autonomy.

Ethics is an issue which often goes unaddressed in the field of IT (see Vilaza, 2022). This is why it is important for UX designers to consciously keep ethical issues in mind when designing a service or product. This creates a more sustainable business model for the businesses and may improve public relations.

Ethical UX design is important for several reasons. First, it ensures that digital products do not harm users or society. It also emphasizes more on long-term sustainability of these platforms, without focusing on short-term profits or conveniences. More transparency is always positive in the field of IT.

Vilaza (2022) categorizes ethics in UX design through five normative principles. These principles are:

- Transparency, which aims to provide clear information without concealment.
- Choice, allowing users to choose their preferences.
- Well-being, which aims to protect users from harm.
- Inclusion, which aims to reach out to and include minority groups.
- Reciprocity, which shares benefits to all parties.

These principles introduce the main concepts of ethical UX design in an easy-to-understand way. Most aspects of these principles attempt to protect user freedom, being against unethical manipulation of users. (Vilaza, 2022). This gives a valuable and convenient framework to work from when designing ethical products.

The ACM code of ethics (Gotterbarn et al., 2017), is a standard code published by the ACM, which attempts to create shared ethical principles for the field of computing. It is broad and includes guidelines such as *Contribute to society and to human well-being, Avoid harm, Be honest and trustworthy, Respect privacy,* and *Ensure that the public good is the central concern during all professional computing work* (Gotterbarn et al., 2017). This guide exists to help in understanding and creating ethical designs, as well as keeping ethics in mind for IT professionals.

O'Brien et al. (2022) explore the implications of engagement and disengagement in the context of Human-Computer Interaction (HCI). The authors highlight the need to question why end-users should be engaged in the first place and who is benefiting from this engagement. They suggest that the goals of developers may not match user needs, and that creating space to question the ethics of these practices is essential. O'Brien et al. argue that the current discourse that highlights engagement as inherently "good" overlooks the notion that disengagement may be in the users' best interest. Therefore, making space for disengagement is equally important in HCI research and design. (O'Brien et al., 2022). This is a unique perspective, which deserves to be explored more deeply in future studies.

The benefits of ethical UX design aren't only for the users, however. In this case, social media companies utilizing ethical UX design can see noticeable benefits as well. These benefits include, but are not limited to, increased user trust, reduced reputation damage, long-term sustainability, and user satisfaction (*Enhancing Shopify User Experience (UX) Through Ethical Practices*, 2022). Chivukula et al. (2020) raises aspects of ethical awareness in designing a products' user experience. These include *Futuring*, where the designer looks forward to possible long-term societal impacts a design may have on its users in addition to immediate impacts (Chivukula et al., 2020).

The most immediate benefit for social media companies to switch to a more ethical UX design may however be in reputation. With the reputation of most social media companies already quite poor and only getting worse, as well as governments stepping in to intervene (Shireeva et al., 2017), many platforms may experience difficulties in the near future. Ethical UX design may prove an important tool in creating a sort of "win-win" situation for users, concerned parties, and companies. It can help create a sustainable and healthy way for people to use social media and have everybody happy with the result.

Pollmann (2023) presents a few solutions to the ethical dilemma of the use of personalized AI in keeping users engaged using an interactive toy robot as a case study. One of the solutions presented is to keep monitoring the user and adapting the AI behavior in accordance. The other solution is limiting time spent for the user in a more direct way. Pollmann proposes that though UX attempts to create an immersive experience, generating a flow experience may not be favorable from an ethical perspective. Pollmann suggests a more subtle way of

limiting time spent with the product by decreasing users' motivation to keep interacting after a certain period of time. Pollmann concludes that there must be a specific balance found between creating an immersive experience and keeping ethical dilemmas in check. (Pollmann, 2023).

It may be possible to generalize these results in order to find a possible solution to the ethical issues with social media. This might mean an algorithm, which attempts to keep usage in check by lowering engagement after a certain period. This could include lowering the personalization of new videos on the feed after a time threshold has been hit.

To conclude, I would suggest a new framework with which to review the ethics of a UX design.

With the competition for user attention as fierce as it is now, this could possibly just be an "ideal". However, social media companies are now facing quite serious challenges from governments and the public and ethical UX design could be an appealing solution. Social media companies are at a point where they have to act as the alternative may be one where nobody is satisfied.

6 DISCUSSION AND CONCLUSION

This chapter concludes the study and briefly summarizes the results found. Future work and limitations of the study are also touched on.

6.1 Conclusion

This study determined the structure of the TikTok user experience as a literature review. The main principles of design used on the platform were discussed, as well as explanation of the psychological theory they are based upon. Ethical UX design was also briefly discussed as a possible path forward in the field of social media UX design.

The findings of this study suggest that understanding the structure of the TikTok user experience and the principles of platform design used can help improve user engagement and satisfaction. Studies found that there is a significant correlation with UX design features and user engagement on TikTok. Many of these features guided the user to unwittingly increase engagement on the platform. By using psychological theory to inform design decisions, UX designers can create experiences that are intuitive, visually appealing, and captivating. This ultimately leads to increased engagement and user satisfaction on the platform.

It was found that the *perceived recommendation serendipity* or "randomness" of the TikTok FYP is the major factor in keeping users engaged on the platform. Users like to have personalized content, but also like to be positively surprised by recommended content.

However, it is important to note that this study also highlights the potential negative consequences of such design practices, such as addiction, privacy concerns, and the potential for harm to users and society. As a result, ethical UX design has been proposed as a possible solution to these issues, as it prioritizes the well-being of users and community.

By incorporating ethical principles such as transparency, choice, well-being, inclusion, and reciprocity, UX designers can create experiences that

are respectful of users' privacy and autonomy, while also promoting engagement in a responsible and ethical manner.

Overall, this study highlights the importance of understanding the principles of UX design on social media platforms like TikTok, and the need for ethical considerations to ensure that user engagement is promoted in a responsible and sustainable way. As the field of UX design continues to evolve, it is essential that designers prioritize the well-being of users and society, rather than solely focusing on engagement and growth. Because of these potential ethical implications, more research should be carried out in the aspects of emotion and interaction from the perspective of UX design.

TABLE 1 TikTok feature and user perception of it.

Feature	**How users experience it**
Community building	Users can find online communities to join
Trends	Social proof and validation, user feels included and "in" on a joke
FYP	State of flow, user scrolls content without much cognitive effort
Personalization	User gets a recommended, personalized feed to scroll through
Interaction	Users interact with content with low effort required
UI	Hick's law, minimal design with limited options
Sounds/hashtags	Sorting system, also pushes trends

The study also attempts to create a sort of framework to inspect the ethical aspects of UX design. It combines previously suggested frameworks into one.

6.2 Limitations and future work

Limitations of this study include the use of only literature review as the method of data collection. This limits the scope of the study to already existing research. Additionally, the study focused on the user experience of only TikTok and did not consider the experiences on other platforms. The study was also mainly focused on the user experience of the *content browser* user type, only briefly considering *creator* types.

Future work in this area could include more empirical studies. These could be surveys or interviews with TikTok users, to gain a more in-depth

understanding of the user experience on the platform. Research could also be conducted on the experiences of *creator* user types in more detail.

Future work could also examine other social media platforms to compare their user experiences and design principles with TikTok. This could lead to a deeper understanding of the different ways in which design impacts user engagement and well-being across different social media platforms.

Further exploration of ethical UX design in the context of social media could also be a beneficial avenue of research. As social media continues to play an increasingly important role in society, it is important to ensure that its design prioritizes the well-being of its users. Understanding of the topic and further conversation can create a space where ethics can be more deeply integrated with UX design.

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