



Digital turn in fashion trend forecasting

*An explorative study of artificial intelligence, media platforms,
and media users to understand changes in fashion trend
forecasting in the digital age*

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Abstract

This thesis explored how artificial intelligence (AI), media platforms, and media users affect practices of fashion trend forecasting. Fashion trend forecasting is an essential part of the fashion system. Forecasters provide fashion companies with insights about emerging trends. New opportunities in the digital age transform forecasting practices: (1) AI offers opportunities to explore machine-made and data-driven fashion trend predictions. (2) Digital media platforms make available vast amounts of fashion-related content, which changes how forecasters collect information. (3) An increasing number of media users participate in fashion dissemination and thus contribute to the stream of information available to leverage. Such changes open up to new ways of shaping fashion trends. Current research offers limited knowledge about the broader context of digital development in the fashion industry to understand how the digital infrastructure, with AI, media platforms, and media users, reshape practices of fashion trend forecasting. The broad approach that includes three major aspects, AI, media platforms, and media users, was inspired by the analytical perspective of Andrew McAfee and Erik Brynjolfsson, which describe digital development focusing on machines, platforms, and the crowd. The topic was explored through a literature review about AI, media platforms, and media users, six in-depth interviews with professionals from the fashion and trend industries, and a qualitative content analysis of the websites of three trend forecasting agencies. The results of this thesis indicated that AI, though relatively unexplored, is increasingly relevant in fashion trend forecasting. AI is applicable in this sector mainly to observe emerging trends faster, to reduce overproduction, and to meet consumer needs more precisely. On the other hand, the results also indicated perceptions of AI as unfitted for some qualities of fashion, such as garment tactility and emotional values. Moreover, the results suggested both benefits and concerns regarding the use of content from digital fashion media in trend research. Some of the results indicated that popular social media provide insights about current trends but might not be the best to use in trend forecasting work as it is too present and mostly represents the mainstream. User participation in fashion media was highlighted in the results as a crucial factor that drives change in the fashion industry. Particularly concerning the role of consumers, which has become more visible and involved in the forming of trends.

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With this master's thesis, I got to combine two of my greatest interests, namely fashion and media. It has been a slow but steep learning curve. The goal is finally reached.

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1 INTRODUCTION

Opportunities offered by the digital infrastructure are currently transforming the fashion system and ways of forecasting fashion trends. Big data; harvested from media platforms where users share their latest fashion obsessions, are then processed by the powers of artificial intelligence (AI), resulting in precise predictions telling the fashion industry what the consumers will desire next. Such opportunities for AI-supported fashion trend forecasting is a strategy that several players in the fashion and trend industries have started exploring (BoF and McKinsey, 2017, p. 58, Thomassey and Zeng, 2018, Luce, 2019, p. 141). Spotting emerging fashion trends in the digital age appears increasingly complex and like a race against time. Will AI become the solution to this challenge? This thesis will explore the digital infrastructure, concentrating on the relevance of AI, media platforms, and media users, and how it affects the fashion trend forecasting sector.

The underlying entanglements of digital media, data and algorithms form a digital infrastructure (Hepp, 2020). Hepp (2020) studies the implications of digital infrastructure to develop theories about deep mediatisation. Several scholars have found it useful to apply the mediatisation concept in studies of fashion to describe how the current media landscape shapes or influences processes in the fashion industry (Rocamora, 2016, Kristensen and Christensen, 2017, Skjulstad, 2018). Rocamora claimed that practices in the fashion industry are «dependent on the media for their articulation» (2016, p. 509). According to Rocamora, «people and institutions in the field of fashion have changed their practices for and with the media» (2016, p. 509). Kristensen and Christensen claimed that media is the reason for the existence of modern fashion (2017, p. 242), and Skjulstad suggested that applying media terminology in fashion research can be helpful to «fully understand how media and fashion co-evolve» (2018, p. 6).

According to an official report, *The State of Fashion 2018*, utilisation of AI was starting to emerge in all parts of the fashion value chain, also in predictive forecasting (BoF and McKinsey, 2017, p. 58). Predictive forecasting, or fashion trend forecasting which will be the applied term in this thesis, is a fundamental part of the fashion system and contributes to valuable insights about future trends for players in the fashion market to use as guidance in the creation and selection of new fashion collections (Blaszczyk and Wubs, 2018, Omotoso, 2018).

AI is software that can solve tasks and be artificially smart on its own (McAfee and Brynjolfsson, 2017, p. 67). AI-technology had a breakthrough in 2016 due to the achieved combination of the essential components: Data, Algorithms, Networks, The Cloud, and Exponential improvements in digital hardware (McAfee and Brynjolfsson, 2017, p. 95). The idea of AI had been around for decades, the first conference on AI was held in 1956 (McAfee and Brynjolfsson, 2017, p. 67), but AI needed faster computers, more storage space, and enough quality data to function. Still, AI is in an early phase, and current machine learning lacks the human ability of common sense (McAfee and Brynjolfsson, 2017, p. 86).

Among existing forms of AI, machine learning appears to be one of the most convenient forms to apply in fashion trend forecasting. Machine learning works well as a tool to predict outcomes (Merrill, 2018, p. 56), and being able to predict outcomes is fundamental in fashion trend forecasting. Machine learning means that software can suggest strategies based on recognised patterns in given data examples (McAfee and Brynjolfsson, 2017, p. 85). Because machine learning enables pattern recognition, it can support predictive analyses in fashion trend forecasting (Luce, 2019, p. 7). The body of research on AI in fashion trend forecasting is growing but still limited to mostly technological experimentations. The experimentations with AI in fashion trend forecasting suggested a dominant focus on datasets extracted from various media platforms, often social media but also online magazines and other fashion websites. These AI-experimentations also indicated a focus on data from specific groups or types of media users such as bloggers.

This thesis will explore AI in fashion trend forecasting from a media-oriented perspective to take on a broader contextual approach to the research topic. This approach includes media platforms and media users as crucial aspects of the investigation, which is important as it contributes to a broader understanding of how the digital infrastructure of AI, media platforms, and media users affect practices of fashion trend forecasting.

Fashion big data

In an era of big data and AI, Thomassey and Zeng identify opportunities and challenges for the fashion industry (2018, p. V). They interpret fashion as ‘one of the oldest human activities’ and highlight how the fashion industry is known to keep up with the technological changes in society (Thomassey and Zeng, 2018, p. V). However, recent changes involving AI seem a bit

troublesome for the fashion industry because of certain obstacles, such as the unclear scope of AI-methods, unidentified benefits in lack of AI-business models, and complications related to the implementation of AI-techniques (Thomassey and Zeng, 2018, p. 2). As a result of this, Thomassey and Zeng suggest that AI is not widely used in the fashion industry yet (2018, p. 2).

Nevertheless, Thomassey and Zeng propose opportunities for the fashion industry to utilise AI to leverage the amount of data related to fashion which they label ‘fashion big data’ (2018, p. V). Such data are «point-of-sales (POS) data, geographic information systems (GIS) data, social media data, virtual 3D data, sensory data, textile physical data» (Thomassey and Zeng, 2018, p. V). The role of social media data will be particularly central in this thesis because of the media-oriented perspective.

Rising demand

It is important to study developments in the fashion industry as it is one of the largest industries in the world with global impact (BoF and McKinsey, 2020, p. 7). The fashion industry is also central to the economy of many countries (Black, 2019, p. 114). There is an increasing demand for fashion worldwide with the most eminent rise in demand in the ‘Asia Pacific region’ (O’Connell, 2020). Predictions are indicating that the global consumption of fashion goods will rise to 102 million tons in 2030, which is a growth of 63% from 2017 (Black, 2019, p. 114). The global fashion market is rising in value, initially predicted to reach about 1.5 trillion dollars in 2020 (O’Connell, 2020). However, as a consequence of the Covid-19 pandemic in 2020, the global fashion industry will likely experience contractions in revenue for some time to come (BoF and McKinsey, 2020, p. 7).

1.1 Structure and purpose

1.1.1 Three categories: AI, media platforms, and media users

To explore how advances in AI and media and communication technologies affect fashion trend forecasting, I apply a comprehensive analytical framework inspired by the book *Machine, Platform, Crowd: Harnessing our Digital Future* by Andrew McAfee and Erik Brynjolfsson (2017). These authors highlight three essential aspects of digital development, namely machines, platforms, and the crowd, and claim that these aspects are reshaping the world of business (McAfee and Brynjolfsson, 2017, p. 14). McAfee and Brynjolfsson are presenting

minds, products, and the core as the counterparts to machines, platforms and the crowd. They claim it essential that companies across industries «rethink the balance between minds and machines, between products and platforms, and between the core and the crowd» (2017, p. 15).

- *Machines*: The breakthrough in AI-technology and further advances in machine intelligence offer new solutions across all industries (McAfee and Brynjolfsson, 2017). This thesis will explore how AI affects the fashion industry and fashion trend forecasting in particular.
- *Platforms*: The Internet, which is a platform of platforms, offers innovative ways to conduct businesses that are hard to compete against for non-platform competitors (McAfee and Brynjolfsson, 2017, p. 202). This thesis will explore the digital imperative of media platforms and how it reshapes the fashion system, and particularly the sector of fashion trend forecasting.
- *The crowd*: As an increasing amount of people from around the world can participate and share knowledge on the Internet, it becomes a question of whether the crowd will come to overwhelm the core (McAfee and Brynjolfsson, 2017, p. 307). This thesis will explore participation in online fashion dissemination to understand how the emerging crowd of enthusiastic media users affects the planning and shaping of fashion trends.

In this thesis, I propose that knowledge about these three aspects, together and individually, are essential to understand the reshaping of the fashion trend forecasting sector. To explore these aspects from McAfee and Brynjolfsson (2017) in the context of fashion trend forecasting, I apply three categories **AI, media platforms, and media users**:

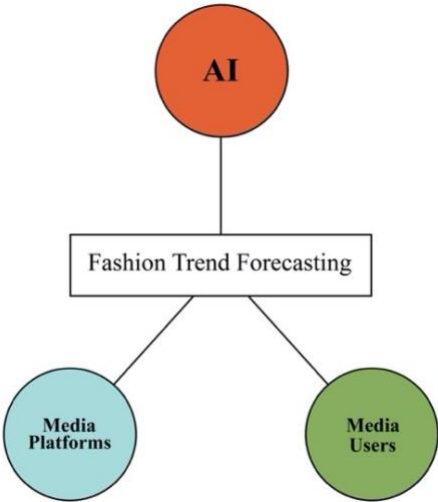


Figure 1. The digital infrastructure of AI, media platforms, and media users

Figure 1 above is a simplified overview of the analytical framework. These three categories will form the basis of a literature review and will be applied as an analytical framework for the analysis of the empirical data collected in this thesis. AI is the technology that some companies have begun to use to support predictions of fashion trends. Media platforms are sources of information to get insights about fashion trends, and media users are participants in the online dissemination of fashion, thus contributing to the shaping of the perception of fashion trends. The second chapter provides a detailed presentation of this analytical framework.

1.1.2 Contribution and importance

In addition to the analytical framework described above, this thesis applies literature that combines fashion and media to explore how the two fields intertwine. In the context of media and communication studies, this thesis contributes to the exploration of an increasing presence of AI, and it identifies the characteristics and roles of various platforms and users in the contemporary media landscape. In the context of fashion studies, this thesis adds perspectives to the academic conversation about changes in the fashion system and fashion trend forecasting in particular. This thesis will also add to the line of research on mediatisation of fashion (Rocamora, 2016, Rocamora, 2019, Kristensen and Christensen, 2017, Skjulstad, 2018), by arguing that fashion trend forecasting supported by AI and fashion big data leads to a state of deep mediatisation in the fashion industry. The research interest in this thesis is a response to other scholars when they call for more research on fashion:

«There is a critical need for fashion research – both academic and industrial – to take a radical lead in shaping a more economically, socially, and environmentally sustainable fashion industry based on alternative paradigms and business models that harness new ways of creating and producing fashion, and engaging with consumers through co-creation and novel experiences» (Black, 2019, p. 114).

A suggestion on how people should prepare for the careers of the future is to understand certain technological concepts, such as AI, big data, and machine learning, and that these ‘all merge one into another’ (Merrill, 2018, p. 56). According to a recent report, *The State of Fashion 2020*, «fashion players are under pressure to be digital-first and fully leverage new technologies» (BoF and McKinsey, 2019, p. 10). Moreover, fashion players are expected to «focus on clearly understanding how to best use new social media channels and functions» (BoF and McKinsey, 2019, p. 11). Amid these high expectations concerning technological

advances, it seems vital to find a meaningful balance between minds and machines, products and platforms, and the core and the crowd in the fashion industry. It will be increasingly important to gather knowledge about the changing fashion environment to understand how the focus on digital solutions and technologies affect practices of the fashion system.

As an ending to this first part of the introduction, it can be relevant to mention that an interest in fashion trends is more than an interest in clothes. The interest in trends expands to a curiosity about human behaviour, taste, and identity. It is about broader tendencies in society that mirror the situation of our contemporary world, «because wrapped up in everyday fashion trends are the effects of shifting cultural attitudes, economic factors, social sharing, and even political climate» (Al-Halah et al., 2017, p. 388). However, to avoid getting lost in the complexity of fashion trends, this thesis primarily applies a conceptualisation of fashion trends understood as trend-information circulating in the media landscape.

Chapter overview

This thesis has five chapters. This first chapter introduces the topic, and it will include contextual background about changes in the fashion system and the role of fashion trend forecasting. In the second chapter, I give a detailed presentation of the analytical framework, followed by a literature review about AI, media platforms, and media users. The third chapter displays the methods, and I give a presentation of the selected samples. It also covers privacy and ethics by going through guidelines on how to handle data collected from interviews and the Internet. Chapter three ends with a description of how I analysed the collected material. In chapter four, I present and discuss the results structured according to AI, media platforms, and media users. Finally, chapter five is a concluding summary of the main findings.

1.2 Background

This chapter provides a contextual background to understand how fashion trend forecasting, as part of the fashion system, is changing. At the end of this chapter, I identify a knowledge gap and present the research questions before proceeding to introduce the analytical framework in the next chapter.

1.2.1 The fashion system

Fashion trend forecasting is one of the sectors of the fashion system (Giertz-Mårtenson, 2018, p. 213). The traditional fashion system; established in the mid-twentieth century, is increasingly debated as unfitted in the context of a digital economy (Black, 2019, p. 114, Giertz-Mårtenson, 2018, p. 226). Still, the fashion industry mainly operates within the old established system of practices and scheduling, such as the tradition of displaying new designs twice a year (Black, 2019, p. 113). According to Black, the fashion system is unsustainable in several of its sectors, not only in the environmental aspects but also economically and in creative leadership, and one of the severe issues is the ever-faster trend cycles (2019, p. 114).

Black thinks that the fashion industry has been slow to take advantage of digital opportunities for design and manufacturing (2019, p. 114). A workshop-discussion reveals how a group of fashion industry workers think «there is an unexplored opportunity to introduce digital technologies in earlier stages of the design process» (Black, 2019, p. 123). However, the workshop attendants highlight how crucial it is to implement digital solutions in a way that upholds the craftsmanship of fashion (Black, 2019, p. 123). Nevertheless, a proposal is to move the fashion system further away from the physical reality and over to the digital realm to free time and reduce costs and let designers «bring in new team members such as consultants and software developers» (Black, 2019, p. 124).

Fashion is changing

Developments that challenge established methods and routines of the fashion system result in claims that fashion, as the world once knew it, has come to an end (Edelkoort, 2014, Geczy and Karaminas, 2019). The editors of the book *The End of Fashion: Clothing and Dress in the Age of Globalization*, are proposing that factors such as digitalisation and mass mediation transform the fashion system because of how such processes broaden the way people consume and perceive fashion (Geczy and Karaminas, 2019, p. 2).

In the context of fashion trend forecasting, Lidewij Edelkoort is considered a guru (Black, 2019, p. 113). To comment on changes in the fashion system, and how this also affects practices in trend forecasting, Edelkoort wrote a manifesto claiming that the fashion system is obsolete (2014). Her claims contribute to an understanding of how the fashion system is affected by a combination of various interrelated elements. Among other things, Edelkoort calls out for ‘a unique and singular point of view’ as she finds this to be absent in current fashion media (2014, p. 6). Edelkoort explains how fashion media in the past consisted of individuals like Diana Vreeland who was able to observe fashion and communicate strong fashion-statements (2014, p. 6). What Edelkoort implies is that fashion media used to be characterised by expert judgment, and the absence of such uniqueness leaves fashion in a state of ‘normality’ today (2014, p. 6).

Moreover, Edelkoort finds that marketing spreads fashion like viruses (2014, p. 4), and that creators of fashion are increasingly also becoming creators of media. Edelkoort finds that consumers show an interest in clothes rather than an interest in fashion, meaning that the ‘art’ of fashion is replaced by increasing market demand for clothes and products, such as expensive designer handbags (2014). She predicts that «consumers of today and tomorrow are going to choose for themselves, creating and designing their own wardrobes» (Edelkoort, 2014, p. 7). Edelkoort also points to the high pace of the fashion industry to explain how it affects trends:

«Since time is short the design process is compressed and therefore the young creative elite make clothes and no longer fashion, they no longer have time to consider a conceptual approach which might transform the silhouette, nor time to transcend dominant trends» (Edelkoort, 2014, p. 1).

Edelkoort explicitly claimed that fashion trend forecasting would change because of changes in the design process (2014, p. 7). If the pressure to being efficient means that there is less time to work with trend development, as Edelkoort indicated, it will be interesting to explore how AI fits into this changing fashion system. Moreover, Edelkoort indicated that much of fashion media are results of marketing, which also means that fashion big data from various media platforms will be advertorial content. Furthermore, it will be interesting to explore what will happen to expert judgement and the unique voices of individual tastemakers when combined with the abilities of AI.

1.2.2 The fashion trend forecasting sector

Definition and history

This thesis focuses on a specific sector of the fashion system called fashion trend forecasting. Some have described this sector as a ‘shadow information system’ (Blaszczyk and Wubs, 2018, p. 1), and referred to trend forecasters as ‘relatively unknown players’ (Giertz-Mårtenson, 2018, p. 213). At the same time, these scholars described trend forecasters as influential tastemakers (Giertz-Mårtenson, 2018, p. 213), and the «major providers of style information to the fashion industry» (Blaszczyk and Wubs, 2018, p. 3). In light of recent developments, fashion trend forecasting has «evolved from a small hidden intermediary activity into a highly influential service business in the global economy» (Blaszczyk and Wubs, 2018, p. 25). Still, there is limited research on this specific sector of the fashion system (Blaszczyk and Wubs, 2018, p. 5).

Fashion trend forecasting is business-to-business oriented, as opposed to fashion media, which targets the consumers (Giertz-Mårtenson, 2018, p. 226). Dedicated trend agencies offer their forecasting services to players in the fashion market (Omotoso, 2018). These agencies provide insights about trend development, and it is common for big fashion brands to pay a high price for services offered by some of these agencies (Luce, 2019, p. 141-142). Fashion trend forecasting arguably plays an essential role as «the global fashion system depends on well-oiled mechanisms for gathering and sharing intelligence about colours, fabrics, and silhouettes» (Blaszczyk and Wubs, 2018, p. 1).

Giertz-Mårtenson described fashion trend forecasting as an activity that anticipates «the future to interpret upcoming fashion trends» (2018, p. 213). Forecast, as a more scientific approach, combines qualitative and quantitative methods (Kongsholm and Frederiksen, 2018, p. 280). The forecasting-method can be subjective compared to a projection because it relies on assumptions or feelings about what is coming, it forecasts ‘a probable future’, which means that it carries uncertainty (Kongsholm and Frederiksen, 2018, p. 280).

Routines or practices in fashion trend forecasting evolve. In addition to long-term forecasts and printed trend books accompanied by colour swatches (dyed pieces of fabric), many forecasters are now also offering subscription-based insights with daily updates online (Kongsholm and Frederiksen, 2018, Blaszczyk and Wubs, 2018). The beginning of modern trend forecasting was slow compared to these present conditions:

«Collection was conducted via travels and personal conversations and meetings, mood boards were created with scissors and glue, presentations took place with plastic overheads, the dissemination of new knowledge included a typewriter, and texts were printed and distributed as articles or books» (Jakobsen, 2018, p. 8)

Later on, trend forecasting agencies implemented new tools such as computers and statistical data, but the intuition of the forecaster remained crucial (Blaszczyk and Wubs, 2018, p. 1). Many forecasters still prefer to present trends using physical material rather than digital alternatives because of the tactile nature of fashion (Blaszczyk and Wubs, 2018, p. 26). Lately, some of the larger fashion companies, such as H&M, take the matter into own hands and gather trend information to fit their specific brand identity or customer base instead of only relying on reports from trend agencies (Giertz-Mårtenson, 2018, p. 228). Some believe that fashion trend forecasting as a business has come to a crossroads because of the digital imperative (Blaszczyk and Wubs, 2018, p. 26). An article suggests that fashion trend forecasting is no longer the same:

«Since the arrival of the internet, things have now changed and fashion trend forecasting has become a more democratic affair. The traditional lofty trend forecasters have been replaced by a plethora of influencers on Instagram and broadcasters on YouTube, who all relay information via their gadget of choice, the humble mobile phone» (Omotoso, 2018).

This article identifies signs of democratisation of fashion trend forecasting; I will suggest that a more suitable formulation would be to claim that trend-shaping is more democratic since more people have the opportunity to participate in fashion dissemination through various media platforms. However, the quote above indicates interesting elements of digital development and how it may impact the field of fashion trend forecasting, which is what this thesis will explore.

The traditional forecasters

Some of the traditional trend forecasting agencies have been operating for decades, such as Pecler Paris founded in 1970 (Giertz-Mårtenson, 2018, p. 221). The common practice in traditional forecasting is to present trend predictions one or two years in advance of a given season, and such long-term forecasts used to be considered a strength (Giertz-Mårtenson, 2018, p. 224). However, some suggest that long-term forecasts are an outdated method, particularly because of the accelerating pace of fashion trend cycles (Giertz-Mårtenson, 2018, p. 226). Moreover, Giertz-Mårtenson suggested that traditional forecasters have a hard time competing

against fashion information online (2018, p. 223), and she found that the traditional forecasters were losing ground (2018, p. 231).

The digital forecasters

In the digital age, some trend forecasting agencies started offering subscription-based insights online (Blaszczyk and Wubs, 2018, p. 3). One of these agencies is The Worth Global Style Network (WGSN), described as «one of the world's most influential trend-authorities» (Giertz-Mårtenson, 2018, p. 219). According to Giertz-Mårtenson, WGSN is a 'digital giant' with «a huge competitive advantage because it continuously publishes information on daily events and trends in addition to issuing longer-term forecasts» (2018, p. 223). The success of WGSN made other industries interested in trend forecasting, and WGSN expanded its services and met the demands of clients such as Microsoft and IKEA (Blaszczyk and Wubs, 2018, p. 25).

The rise and success of WGSN occurred during the same time as the revolution of information and communication technology (Blaszczyk and Wubs, 2018, p. 25). In 2005, WGSN was acquired by a British media company for €140 million, and some claim that this «demonstrated that fashion forecasting was no longer a small business» (Blaszczyk and Wubs, 2018, p. 25). This sale might have indicated that fashion trend forecasting was heading in a new direction; perhaps for a future «dominated by anonymous parent companies, big data, and digital dissemination» (Blaszczyk and Wubs, 2018, p. 27).

The AI forecasters

In addition to the traditional and digital forecasters, I suggest a third type: AI forecasters. The concept of AI forecasters is distinguished from the traditional and digital forecasters because they have a distinct profile based on the use of AI and big data to make predictions about fashion trends. Such AI forecasters will be described more in detail later in this thesis.

Companies interested in AI-supported fashion trend predictions

This subsection provides a bit of background to demonstrate how different companies explore the use of AI to predict fashion trends. An online retailer called Yoox is among fashion companies starting to explore AI in creative processes (Wightman-Stone, 2018, Mau, 2018). The founder of Yoox had envisioned to combine humans and machines since he founded Yoox in 1999 (Wightman-Stone, 2018). When Yoox created the collection *8 by Yoox*, it supposedly took advantage of AI «to review content from across social media and online magazines in key

markets with a particular focus on fashion influencers» (Wightman-Stone, 2018). Yoox took a ‘data-driven approach’ to fashion creation (Mau, 2018). Such data-driven approaches highlight the interest in content from particular media platforms and users, and also the opportunities of digital infrastructure.

Moreover, companies outside the fashion industry are also showing an interest in AI to forecast fashion trends. Both Amazon and Facebook experiment with AI to predict and create fashion (emch, 2018, Luce, 2019, Kemeny, 2018). Amazon takes advantage of its enormous amount of customer data and applies machine learning to analyse customer preferences and buying behaviours. Based on such insights; Amazon produces fashion products and thus acquire market share in the fashion industry (emch, 2018, Luce, 2019, p. 125).

The tech-company, IBM, develops AI-systems specialised for fashion trend forecasting. A video on the IBM MediaCenter website shows how students from the Fashion Institute of Technology (FIT) in New York use such AI-systems as an integrated part of the creative process when planning designs. The caption under the video informs that IBM and FIT have partnered «to educate the next generation to use technology to forecast trends» (IBM, 2019). The AI-systems offer the students insights through vast amounts of fashion images, collected from around the globe. Michael Ferraro represents FIT in the video. Ferraro believes fashion will become a service similar to software (IBM, 2019, 01:40). The video ends with a line from Ferraro: «your clothes will be generators of vast amounts of data» (IBM, 2019, 01:47), which seems to be his vision about the future of fashion.

1.3 Knowledge gap

At this point, this thesis has demonstrated how practices of fashion trend forecasting are changing due to digital development. The literature seems to identify two main factors challenging traditional trend forecasting. The first is the forecasting agencies that offer daily trend reports through online subscriptions. The second is the amount of fashion information on the Internet that fashion companies can access for free. Besides claiming that traditional forecasters lose ground and that big data and anonymous parent companies will characterise the future of fashion trend forecasting, there is little else knowledge in the current literature to understand broader implications of the digital development.

More importantly, what seems to be a knowledge gap concerning the transformation of fashion trend forecasting practices, is the lack of overview to understand the effects of underlying processes in the digital infrastructure. Aspects such as AI and fashion big data are not covered sufficiently in current literature about developments in the fashion industry. To learn about the role of AI in fashion trend forecasting, I had to apply studies that describe results from experimentations with various AI-supported forecasting methods. These experimentations are relatively technological as they focus on testing of current AI-technology (Thomassey and Zeng, 2018). Those experimentations are narrow in the sense that they only test AI in fashion trend forecasting, without commenting on the bigger picture to get an understanding of the role of AI and media technology in the fashion industry. By bringing together aspects of the digital infrastructure; AI, media platforms, and media users, this thesis will fill in some gaps concerning the reshaping of fashion trend forecasting.

1.4 Research questions

The lack of research on broader implications related to digital infrastructure in the fashion trend forecasting sector, and mainly the limited knowledge about AI, rendered it necessary to develop research questions that address AI, media platforms, and media users. Addressing all three categories is crucial to understand the broader impact of digital infrastructure and how it reshapes the fashion system in terms of trend planning.

How do AI, media platforms, and media users, together and individually, reshape practices of fashion trend forecasting?

This overarching research question is divided into three research questions targeting each of the three categories of the analytical framework:

- **RQ1:** *How and to what degree does AI affect methods of fashion trend forecasting?*
- **RQ2:** *How do various media platforms work as sources to fashion information?*
- **RQ3:** *How does media users' online participation affect the shaping of fashion trends?*

I will structure the literature review, the analysis, and the report according to these categories and research questions. While addressing these research questions, I will shed light on some of

the social and structural implications of digital change in the fashion trend forecasting sector and also in the overall fashion system.

2 ANALYTICAL FRAMEWORK

I presented the analytical framework in short as part of the introduction to this thesis; it is a comprehensive analytical perspective inspired by *Machine, Platform, Crowd: Harnessing our Digital Future* by McAfee and Brynjolfsson (2017). I adopted these aspects of digital development presented in this book and fitted them to the topic of this thesis, which resulted in the three categories: AI, media platforms, and media users. The first part of this chapter will present the analytical framework in detail. The second part is a literature review structured according to the three categories of the analytical frame.

2.1 Machine – Platform – Crowd

Applying McAfee and Brynjolfsson (2017) as an analytical framework suits the purpose of this thesis because these authors target key tendencies in media and technology to explain how digital development affects various businesses, also in the fashion industry. However, McAfee and Brynjolfsson do not concentrate on the fashion industry in this book. Still, they highlight that machines, platforms, and the crowd have counterparts «in all companies and industries» (McAfee and Brynjolfsson, 2017, p. 15). They claim it will be essential for businesses to consider these digital aspects to gain understanding and thrive in the future (McAfee and Brynjolfsson, 2017, p. 16). As mentioned in the introduction, McAfee and Brynjolfsson identify minds, products, and the core as the counterparts to machines, platforms, and the crowd (2017, p. 15). In the next sections, I will present the three aspects, machines, platforms, and the crowd, and their counterparts, focusing on how these are applicable in fashion trend forecasting.

2.1.1 Minds and machines

Advances in machine technology and the breakthrough of AI have come to challenge the previous perception of the human mind as the best decision-maker, forecaster, and creative innovator (McAfee and Brynjolfsson, 2017). One of the proposals is that people should, in most

situations, let machines be the decision-makers and forecasters instead of relying on human predictions and expert judgements (McAfee and Brynjolfsson, 2017, p. 42). However, some people are recognised as better forecasters than others. These are so-called ‘superforecasters’ because they manage to be open to different perspectives and absorb information from multiple sources (McAfee and Brynjolfsson, 2017, p. 60).

Nevertheless, McAfee and Brynjolfsson claim that machines are better forecasters than humans. This claim is supported by the work of Daniel Kahneman and his colleagues; these scholars found that the human brain operates with two systems for reasoning, system 1 and system 2 (McAfee and Brynjolfsson, 2017, p. 35). System 1 is intuition or judgement, something that develops naturally through life as people learn from examples (McAfee and Brynjolfsson, 2017, p. 36), while system 2 is «rational and logical calculations» (McAfee and Brynjolfsson, 2017, p. 42). While the human mind is buggy because of biases in system 1 and also lacks insight about its own intuition (McAfee and Brynjolfsson, 2017, p. 43-44). Machines, on the other hand, are better decision-makers because they can operate like system 2 (McAfee and Brynjolfsson, 2017, p. 46).

Achieving successful data-driven decisions requires quality data inputs (McAfee and Brynjolfsson, 2017, p. 51). Moreover, algorithms can carry biases (McAfee and Brynjolfsson, 2017, p. 51), meaning that machines are not entirely cut off from biases even though they are less biased than humans. However, machines can be tested and will not make the same mistakes once fixed (McAfee and Brynjolfsson, 2017, p. 53). Despite promising results from machine-made predictions, McAfee and Brynjolfsson are «confident that the ability to work effectively with people’s emotional states and social drives will remain a deeply human skill for some time to come» (2017, p. 123). McAfee and Brynjolfsson are convinced that machines and minds working together will generate the best solutions in the future (2017, p. 119).

2.1.2 Products and platforms

Products in traditional terms are made of atoms while platforms inhabit *information goods* made of bits, which are nearly free to reproduce; other than the cost of storage space, the cost of digitised information goods are near-zero (McAfee and Brynjolfsson, 2017, p. 135). When something is digital, it is perfect in the sense that it can be copied infinitely without losing

quality (McAfee and Brynjolfsson, 2017, p. 136). Additional to being free and perfect, information goods can also spread within an instant (McAfee and Brynjolfsson, 2017, p. 136).

Platforms are highly competitive compared to traditional goods and services because they take advantage of the free, perfect, and instant qualities of the Internet (McAfee and Brynjolfsson, 2017, p. 137). McAfee and Brynjolfsson think ‘nonplatform participants’ in many industries will struggle even if their product is good (2017, p. 202). McAfee and Brynjolfsson described the world wide web as a ‘multimedia, easy-to-navigate platform’ (2017, p. 138), and explained that it is the dominant digital platform in the world, built in a way that invites people to participate (McAfee and Brynjolfsson, 2017, p. 164).

2.1.3 The core and the crowd

Since the web invites people to participate, there is an increasing amount of people from around the world that shares information online, and this is what McAfee and Brynjolfsson name the crowd (2017, p. 14). The counterpart to the crowd is the core, which is «the dominant organizations, institutions, groups, and processes of the pre-Internet era» (McAfee and Brynjolfsson, 2017, p. 231). The many contributions from the crowd are causing ‘an ocean of uncontrolled information’ (McAfee and Brynjolfsson, 2017, p. 232). Platforms open to crowd participation can generate useful indications about what offerings are attractive among crowd members (McAfee and Brynjolfsson, 2017, p. 261). Moreover, they predict that the crowd will become even more diverse and evolved in the future (McAfee and Brynjolfsson, 2017, p. 275).

I will later use these ideas from McAfee and Brynjolfsson to perform an explorative analysis of the collected empirical data to understand better how the world of fashion is transforming.

2.2 Literature review

I selected literature based on the analytical framework, and in the following sections, I will review literature about the three categories: AI, media platforms, and media users. First, literature that described AI-supported methods in fashion trend forecasting. Then, literature that discusses the definition of fashion media and fashion content in various media platforms. Lastly, a selection of literature about media users and how they can participate in fashion

dissemination. For AI, I primarily selected newer literature published after 2016 since AI had a breakthrough that year (McAfee and Brynjolfsson, 2017). For media platforms and media users, I primarily selected literature from the 2010s because new platforms started to grow in relevance and challenge traditional fashion media during this decade. When searching for literature, I mainly used Oria through the UiO website, and also Google Scholar. Journal articles and book chapters make up a big part of the selected literature.

2.2.1 AI in fashion trend forecasting

The first part of this literature review offers a brief overview of the relevance of AI in fashion trend forecasting. Table 1 below is an overview of the selected literature about AI.

	Literature	Central themes	Key findings
Overview	BoF and McKinsey (2017) Luce (2019) Thomassey and Zeng (2018)	Introducing the role of AI in fashion trend forecasting	<ul style="list-style-type: none"> AI promoted as an opportunity because it forecasts more precisely, and a challenge because it may seem complicated to implement
Experimentations (training and testing of AI for fashion trend forecasting)	Al-Halah et al. (2017) Beheshti-Kashi et al. (2018) Gabale and Subramanian (2018) Matzen et al. (2017) Ren et al. (2019)	Data-driven predictions Social media analytics Fashion attributes	<ul style="list-style-type: none"> Optimised use of big data highlighted as the key to success in fashion trend forecasting Social media data regarded as valuable Selection of fashion attributes is essential

Table 1. Selection of literature about AI in fashion trend forecasting

Overview of current knowledge about AI-supported fashion trend forecasting

According to *The State of Fashion 2018*, the fashion industry was late to engage in the AI-sphere, but claims are that some digitally advanced players in the fashion market have started demonstrating the potential of AI, such as using algorithmic systems to predict trends (BoF and McKinsey, 2017, p. 58). A proposed consequence of using AI in the fashion industry is a blurring of the line between creativity and technology (BoF and McKinsey, 2017, p. 58).

Research on AI in fashion is still limited, yet there are two comprehensive contributions to the field. These are *Artificial intelligence for Fashion Industry in the Big Data Era* (Thomassey

and Zeng, 2018), and *Artificial Intelligence for Fashion: How AI is Revolutionising the Fashion Industry* (Luce, 2019). Both of these contributions go in detail to discuss opportunities and challenges related to AI in different sectors of the fashion system. Thomassey and Zeng (2018) is a collection of studies that represent a rather technical approach to AI in fashion, while Luce (2019) offers a detailed description of the role of AI in fashion to make the technology more understandable to those without experience from computer engineering.

Claims are that AI in fashion trend forecasting can be more efficient than traditional statistical methods and that it can reduce up to 50 % of forecasting errors (Thomassey and Zeng, 2018, p. 10, BoF and McKinsey, 2017, p. 59). As stated in the introduction, Thomassey and Zeng (2018) suggest that the big data era opens up to significant opportunities in the fashion industry. However, despite help from AI, it will still be a challenge to predict fashion trends because they change fast (Thomassey and Zeng, 2018, p. 23). Some fashion companies are likely to find it difficult or scary to implement the AI-technology needed to leverage opportunities of big data (Thomassey and Zeng, 2018, p. V). Some have expressed concerns that AI is «too mechanical to capture the creative core of fashion» (BoF and McKinsey, 2017, p. 58). Others are suggesting that ‘the human eye, the human touch, and the human mind’ are the best technologies in fashion trend forecasting (Blaszczyk and Wubs, 2018, p. 28).

AI-experimentations for fashion trend forecasting

Five different experimentations with AI in fashion trend forecasting indicated relatively impressive performances of various AI-based prediction models. These studies suggested that such use of AI and data analytics would be beneficial in the fashion industry. The five studies mostly highlighted opportunities rather than challenges, and two of the studies explicitly suggested optimised use of big data as the key to success in fashion trend forecasting (Al-Halah et al., 2017, Ren et al., 2019). It was interesting to notice how these studies seemed to approach fashion trend forecasting in slightly different ways in terms of the applied AI-methods, the selection of datasets, and the creation of fashion attributes.

In a study gifted by Amazon, Al-Halah et al. (2017) trained AI-models to predict fashion attributes using a dataset containing 200.000+ labelled images from fashion websites. Then, they applied sales data from Amazon to test the AI-models. The purpose was to predict the future popularity of specific garments sold on Amazon. This study reported good results and claimed that fashion trend forecasting could benefit from prediction models enabling visual

detection of fashion attributes from large datasets (Al-Halah et al., 2017, p. 395). This study indicated that AI-based prediction models might need large quantities of information to learn enough fashion attributes. However, this study did not address the quality of the data input, such as the choice of fashion websites.

In a paper from Cornell University, Matzen et al. (2017) promoted benefits of machine learning in fashion trend forecasting. They claimed that there had been a limitation in fashion trend forecasting to focus on datasets «biased towards images of the fashion-conscious» (Matzen et al., 2017, p. 3). Instead of concentrating on fashion websites, and to add more variation to the datasets, they suggested leveraging pictures shared in social media to ensure a dataset that would be more representative of everyday style around the world (Matzen et al., 2017, p. 3).

Ren et al. (2019) conducted a case study to optimise forecasting methods in a Chinese fashion company. Ren et al. found it beneficial to combine quantitative sales data with qualitative data from social media, such as user-generated comments (2019, p. 8). This strategy indicated perhaps that sales numbers alone would not sufficiently represent how satisfied customers were with purchases. Therefore, online comments would be valuable to reveal what customers thought about specific trends and what they ended up wearing and sharing online.

Beheshti-Kashi et al. (2018) conducted an experimental analysis of a sample of seventy-four fashion blogs selected from a list of the most influential fashion blogs written in German. They selected fashion attributes to use in the experimentation based on trend topics detected in three online magazines, and this resulted in fashion attributes such as fringes, metallic, and other characteristics of fashion (Beheshti-Kashi et al., 2018, p. 83). The purpose of this study was to detect fashion topics, colours in particular, from blog posts by applying an AI-method called text mining. Beheshti-Kashi et al. found that the AI-method was like an ‘intelligent information retrieval’ that would be beneficial in the forecasting of upcoming fashion trends (2018, p. 71-72). Moreover, this study included both fashion blogs and fashion magazines, which highlights the relevance of such sources in AI-supported trend predictions. Both Beheshti-Kashi et al. (2018) and Al-Halah et al. (2017) selected datasets representative of the fashion-conscious, which was the opposite of what Matzen et al. (2017) suggested would be best.

Gabale and Subramanian (2018) tested an AI-supported object detector to see if it could «extract fashion objects from fashion photos in the wild» (2018, p. 3). Their goal was to predict

fashion trends that would become popular in India based on information from social media. According to these scholars, there are vast amounts of fashion photos in social media without labels, which can be challenging in terms of object detection (Gabale and Subramanian, 2018, p. 1). However, they claimed that their object detector could identify smaller objects, such as hats, boots, sunglasses, earrings, sandals, and watches, from the social media photos that they extracted (Gabale and Subramanian, 2018, p. 3). They reported that several of their trend predictions came true, but the predictions seem limited to colours; green for handbags, grey for long dresses, and the combination of plum coloured tops with black jeans (Gabale and Subramanian, 2018, p. 5).

These AI-experimentations will be summarised together with the rest of the literature at the end of this chapter.

2.2.2 Media platforms and fashion

The first part of this literature review concentrated on AI in fashion trend forecasting, and the literature highlighted some platforms as valuable sources to fashion big data, such as online magazines and fashion blogs. This second part of the literature review will focus on digital development in fashion media, and it will shed light on some of the media platforms identified as relevant for fashion-related content. Table 2 below is an overview of the selected literature.

	Literature	Central themes	Key findings
Overview of fashion media in the digital age	Black (2019) Clement (2020) Engholm and Hansen-Hansen (2013) Giertz-Mårtenson (2018) LIM (2020) McAfee and Brynjolfsson (2017) Polson and Scott (2018) Rocamora (2012)	The complexity of current fashion media Popular media platforms	<ul style="list-style-type: none"> • A broader definition of fashion media in the digital age • The amount of data from popular platforms is vital in fashion forecasting with AI
The fashion magazine	Rodríguez et al. (2017)	From print to digital	<ul style="list-style-type: none"> • Online versions of fashion magazines might be less detailed compared to the printed versions
Fashion blogs	Engholm and Hansen-Hansen (2013) Rocamora (2012)	A radical change in fashion media	<ul style="list-style-type: none"> • Blogs opened up to user-driven and decentralised fashion media

Fashion in the social media environment	Reilly and Hawley (2019)	Attention deficit fashion and micro-trends	<ul style="list-style-type: none"> • Rapid change of fashion trends in social media
Fashion on Instagram	De Perthuis and Findlay (2019)	Representations of the fashionable ideal in a digital age	<ul style="list-style-type: none"> • Typical fashion content on Instagram does not challenge the fashionable ideal

Table 2. Selection of literature about media platforms and fashion

A brief overview of relevant media platforms

Defining fashion media, given the complexity of the contemporary media landscape, appears complicated (Engholm and Hansen-Hansen, 2013). The definition of fashion media seems to broaden as «the digital age is transforming and expanding the world of fashion media» (LIM, 2020). Fashion content in the digital age can be anything from blog posts, images on Instagram, to videos on YouTube, and also the fashion film genre (Rocamora, 2019, p. 108).

A claim is that the increasing focus on social media and digital communications have caused fashion producers and consumers to perceive fashion trend information differently (Giertz-Mårtenson, 2018, p. 230). Through digital media, images of fashion have the potential to reach globally, and the global reach of fashion imagery may have caused images of fashion to become more significant than the actual fashion products (Black, 2019, p. 115). To underline the role of various social media platforms as sources of fashion big data, I will introduce a selection of platforms based on indicated relevance from the literature:

- *Instagram*. Instagram is a social media platform owned by Facebook Inc. On Instagram, users can share pictures, videos and text, and connect with others. As of January 2020, Instagram got reported as the sixth most popular platform for social media in the world with a billion active users (Clement, 2020). Over 100 million photos were uploaded to Instagram every day in 2017 (Polson and Scott, 2018, p. 6), making it a platform with an enormous amount of data available for fashion trend analysis. The visual nature of Instagram is found to be well suited to spread fashion trends (Casaló et al., 2018, p. 2).
- *Pinterest*. Pinterest is a social media platform for pictures. In January 2020, it had 322 million active users worldwide and was ranked number fourteen in popularity (Clement, 2020). On Pinterest, users can click through pictures and save them in folders to create sorts of mood boards. These folders can either be public or private, and users can follow other profiles.

- *YouTube and TikTok*. Both YouTube and TikTok are platforms for video-content. In 2017 it was estimated that YouTube had 80 million videos (McAfee and Brynjolfsson, 2017, p. 231). In the ranking of most popular social media, YouTube comes in second after Facebook; it had two billion active users as of January 2020, and TikTok was closing in on Instagram with 800 million active users at the time (Clement, 2020).

At the beginning of 2020, the four platforms had 4 122 000 000 active users worldwide combined. The continuously increasing amount of data coming from platforms like these is one of the factors listed as crucial for the breakthrough and further development of AI (Polson and Scott, 2018, McAfee and Brynjolfsson, 2017).

The fashion magazine

Through a comparative content analysis, Rodríguez et al. (2017) claimed to find that the print version of Spanish VOGUE presented a broader range of content compared to the online version of the same magazine. They also argued that the digital version valued the quality of the headline more than the quality of the analysis (Rodríguez et al., 2017, p. 58). It seems that these scholars suggested that fashion media lost valuable aspects when transferred to the digital realm. However, their sample was small and not generalisable to all digital versions of print magazines. Still, this observation adds critical knowledge to understand what happened to fashion media in the transition from print to digital. They might be right in suggesting that the quality of much digital fashion content is less detailed compared to fashion media in the print era. At the same time, I argue that the totality of fashion-related information available today is much broader.

Fashion blogs

In studies of newer fashion media, the fashion blog is of particular interest. Several scholars have suggested that the growing influence of fashion blogs came to challenge the established fashion media (Rocamora, 2012, Engholm and Hansen-Hansen, 2013). It became notable that blogs had an impact on established fashion media as some magazines started to adopt blog aesthetics (Engholm and Hansen-Hansen, 2013, p. 141). According to Rocamora, blogs have extended the previous geographical boundaries of fashion media because they opened up to fashion participation from around the world, and rendered the focus on fashion cities like New York, London, Paris and Milan less dominant in fashion media (2012, p. 99).

Engholm and Hansen-Hansen discussed how blogs opened up to a new type of fashion communication described as user-driven (2013, p. 141). Engholm and Hansen-Hansen identified various blog genres and suggest that blogs about street style are remediations of the mood boards and predictions of fashion trend forecasters. They explained this by describing a perception of street style blogs as mediating links between «the style of the street and the level of trend forecasters and style surfers on whom the fashion media and fashion producers rely in order to catch and predict trends» (Engholm and Hansen-Hansen, 2013, p. 146).

This literature about fashion blogs (Rocamora, 2012, Engholm and Hansen-Hansen, 2013) described changes in fashion dissemination that started with the rise of the fashion blog as a genre. I argue that other platforms where users share fashion content, such as Instagram, share many of the characteristics that these scholars identify in the fashion blog genre, which means that several of their findings are suitable in descriptions of digital fashion media beyond the concept of blogs.

Fashion in the social media environment

Reilly and Hawley (2019) studied fashion media in the digital age, concentrating on the lifecycle of fashion trends. They introduced the concept ‘attention deficit fashion’ or ADF to describe a rapid change of fashion trends allegedly caused by the short attention span in social media, especially among younger generations who are digital natives (Reilly and Hawley, 2019). Through a literature review, Reilly and Hawley discussed attention deficit fashion by addressing micro-trends; trends that do not reach the broader fashion market as they are often bound to specific locations or demographics (2019, p. 91).

To explore ADF, Reilly and Hawley conducted two brief case studies with a fashion blogger and an employee from a fast fashion store, both in their early twenties (2019, p. 91). Both cases referred to the popular hashtag #ootd, which means outfit of the day. These limited findings indicated a tendency in social media platforms that may contribute to ADF, namely the idea of posting a new outfit each day using hashtags like #ootd. According to Reilly and Hawley, ADF and micro-trends make it complicated for fashion companies to identify which trends to invest in (2019, p. 93). Moreover, Reilly and Hawley claimed that fashion forecasting in traditional terms is no longer doable, given how social media influences the fashion industry (2019, p. 91).

Fashion on Instagram

Through an explorative study of fashion content on Instagram, de Perthuis and Findlay (2019) claimed that fashion imagery on Instagram showed fewer signs of artistic expression, as compared to traditional fashion photography (2019, p. 13). These scholars only analysed the posts of two Instagram users, but they argued that these specific user-accounts were representatives of the dominant aesthetics among users recognised as fashion influencers (de Perthuis and Findlay, 2019, p. 3). According to de Perthuis and Findlay, scrolling through the Instagram feed was like being exposed to the same images on repeat, which naturalised and sustained what seemed to be an ideal performance in fashion expression (2019, p. 15).

2.2.3 Media users and fashion

So far, this literature review has concentrated on AI and media platforms. This last part of the review will focus on media users related to fashion. Many fashion consumers are «users of social media services» (Beheshti-Kashi et al., 2018, p. 71), which means that it is essential to explore media users' participation in current fashion dissemination. Moreover, this thesis is interested in both the fashion core (players in the fashion market) and the fashion crowd (consumers) and how these two counterparts can participate as media users.

	Literature	Central themes	Key findings
Connectivity and participation	Chae and Ko (2016) Kim et al. (2014) McAfee and Brynjolfsson (2017) Naisbitt (1984) Skjulstad (2018)	A participatory principle	<ul style="list-style-type: none"> Online participation leads to an increased connectivity between consumers and producers of fashion in the digital age
Content creators	Duffy (2015) Engholm and Hansen-Hansen (2013) Geczy and Karaminas (2019) Rocamora (2012, 2019) Welters and Lillethun (2011)	Media users who contribute to fashion media by actively creating content	<ul style="list-style-type: none"> Some media users become an integrated part of the fashion industry Fashion companies become producers of media
Trendsetting	Lillethun (2011) Suzuki and Best (2003) Casaló et al. (2018)	Trickle-down and bubble-up Subcultures Influencers	<ul style="list-style-type: none"> Mainstream media seem to play a significant role in the spreading of new fashion trendsetters

Table 3. Selection of literature about media users and fashion

Connectivity and participation: A new relationship between consumers and producers

As society is moving away from the old industrial form and towards an economy dependent on information-electronics, a proposed consequence is a participatory principle affecting the relationship between those who produce and those who consume goods (Naisbitt, 1984, p. 197). In facing the consumer movement, it was expected that many businesses would resist despite having «everything to gain and nothing to lose by incorporating consumers into the corporate decision-making process» (Naisbitt, 1984, p. 197). It seems that the Internet accelerated the anticipated participatory principle, given recent descriptions of an emerging online crowd that reshapes core processes (McAfee and Brynjolfsson, 2017).

Kim et al. (2014) discussed changes in fashion consumer experiences in light of advances in communication technology. They suggested it was possible to identify a paradigm shift in fashion. They claimed that the growing engagement digitally had caused a «tsunami effect on the fashion retail industry in the past decade» (Kim et al., 2014, p. 10). Moreover, such changes rendered social media a striking tool for consumer-driven marketing (Kim et al., 2014, p. 11). Among other paradigms for fashion consumerisms, they described a concept of smart consumer experience (SCE) to explain how consumers engage with fashion in new ways through technological devices. SCE involves higher engagement from consumers and transparent communication from brands, and more co-creation between the two (Kim et al., 2014, p. 13).

Chae and Ko (2016) analysed survey responses of 582 consumers from a research institution to study social customer participation in fashion online. These consumers had previous experience from participating in social networking services linked to the fast-fashion brand Uniqlo and the luxury brand Louis Vuitton. Chae and Ko proposed three different types of customer social participation based on the subject of interaction: Customer-brand, customer-customer, and customer-media (2016, p. 3805). Chae and Ko concluded that it was easier for customers to participate because of social media, and they presented this as both a challenge and an opportunity for service industries like fashion; if a business manages to engage customers to participate voluntarily, it can be a path to success (2016, p. 3810).

Connectivity on Instagram

Skjulstad (2018) studied media users on Instagram. For more than a year, she conducted an online ethnography through textual analysis, observation, and participation with approximately four hundred Instagram users connected to the fashion industry (Skjulstad, 2018, p. 5).

Skjulstad found that the luxury streetwear brand Vetements applied the logic of Internet memes to create engagement and invite other users to participate and connect with the brand identity. She suggested that this strategy could «invite everyone to participate in reproducing the brand's aesthetics without having to buy a single piece of clothing» (Skjulstad, 2018, p. 10).

What Skjulstad (2018) found about Vetements on Instagram contributes to valuable knowledge to understand how the logic of media users, including their interest in Internet phenomenon such as memes, can become an integrated part of a fashion brand's online user profile. Skjulstad's findings are not generalisable to all fashion brands as media users. However, her observation adds crucial knowledge about transformations in fashion media due to new opportunities for connectivity and participation online.

Content creators

The connectivity and participatory environment of the digital age described above seems to have an immense effect on the fashion system. Previously, journalists, photographers, and other personalities from established magazines dominated fashion media (Rocamora, 2012, p. 100). A magazine's editor-in-chief had significant influence to take the lead and set the trends for the consumers to follow (Welters and Lillethun, 2011, p. 395). With digital media platforms, a new type of participant in fashion media emerged, namely the fashion bloggers (Rocamora, 2012, p. 100). Fashion bloggers have been described as «power elites shifting the terrain of traditional fashion reporting and dramatically altering the ways in which fashion is disseminated» (Geczy and Karaminas, 2019, p. 2).

Many of those who rose to fame as fashion bloggers had no previous institutional connections to the fashion industry (Rocamora, 2012, p. 100), which means that new media opened up to participation and resulted in the integration of crowd members into core-practices in fashion media. By using interactive media platforms, such as blogs, some consumers would become central as producers of fashion content (Engholm and Hansen-Hansen, 2013, p. 140, Duffy, 2015). As part of her writings about mediatisation in fashion, Rocamora described how fashion companies are also increasingly engaged as producers of media in the digital age (2019, p. 109).

Trendsetting

Kongsholm and Frederiksen defined trendsetters as someone who is generally open to change and likely to be the first to try what is new, often a step ahead of the mainstream (2018, p. 177).

In lack of in-depth studies of trendsetting in the current fashion media landscape, I will apply some relatively old theories about how trends spread. Trickle-down and bubble-up are theories commonly applied in the fashion industry to explain how fashion trends emerge and spread (Lillethun, 2011). Trickle-down originates from the early years of modern fashion when the masses imitated trends worn by the elites, thus creating a trickle-down effect (Lillethun, 2011, p.118). Later on, a reverse phenomenon appeared as fashion trends started to emerge from subcultures, and this became known as the bubble-up effect (Lillethun, 2011, p.118).

Suzuki and Best (2003) explored the conditions that led a particular subculture in Japan to become trendsetters of fashion in the 1990s despite not being part of any prior fashion elite. This subgroup is called Kogaru and refers to stylish high-school girls (Suzuki and Best, 2003, p. 61). According to Suzuki and Best, the influence of Kogaru spread by word of mouth in big cities such as Tokyo and Osaka, much thanks to mobile phones, and it spread wider with help from mainstream media, such as magazines and television (2003, p. 71). Suzuki and Best highlighted social networks as one of the critical conditions that made the Kogaru subculture trendsetters (2003, p. 75). These findings are interesting because they indicate the role of communication technology and mainstream media in the emerging of new trendsetters in fashion before the era of social media.

A study about fashion influencers indicated that mainstream media still play a significant role in terms of identifying and establishing new trendsetters in the fashion industry (Casaló et al., 2018). This study identified fashion influencers based on various factors, such as the number of followers, but also, and more interestingly; that these individuals had been mentioned by newspapers and magazines (Casaló et al., 2018, p. 5). Such factors indicate the relevance, still, of mainstream media as essential in identification, establishing and further spreading of types who become recognised as influential in the fashion industry.

2.3 Summary of the literature review

The experimentations indicated valuable results of AI in fashion trend forecasting, and these studies signalled what data sources are common to leverage when applying AI and data analytics in fashion trend forecasting. Several of the AI-studies favoured datasets extracted from social media. Some of them highlighted the value of user-generated comments in particular, and others suggested predictions will be more representative if based on global social

media data. What seems to be decisive for optimised results in fashion trend forecasting with AI, is the process of selecting quality datasets and creating relevant fashion attributes to train the AI-models with for them to recognise such attributes in the datasets. The literature about AI demonstrated how machines challenge minds in fashion trend forecasting.

The literature about media platforms indicated that the definition of fashion media broadens as more platforms keep emerging in the digital age. Much of the current literature about digital fashion media concentrates on fashion blogs to understand how they reshaped fashion media. Many of the qualities of blogs are central in other platforms as well, such as Instagram. One study claimed to identify a tendency of attention deficit fashion (ADF) in social media, which would make it more complicated for trend forecasters to understand which trends will last and which will disappear fast. The impact of platforms on the circulation of fashion information renders fashion imagery more visible than the actual fashion goods.

The literature about media users highlighted various tendencies that might render the fashion industry (the core) more open to impacts from the consumers (the crowd). There is an increased connectivity between producers and consumers of fashion in terms of online participation and co-creation and a change in trendsetting forces since more people from around the world contribute to fashion trend dissemination online.

These two first chapters have introduced the topic and explained the analytical perspective. Through a comprehensive literature review, I have shed light on previous research on developments in the fashion sphere concerning the introduction of AI as a new tool in forecasting, and changes in fashion media that occurred with new platforms and users.

3 METHODS

In this chapter, I will go through and explain how I designed the research in this explorative thesis, and I will present the two samples that I selected for the collection of empirical data. This chapter shows the path I took to investigate the three categories: AI, media platforms, and media users, and how I explored this digital infrastructure to answer the research questions. To refocus on the mission, I repeat the overarching research question:

How do AI, media platforms, and media users, together and individually, reshape practices of fashion trend forecasting?

3.1 Research design

I designed and structured the research in this thesis according to the analytical framework: AI, media platforms, and media users. As previously stated, this broad analytical perspective was inspired by McAfee and Brynjolfsson (2017). At this point in the thesis, I have explored these three categories through a comprehensive literature review. For further exploration, I conducted seven qualitative in-depth interviews, but one withdrew. I also did a qualitative content analysis of the websites of three professional trend forecasting agencies.

I used qualitative research interviews as the main method for data collection because it enabled an in-depth exploration of people's perceptions of AI, media platforms, and media users in the context of fashion trend forecasting. I applied methods for qualitative research interviewing developed by Kvale and Brinkmann (2009). A quantitative method seemed unfitted to measure thoughts about what influences the fashion trend forecasting sector. Therefore, a qualitative method was more suitable for the aim of this thesis. Qualitative interviews opened up to conversations that indicated complex and nuanced approaches and ways of thinking about fashion trends in light of AI and changes in the media landscape. After conducting most of the interviews, I saw the need for an additional source to create more context and validation for the interview findings. Therefore, I added a secondary data source by doing a qualitative content analysis of the websites of three trend forecasting agencies. The insights from these websites helped position the findings from the interviews in a broader context.

3.2 Sample selection

I used two different sets of samples; one sample for the qualitative interviews and one sample for the content analysis of websites. The sample for the interviews consists of individuals in various positions from the fashion and trend industries, while the sample for the content analysis of websites consists of trend forecasting agencies.

3.2.1 Interview sample

The essential requirement in the selection of the interview sample was to find people with professional knowledge about fashion trend development. Professional knowledge means that their primary job had to be related to fashion trends. Preferably on a level that would give them more insight than the average about broader tendencies and shifts in the fashion sphere. I wanted the interview sample to include people engaged in different professions related to fashion to reveal a broader perspective of the research questions. AI is relatively new to the fashion industry. Therefore, previous hands-on experience with AI was not a requirement in the selection of informants. Various levels of AI-knowledge is be a more realistic representation of the current situation.

I searched on Google for possible interviewees. I searched for trend forecasters and various institutions or organisations focusing on education or innovation in the fashion industry. I primarily searched for someone who works business-to-business oriented, rather than business-to-consumer. I sent out invitations per email between the end of August 2019 and the end of September 2019. I reached out to one additional candidate in January 2020. In total, I contacted individuals and companies from Denmark, Finland, France, India, Italy, Norway, the United Kingdom, and the United States of America. Seven people agreed to participate, but one of them withdrew only weeks before the submission date. Therefore, I will later report findings from six interviews instead of seven.

I present the interview sample in alphabetical order. The presentation contains information about the profession of the informants, and names are included with consent from the informants. A majority of the sample is working in Norway, which is probably a result of convenience sampling because it ended up being easier to find and contact people who live in the same country as I do. The table below is an overview of the interview sample:

Name	Role	Country	Interview date	Setting	Duration
Anja Bisgaard Gaede	Founder and CEO of SPOTT trends & business aps	Denmark	September 24, 2019	Zoom-call	41:26
Anonymous with code name Edu	Works in fashion education	————	September 9, 2019	Telephone	32:16
Jill Hawkins	Founder and CEO of The Future Thief	Denmark & UK	January 27, 2020	Zoom-call	56:38
Gisle Mariani Mardal	Head of innovation for The Norwegian Fashion Hub	Norway	September 20, 2019	Telephone	23:06
Ove Hansrud	Editor of Tekstilforum	Norway	September 5, 2019	Telephone	35:01
Patrick Stangbye	A digital consultant working in the fashion industry	Norway	September 12, 2019	Telephone	21:23

Table 4. Overview of the interview sample

Anja Bisgaard Gaede is a trend consultant and forecaster located in Denmark, and she goes in-depth to analyse trend developments for lifestyle and fashion businesses. Through her company SPOTT, she delivers reports about future trends, and she creates fashion buyers guides for the upcoming seasons. SPOTT is the agency that provides trend reports to the Norwegian trade press called Tekstilforum.

The anonymous person represents an educational institution that offers fashion programs. I have given this person the code name Edu (short for education). Edu is a person with knowledge about traditions and techniques for fashion creation. Edu is frequently part of more extensive international dialogues about future design and manufacturing tendencies in the global fashion industry.

Jill Hawkins is a trend forecaster who helps different fashion and lifestyle businesses to choose the right trends for the future. She operates as a futurist or brand positioning expert. Hawkins has a website called The Future Thief. Hawkins is currently located in Denmark and has been involved with pej gruppen which is a Danish trend forecasting company. She was recently one of the speakers at a trend conference in Oslo held by pej gruppen.

Gisle Mariani Mardal is head of innovation for the Norwegian Fashion Hub (NFH). NFH is the official cluster for the Norwegian fashion industry, and it is part of the Norwegian Innovation

Clusters. The purpose of NFH is to ensure innovative and sustainable growth and development in the Norwegian fashion industry.

Ove Hansrud is editor of a Norwegian trade journal for fashion retail called Tekstilforum. The journal publishes trend news and updates about the fashion scene in Norway. As the editor, Hansrud seems to have a close dialogue with retailers from across the country, which gives him a good deal of insight into current practices in Norway. Tekstilforum receives trend reports developed by Anja B. Gaede.

Patrick Stangbye is a digital consultant working in Norway, at the time of our interview he was working on a project for one of the most promising Norwegian fashion brands to upgrade their online store. Stangbye has experience with fashion from an international context as he used to work with fashion buying and communication in Paris during his time as a student.

In addition to the interview sample, I selected a sample for the qualitative content analysis of websites, which will be presented in the following section.

3.2.2 Website sample

The website sample consists of three professional trend forecasting agencies. In October 2019, I used Google to search for “fashion trend forecasting”, and also “AI fashion trend forecasting”, which gave me a list of different players from the forecasting market. Among these, I already knew some, like WGSN. The websites had to belong to professional and legitimate trend agencies, I checked their integrity by looking at the lists of clients to see that they work with known brands from the fashion industry.

Table 6 below presents an overview of the selected sample for the content analysis of websites. All information displayed about the trend forecasting agencies in the table comes from the websites.

Website	Name	Founded	Description	Locations
(Heuritech, 2020) (https://www.heuritech.com)	Heuritech	2013	Fashion forecasting with AI for luxury and sports brands	France, USA, Singapore
(Trendstop, 2020) (https://www.trendstop.com)	Trendstop	2002	Targets both fashion and lifestyle industries and has sustainability as a core value	England, USA

(WGSN, 2020) (https://www.wgsn.com/en/)	WGSN	1998	Declares to be the number 1 forecaster for fashion, does forecasting for a lot of other industries as well	England and the USA, also: Australia, Brazil, China, France, Germany, Hong Kong, Italy, India, Japan, Korea, South Africa, Spain, Turkey
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Table 5. Overview of the website sample

I selected WGSN because it plays such a significant role in the field of fashion trend forecasting. In addition to WGSN, I wanted to include other players who represent slightly different agency profiles in fashion trend forecasting. I selected a trend agency called Heuritech because it represents AI forecasting in fashion. While WGSN and Heuritech represent two extremes—WGSN by being ‘a digital giant’ (Giertz-Mårtenson, 2018), and Heuritech by being based on AI—I wanted the third agency to represent a more traditional profile. For this, I selected Trendstop; a forecasting agency that works with several known fashion brands.

Heuritech. Heuritech is located in Paris and uses AI to forecast fashion trends. Heuritech shows to collaborations with both Louis Vuitton and Dior, which are two of the most famous luxury brands in the world. The list of connections also includes a big sports brand like Adidas. Heuritech was rewarded with the LVMH (Louis Vuitton Moët Hennessy) innovation award in 2017, and in 2020, Heuritech expands with offices in Singapore and New York.

Trendstop. Trendstop does forecasting for both fashion and lifestyle. It was founded in 2002, the headquarters is in London. Their client’s list includes fast fashion brands H&M and Forever 21, and mid-range to high-end brands Ralph Lauren and Hugo Boss. They also work with PVH, which is an agency that owns clothing brands such as Tommy Hilfiger and Calvin Klein.

WGSN. The Worth Global Style Network (WGSN) was previously mentioned in this thesis because it arguably holds a significant position in the trend forecasting market. WGSN was founded in 1998 in London. Today, WGSN has offices around the world. According to the WGSN website, they are the number one trend forecasting agency for fashion.

The combination of samples

The interviews are the primary data source, and the websites are the secondary data source. Figure 2 below demonstrates how I combined the two samples and what roles or sectors the different sample units represent in the context of fashion.

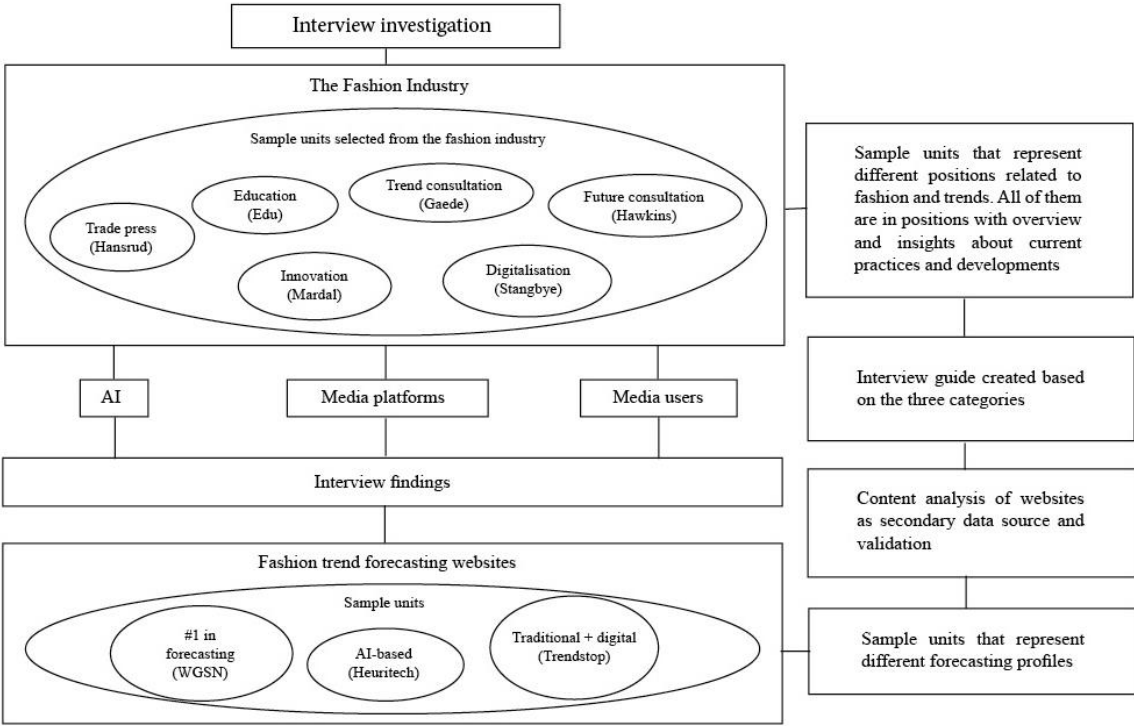


Figure 2. Overview of the combination of samples and methods

3.3 Qualitative research interviews

I thematised the interviews according to the analytical framework. I used the three categories AI, media platforms, and media users as the point of departure in the development of questions and themes to cover in the interviews.

Categories to explore	Themes to cover in the interviews
AI	Reasons to use AI in fashion trend forecasting Opportunities and challenges with AI in fashion trend forecasting
Media platforms	Media's role in the fashion industry Influential platforms for fashion information
Media users	Participants in fashion media Trend-shaping/Trendsetting Relationship between producers and consumers of fashion

Table 6. Thematising the interview investigation

Interview guide

The interview guide proposed semi-structured interviews with themes to cover based on the analytical framework. To validate the interview guide, I did two rounds of pilot interviews with a friend who has an education in fashion. Based on feedback gained from these pilot interviews, I changed a few formulations in the interview guide to make sure that the questions were understandable. The interview guide was broadly divided into four different sections:

- The first part of the interview guide contained a few background questions to understand the informants' relation to fashion and trends. Given the slightly diverse characteristics of the informants, it was necessary to tap into their various experiences.
- The second part covered questions related to media users. With these questions, I addressed details concerning the participatory culture in the contemporary media landscape and how it may affect fashion dissemination and trend-development. These questions targeted the relationship between consumers and producers of fashion and the concept of trendsetters or trendsetting.
- The third part contained questions about media platforms, with questions such as 'what platforms are the most influential for fashion information?', and other similar questions about the role of media in the context of fashion.
- The fourth and last part had questions concerning AI to explore how the informants experience the growing relevance of AI in fashion trend forecasting.

The order of the questions was sometimes rearranged based on the dynamic nature of the conversations. The questions were reasonably open, allowing the informants to express their perception of AI, media platforms, and media users without too much interference from me. However, I understand that the questions were sometimes a bit confusing, given that I shifted focus between three different categories. Nevertheless, this approach was useful because it generated answers that combined various aspects. Through the shifting focus, the responses revealed a broader overview and exposed how the informants understand connections between elements in the fashion system.

Conducting the interviews

Four of the interviews were conducted over the phone, and two were conducted using Zoom; a free software for video conferencing. Some argue that face-to-face interviews give richer impressions, but I did not consider facial expressions and the like to be relevant for the aim of

this thesis. Emotional or personal stories were not requested. Therefore, considering the purpose of this thesis, I argue that phone and Zoom interviews were suitable.

When conducting the interviews, I followed techniques for qualitative interviews proposed by Kvale and Brinkmann (2009). I opened the interviews with a briefing to explain my research project. I reminded each informant that it would be possible to withdraw from the project at any time without naming the reason, and I asked if they wanted to be held anonymous or not. I then asked if I could record the conversation with an audio recorder, after their consent, I started the audio recorder and proceeded to the first questions. During the interviews, I sometimes used the technique of verifying questions to make sure that I understood the answers correctly, and I listened attentively in case someone mentioned something to follow-up. I ended the interview sessions by asking them if they wanted to add anything else.

Transcribing the interviews

It was necessary to transcribe the audio files from the interviews to enable an in-depth analysis of the collected data. I decided to transcribe the interviews myself to learn more about my skill as an interviewer and to start the analysis of the interview data while transcribing (Kvale and Brinkmann, 2009, p. 180). Four of the six interviews are translated from Norwegian to English. The transcripts are formal rather than verbatim as some formulations have been adjusted to make it easier to read the transcripts, by for example deleting repetitions of words, and coughing or laughter are left out (Kvale and Brinkmann, 2009, p. 180). The transcripts are the primary data material I analyse, and I use quotes from the transcripts when I present the results with consent from the informants.

3.4 Qualitative content analysis of websites

The purpose of doing a qualitative content analysis of websites was to ensure a secondary data source to contextualise and validate the findings from the interviews. Doing a qualitative content analysis of information from websites poses a threat to the reliability of this thesis because websites may change structure and content regularly, and this means that other researchers may have a hard time following the exact steps of this thesis to check its reliability. However, the focus of the content analysis was to gather information about some of the players in the trend forecasting industry to see how they communicate the use of methods to understand how opportunities from the digital infrastructure affect their practices. I searched through the

three websites for mentions of AI, media platforms, and media users. I primarily collected data from the websites during October 2019. As websites change regularly, I checked the websites several times until the submission date of this thesis in June 2020.

3.5 Privacy and ethics

This thesis follows guidelines for privacy recommended by NSD, which is the Norwegian centre for research data (NSD, 2020). This thesis also follows ethical guidelines for academic writing and empirical research presented by Nygaard (2017). NSD approved this thesis project before I collected any empirical data. The reference number for this thesis registered with NSD is 630750. I used templates from NSD to create an information sheet and a consent form, which got sent to all participants via email. The information sheet contained information about the purpose of the project and the informant's rights. The consent form contained statements for them to agree to, concerning anonymisation and how I could store and use data from the interviews. Obtaining informed consent is essential. The consent forms were either signed electronically or agreed to at the start of the interviews. It is common to let research participants know that they can withdraw without stating a cause (Nygaard, 2017, p. 39). Therefore, I made sure to communicate this to all informants. If any of them were to withdraw, which happened, I needed to have enough data material not to be harmed by the loss. Hence the additional data from the websites which gave some safety.

3.5.1 Handling interview data

I recorded the interviews based on consent from the informants, and I stored the audio files on a personal storage device. All audio files got deleted at the end of the project. The transcripts are kept but anonymised for safe storage. The informants accepted the quotes applied in the report and confirmed its rightfulness. Answering the research questions of this thesis does not require any sensitive data such as the informant's identified gender, health status, age, sexual orientation, religious beliefs, or any other topics related to a person's intimate and private life. It was not a requirement that the informants needed to have their names stated in this thesis; however, opening up to using names seemed like a natural decision given the nature of the interview conversations. Every name of informants reported in this thesis is with consent.

About zoom

The video conferencing software Zoom received criticism during the Covid-19 pandemic in 2020 about its lack of data protection. When I learned about these concerns, I had already used Zoom for a couple of interviews. However, it is essential to keep in mind that this thesis is about fashion and not interested in any personal or sensitive data related to sex or mental health. The information collected via Zoom concerns professional views on the field of fashion, such as perceptions of AI and the contemporary media landscape. Moreover, the informants I interviewed via zoom have given their consent that I can use their names in this thesis, which underlines the low degree of sensitivity in the data.

3.5.2 Internet ethics

This thesis handles data from websites. Therefore, it was necessary to follow guidelines for Internet research. This thesis follows the guidelines for Internet research presented by NESH, which is the national research committee for social sciences and humanities. This committee prevents scientific dishonesty within social science and the humanities. The NESH guidelines describe many ways to include the Internet in research. For example: ‘the research on production, communication and interaction via the web’, and this can include the use of websites (translated from Norwegian, NESH, 2014, p. 4). The main rule is that researchers are allowed to use material from open forums without obtaining consent unless it conflicts with the individual’s right to privacy (translated from Norwegian, NESH, 2014, p. 4).

The context of the material becomes crucial to decide whether it is private or public (translated from Norwegian, NESH, 2014, p. 5). The information I collected from the websites is about company practices, not about individuals. The information does not require exclusive access, and it is open and publicly available for everyone with non-censored access to the Internet. The way I understand the NESH guidelines, it was not necessary to contact the trend agencies to obtain consent before handling data from their websites.

3.6 Limitations

There are several limitations in this thesis, which I will discuss in this section. The main limitations are (1) results that will not be generalisable due to small samples, and (2) lack of

inter-coder reliability in the interpretation of the collected empirical data. As in all research, it is crucial in this thesis to consider validity, reliability, and generalisability (Kvale and Brinkmann, 2009, p. 244). These aspects are somewhat complicated in studies where the primary data source are qualitative research interviews because the data collection happens as a co-creation of knowledge between the interviewee and the interviewer (Kvale and Brinkmann, 2009, p. 193). It is generally hard to stay unbiased in the interpretation of data from interviews. Therefore, I find it suitable to think of reflexive objectivity which means that I am aware of my role in the production of knowledge (Kvale and Brinkmann, 2009, p. 242).

Validity in qualitative interview investigations can mean to check the validity of collected knowledge regarding «its degree of correspondence with an objective reality» (Kvale and Brinkmann, 2009, p. 247). Hence the need to use a secondary data source such as the websites for validation; to check for correspondence between the interview data and data from a source where I did not participate in the knowledge creation. Reliability addresses the question of whether it will be possible for others to reproduce this thesis and get similar results (Kvale and Brinkmann, 2009, p. 245). I transcribed the interviews, and I analysed the data alone without checking the reliability through transcriber reliability or inter-coder reliability. However, I applied member checking also called participant validation (Birt et al., 2016), which means that the informants got a chance to read through the results to check that they still agreed with what they stated earlier and that I had interpreted their statements correctly.

The explorative nature of this thesis, and the intent to gather knowledge that can inspire future research, means that this thesis does not aim at being generalisable. Moreover, both of the samples are small and results of convenience sampling. Still, I argue that they are good samples because they offer insights about exciting positions and processes related to fashion trends. The websites belong to trend forecasting agencies located with main offices in Europe, and most of the informants work in Scandinavia. As a consequence of this convenience sampling, this thesis is, unfortunately, ignoring vital players from other parts of the world. Because of the explorative focus and small samples–this thesis does not achieve generalisability. Nevertheless, the intention was never to end up with results that are generalisable to the entire fashion industry, nor representative of every aspect in fashion trend forecasting. Getting such results is probably not possible within the scope of one master's thesis.

Furthermore, the analytical framework is quite extensive, covering three complex aspects of digital development, hence the broad approach through three different categories: AI, media platforms, and media users. This comprehensive approach is possibly a limitation because some might find it hard to follow the line of thought through changing focuses. However, I argue for the importance of doing this type of broad reporting to understand intersections of processes involving analysis of fashion big data, sources of fashion big data, and providers of fashion big data (AI, media platforms, and media users).

3.7 Thematic analysis

In this brief section, I will explain how I went about and analysed the collected empirical data, both the data from the interviews and websites. First, I coded the interview data using the analytical framework, AI, media platforms, and media users as the point of departure. Then, I conducted a qualitative content analysis of the coded interview data. Concerning the websites, I performed a qualitative content analysis of the data collected from the websites to identify themes that would fit the themes from the interview data, either by being confirming or contrasting. It was not possible to include every theme that I identified. Therefore, I selected the most significant themes based on relevance to the research questions, and I will present these themes in coding manuals at the end of this section.

3.7.1 Coding

I coded the transcribed interviews by identifying themes related to the analytical framework. Coding in the grounded theory tradition does not require quantification (Kvale and Brinkmann, 2009, p. 202). Hence the decision to analyse the codes qualitatively in comparison to other codes in the data material. Kvale and Brinkmann explained that the purpose of such coding is «development of categories that capture the fulness of the experiences and actions studied» (2009, p. 202). I applied a combination of predefined codes based on what I could find in the current literature, and new codes based on what I identified in the collected empirical data.

When coding the transcripts, I attached one or more themes to every new interview statement to systematically organise the responses into meaningful thematic segments. An interview statement describing the need for new technological systems was linked to the AI-category because it came up as part of the discussion about AI. In that sense, the categories are broad.

Some statements described complex processes including AI, media platforms, and media users, and therefore, I linked them to all three categories.

The websites were scanned manually with the purpose to check if they mentioned AI or other machine-supported methods and if they mentioned specific media platforms and users. Interesting elements from the websites got saved in a document, such as screenshots or key sentences. The thematic analysis of the data collected from the websites was less in-depth, compared to the detailed coding of the interview data.

Coding manuals

These three coding manuals show identified themes and subthemes for each of the three categories of the analytical framework: AI, media platforms, and media users:

Category	Themes	Subthemes	Examples
AI	AI: Suggested reasons for use	Tackle the high pace in the fashion industry	«the quantities of information that you need to comprehend in a fast pace» (Gaede, 2019)
		Achieve less biased trend predictions	«people always have certain perspectives [...] they have in a way curated a bit of the selection already» (Stangbye, 2019).
		Sustainability: Avoid overproduction	«Artificial intelligence can let us use data in a way that makes the processes, services, and products more accurate» (Mardal, 2019).
	AI: Suggested challenges	How to select and interpret fashion big data	«you can get blindsided by the data» (Hawkins, 2020)
		Defining roles: What AI will do and what the forecaster will do	«fashion and clothes are about emotions which are hard to predict» (Hansrud, 2019)

Table 7. The coding manual for AI

Category	Themes	Subthemes	Examples
Media platforms	Dissemination of fashion in the digital age	From print to digital	«the traditional print media play a less significant role» (Hansrud, 2019)
		Information overload	«so much content is being produced, you cannot keep track of where the trends are all the time» (Stangbye, 2019)

		Digital fashion: An early phase	Carlings digital collection
	Use of media platforms in trend research	Social media	«brands today can almost use Pinterest as a starting point for the production» (Mardal, 2019)
		Online versus offline	«let us start researching, and then it becomes completely silent. Everyone is sinking into their phones or laptops» (Edu, 2019)

Table 8. The coding manual for media platforms

Category	Themes	Subthemes	Examples
Media users	Increased connectivity, but lack of transparency	Consumer-producer relationship in social media	«most important part of the job as a store owner is to get good pictures to post on social media» (Hansrud, 2019)
		Consumer needs	«It is increasingly the consumer who creates the trends» (Mardal, 2019)
	Content creators	Storytelling and advertising	«fashion companies are more able to use media as a way to tell their story» (Hawkins, 2020)
	Trendsetting	Subcultures	«it is in a way in subcultures on Instagram that trends are created» (Stangbye, 2019)
		Influencers	«the influencers get things sent as the first in the launch, so they probably think that they are at the front» (Edu, 2019)
		Tendencies	«if sustainability is not necessarily trendsetting—at least it is steering the trends» (Edu, 2019)

Table 9. The coding manual for media users

These three coding manuals represent the structure of the thematic analysis of the collected data from the interviews and the websites. In the following chapter, I will present and discuss each of these themes from the coding manuals.

4 RESULTS AND DISCUSSION

This part of the thesis is the results section, and this is where I will present my findings. The six in-depth interviews generated most of the results, while the results from the content analysis of the three websites added a broader context and contributed to a more nuanced perspective in the discussions. The results are divided into three main parts based on the categories of the analytical framework: AI, media platforms, and media users. For each of these three categories, I have identified themes and subthemes based on what the collected empirical data suggested. The reporting of these themes and subthemes will be according to the following structure:

- *First part: AI*
- *Second part: Media platforms*
- *Third part: Media users*

4.1 AI: Introduction of results

This part concentrates on the results of my analysis regarding the first category of the analytical framework: **AI**. These results will respond to **RQ1: *How and to what degree does AI affect methods of fashion trend forecasting?*** With limited current research to understand broader impacts of AI in fashion trend forecasting, this report will be highly explorative, and the discussion will focus primarily on the collected empirical data from the interviews and the websites. However, and where it seems fit, I will refer to claims from existing literature about AI in fashion trend forecasting to position my findings according to current research. The results concerning AI are divided into two main themes, and these themes have subthemes:

Theme 1 – AI: Suggested reasons for use

- Tackle the high pace in the fashion industry
- Achieve less biased trend predictions
- Sustainability: Avoid overproduction

Theme 2 – AI: Suggested challenges

- How to select and interpret fashion big data
- Defining roles: What AI will do and what the forecaster will do

The first theme is based on what the samples indicated as reasons to use AI in fashion trend forecasting. The second theme is based on what the samples indicated as challenges or concerns regarding the use of AI in fashion trend forecasting. All these identified themes and subthemes are generated from my analysis. I will discuss them in the following sections with help from quotes from the interviews, and in some cases, with findings from the websites to contextualise the discussions. Before presenting the first theme, I find it needed to present the level of AI experience in the two samples.

Background concerning the samples' experience with AI

Edu. Edu values fashion as art and highlighted the artistic abilities of fashion designers to express something personal. Edu, as a representative of fashion education, explained that they were not teaching about AI yet, and also that the institution lacks knowledge on this topic. Edu described a growing interest among the fashion students to apply aspects of technology in the planning of new designs. Edu explained that their students research trends without AI or trend reports, which means that they have to gather information and make it into something new without help from software or trend forecasting agencies.

Gaede. Gaede defined her approach to trend forecasting in fashion as business-oriented and commercially driven rather than avant-garde. In her work with fashion trends, she is combining her background from communication studies with theories of behavioural economics. Gaede had not yet tried AI. However, she knew of several other trend forecasting agencies that had started using AI, and she expressed that she was curious to test it herself to see how a trend-algorithm would work.

Hansrud. As editor of the only trade press for fashion retail in Norway, Hansrud is in a position where he has much knowledge about how fashion businesses in Norway operate. Hansrud was not very familiar with AI. However, he explained that the fashion system is outdated and in need of change, and he suggested that technology such as AI could be of great help to overcome some of these challenges that fashion businesses are currently facing.

Hawkins. Part of Hawkins' work as a futurist is giving trend consultations to different businesses, not only fashion, to help them perform according to how the world is changing. Hawkins underlined the importance of making the right decisions when taking on a data-driven approach to trend forecasting. At the time of our interview, she was not using AI. Hawkins

approaches the interplay of fashion and AI with a particular interest in the combination of creativity and technology to start a discussion about what may happen when minds and machines work together.

As head of innovation for the Norwegian Fashion Hub (NFH), Mardal works on projects together with this organisation to develop the Norwegian fashion and textile industries to make them sustainable and oriented towards the future. Mardal explained that a lot of the work they do concentrates on developing new business models for fashion companies, and he mentioned that they discuss technology and digitalisation as some of the main enablers of this. Mardal showed an interest in AI in fashion trend forecasting as a solution for optimising processes.

Stangbye is a digital consultant with years of experience from the fashion industry. He showed a broad understanding of how fashion is affected by digitalisation, and he discussed both challenges and opportunities for fashion in the contemporary media landscape. Stangbye seemed optimistic about AI in fashion trend forecasting, and he suggested that AI can support the search for exciting trend-aspects from the deep corners of social media.

All six informants reported being aware of the growing presence of AI in the fashion industry. However, none of them described having any hands-on-experience with using AI as a tool in fashion or trend-related work. I did not know in advance what their level of experience with AI would be, so this result was relatively random. Some of the informants seemed very optimistic about AI-supported fashion trend forecasting, while others expressed a bit of scepticism. Nevertheless, all six informants seemed convinced that AI would play a more significant role in fashion trend forecasting in the future, and also in the overall fashion system.

Background about the websites

Among the trend agencies Heuritech, Trendstop, and WGSN, I found that the Heuritech website gave out significantly more information about AI compared to the two others. Heuritech promoted AI as the leading strategy in all of its fashion trend forecasting practices. The Trendstop website, on the other hand, informed about using a ground-breaking methodology without further clarification. Information on the WGSN website indicated use of data to support trend reports, and the website also promoted something called ‘WGSN’s intelligence’ (WGSN, 2020), which appeared to be a tool for clients to use in decision-making.

This part presented a bit of background about the two samples concerning their experiences with AI. It was necessary to provide such information about the level of AI experience among the samples before presenting any further results. The next section is the first theme of the AI results.

4.2 AI: Suggested reasons for use

The following sections will present some of the suggested benefits of using AI in fashion trend forecasting. These suggestions are based on findings from the collected empirical data.

4.2.1 Tackle the high pace in the fashion industry

The high pace of the fashion industry was one of the main themes discussed in the interviews concerning reasons to use AI in fashion trend forecasting. Statements that described a rapid change of trends appeared relatively often in the interview material. Moreover, findings from the websites indicated a focus on efficiency in the forecasting work to stay ahead of new trends.

The high pace is a much-debated topic among fashion scholars and players in the fashion industry (Black, 2019, p. 114, BoF and McKinsey, 2019). Among some of the claims concerning the pace in fashion, Edelkoort suggested that the pressure to work fast means that new trend innovations are in danger of being ignored (2014, p. 1). Reilly and Hawley (2019) explicitly suggested that traditional fashion trend forecasting would no longer be possible because of the pace in social media and how it leads to micro-trends. These short-lived and fragmented trends would perhaps only reach specific demographics rather than the mainstream market (Reilly and Hawley, 2019, p. 91).

Results from the interviews indicated that the high pace renders it challenging to keep an overview of trends, which might be hard for forecasters, but also for others in the industry who tries to identify trends or tendencies to understand the current fashion environment. Two of the informants provided the following answers when asked why it seems relevant or interesting to use AI to predict fashion trends:

«Because of the amount of massive information, the quantities of information that you need to comprehend in a fast pace» (Gaede, 2019).

«I think it is about the amount of information you can absorb [...] there are only 24 hours a day, so you are not able to keep track of everything. So, if you have someone who follows it and manages to give you like a curated selection or report, then I think it (AI) will be exciting» (Stangbye, 2019).

Findings from the websites showed that the high pace of the fashion industry is something that the agencies are paying attention to as well, which reinforces the impression from the interview data that this was an important theme to discuss. Compared to the websites of Trendstop and WGSN, the Heuritech website dedicated much space to promote the use of technology to tackle the pace. One of the primary offerings from Heuritech appeared to be AI-solutions that would keep fashion brands from falling behind. A description attached to the bottom of the website explained that «Heuritech is a cutting-edge artificial intelligence fashion company that provides brands with the vision they need to stay ahead of today's dynamic market and trends» (Heuritech, 2020).

The two words vision and need seem essential in the interpretation of this statement. First, AI plays a central role in Heuritech forecasting, which means that AI-based systems and big data are supporting the vision that Heuritech offers. How Heuritech balances out machine and human-made visions is unclear from the information on the website. Second, Heuritech communicates out that they have identified a need in the fashion market, which seemingly has to do with the need to tackle the high pace.

The two other websites focused less on communicating particular solutions for clients to keep up with the high pace. However, the WGSN website did indicate time-saving methods:

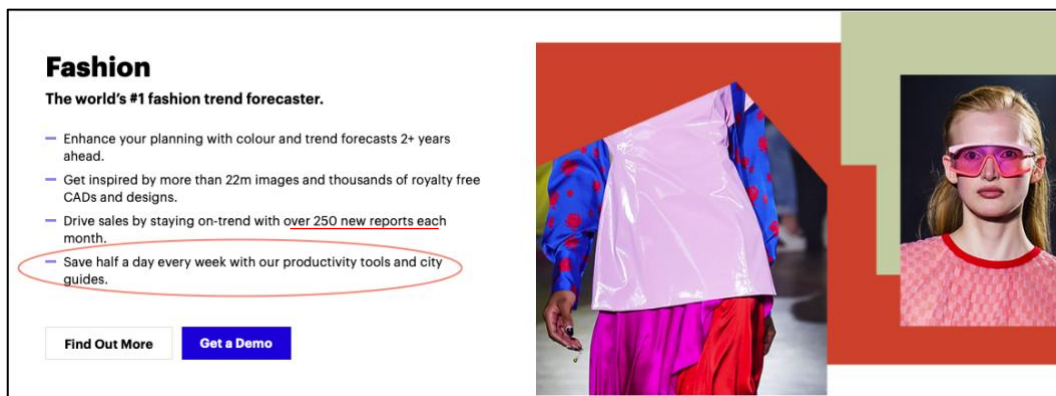


Figure 3. Screenshot of wgsn.com May 2020 indicating a focus on efficiency

Figure 3 above is a screenshot of a section on the WGSN website. This screenshot demonstrates that WGSN offers clients tools for increased efficiency (WGSN, 2020). Moreover, the screenshot also reveals that WGSN develops nearly three hundred trend reports monthly, in addition to offering long-term forecasts. The combination of ‘here and now’ and future insights was, according to Giertz-Mårtenson, one of the strengths of WGSN (2018, p. 233). The need for constant updates might be a tendency in the digital age that the fashion industry is increasingly becoming aware of, as the following subsection will highlight.

Long-term planning perceived as unsuitable

Regarding AI, several of the informants stated quite clearly that they lacked experience with this technology. Nevertheless, one of the informants, Hansrud, discussed AI as a solution to a growing problem he has observed concerning the traditional fashion system. He suggested that new technology, such as AI, can help fashion businesses with timing; to help them invest in the right trends at the right time and buy inventory closer to actual drop-date. The literature suggested long-term forecasts as one of the weaknesses in traditional fashion trend forecasting (Giertz-Mårtenson, 2018, p. 224). According to Hansrud, many retailers in Norway still follow this conventional fashion system of seasons and buy inventory many months before it goes to the stores, and he questioned this practice:

«what the technology can offer, is that it gives the industry the possibility to spot trends a lot faster. It is still the case today that stores pre-order clothes for spring 2020, and maybe 60% of inventory for spring was already bought in August (2019), and that is a totally hopeless old-fashioned way to run a business. Things are changing radically [...], the value chain will change, and the production will go faster, and that is where the technology will come in handy» (Hansrud, 2019).

Another informant, Mardal, gave a similar statement. He suggested it will be essential for fashion companies to reduce the time spent from collection planning to collection drop. These interview findings indicated that many fashion companies might be trapped in-between the traditional fashion system of established buying-calendars and seasons, and the new reality of the fashion market. Recently, an official report stated that AI-supported planning could be part of the solution to cut down go-to-market time in the fashion industry (BoF and McKinsey, 2020, p. 33).

The cycle of trends

Whether the best decision is to run along with the speed of change in the fashion industry or to slow down seems to be something to reflect upon for a trend forecaster. Gaede described an experience that there is a push or a constant expectation for new trends in the fashion industry, but she has found that style-variations in clothing often change faster than what comes naturally to regular consumers. Therefore, when consulting her clients, Gaede will suggest that it is better to stick with a specific style or a trend for a while longer instead of always introducing new ones. She suggested that it can take up to ten years for the mainstream market to join in on new trends in fashion, such as a silhouette change:

«Every time a silhouette changes it is something very new to the regular consumers who just got used to something, and for them to change into a wider silhouette overnight that is not going to happen» (Gaede, 2019).

This statement indicated that there might be a mismatch between how fast the common consumer expects new trends and how often the fashion industry introduces new trends. The speed of fashion trend cycles was highlighted as one of the concerns related to sustainability in the fashion industry (Black, 2019, p. 114).

Finding what it takes to slow down the accelerating pace in trends seems complicated, especially considering how rooted it seems to be in the current state of fashion. The two scholars that identified attention deficit fashion in social media even suggested that fast fashion, and the phenomenon of micro-trends, had come to replace the initial fashion system (Reilly and Hawley, 2019, p. 87). However, identifying digital natives with a short attention span as the

reason for micro-trends, such as these scholars did, seems a bit problematic because it concentrates on a small fraction of the fast fashion situation and ignores the bigger picture.

Part of this bigger picture is statistics reporting that 86% of fashion companies use influencer marketing (BoF and McKinsey, 2019, p. 33). As fashion brands spread their products through gifting or collaborating with popular media users, these media users post pictures in social media of new outfits all the time because they keep receiving new ones. Therefore, the trend-machinery keeps going at high speed caused by the expectation of new trends that may partially be an illusion created by the fashion industry itself.

The peak of the pace?

Gaede suggested that the fashion industry might have reached the peak of the pace in terms of how often new clothing collections get released in the fast fashion market:

«where we are right now, we are seeing a collection each week. I do not think this pace is going to increase because that will erode the business model itself. So, I think we have kind of reached the peak of the pace where we are» (Gaede, 2019).

This statement indicated that the pace in the fashion industry is at an all-time high, and this seems like a very relevant statement given recent discussions in fashion media. During the Covid-19 pandemic in 2020, many fashion industry executives were speaking up about actually starting to do something to change the fashion system because of unsustainable practices related to the high pace and also to find back to the craftsmanship of fashion (Blanks, 2020, Flaccavento, 2020). A group of designers and other fashion industry profiles were allegedly forming a movement to take the lead in reshaping the fashion system (Sherman, 2020). It will be interesting to see whether these initiatives that emerged during the time of crises will have any long-term implications concerning the pace of the fashion industry.

4.2.2 Achieve less biased trend predictions

The intuition of the trend forecaster appears greatly valued in the fashion trend forecasting sector. Such intuition was highlighted as the essential tool in fashion trend forecasting, even when forecasters started using new support systems such as computer-assisted statistical methods (Blaszczyk and Wubs, 2018, p. 1). However, the rise of convenient AI systems seems

to challenge this perception. According to McAfee and Brynjolfsson (2017), intelligent machine systems are less biased and beat intuition when it comes to decision-making, and their claim is that AI will be better suited to develop forecasts and make predictions compared to people. On the other hand, in what ways this logic applies to the field of fashion trend forecasting is perhaps unclear because of aspects associated with fashion such as individual taste and creativity, which are aspects that are hard to cut off entirely from biases.

The findings from the websites indicated that two of the forecasting agencies favoured expert judgement as they explicitly highlighted the importance of on-the-ground trend hunt. Both Trendstop and WGSN explained on their websites that they had trend forecasters travelling around the globe to spot trends by visiting cities and stores and attend events (this information was removed from the Trendstop website).

This information was noteworthy because it seemed like a cornerstone of what these agencies were doing; it was an essence of their work. Taking away some of their integrity as trend experts by suggesting that AI would do better seems wrong. Expert judgement is probably going to be very useful still in the fashion industry. McAfee and Brynjolfsson suggested that some are superforecasters because they manage to take in several inputs (McAfee and Brynjolfsson, 2017, p. 60). However, not taking advantage of new support systems for predictions does not seem like the best strategy either. One of the informants suggested that even professional fashion trend forecasters cannot entirely cut off from their personal preferences, which can result in biased predictions:

«Because people always have certain perspectives, things that they are more exposed to than others, so that means that they have in a way curated a bit of the selection already» (Stangbye, 2019).

Stangbye shared an experience that sometimes the personal preferences of the forecaster would shine through in the trend predictions, and he suggested that AI can help eliminate such biases in the forecasting process. Nevertheless, although machines are less biased than humans, it is essential to remember that humans handle the machines, and sometimes the data inputs can be flawed, or the algorithmic systems can contain biases (McAfee and Brynjolfsson, 2017, p. 51, Luce, 2019, p. 192).

Based on varied opinions from current literature and the findings in this thesis, it is possible to address whether biases in fashion forecasting should be considered a problem or not. It cannot be entirely random and without reason that one person, Lidewij Edelkoort, has been recognised as the most eminent trend forecaster in the fashion industry. In the fashion industry, there seems to have been a tendency to idolise specific individuals as experts or gurus of fashion. This tendency of identifying trend experts is still apparent, and it is not necessarily something that should vanish from the industry altogether.

Data-driven trend predictions

Based on what McAfee and Brynjolfsson suggested, to end up with less biased trend predictions, an alternative is to rely more on data-driven predictions and less on intuition. The AI-experimentations indicated use of vast datasets, which means that the AI-supported trend predictions were results of huge amounts of information. One of the informants suggested that analytics involving large datasets strengthen the argument that something is going to be a trend:

«you want to find similarities in order to actually have a trend. So, you want that similarity and that consensus to be coming from various sources. [...]. Can I track this colour in various sources? Can I see that this is actually coming through? So, that is where I think that AI would be massively relevant, to do a heavier argumentation saying that we have actually found [...] this kind of research [...] on this basis, that is, you know, global or 10 000 webpages» (Gaede, 2019).

Perhaps will AI-supported methods be more democratic in terms of generating trend predictions based on what the majority prefers, but what happens then to expert judgement? In fashion trend forecasting, should the preferences of the crowd be decisive over the intuition of the trend forecaster? AI facilitates a new balance in fashion trend forecasting where the predictions can shift from primarily being core-processes to become entirely crowd-based. Listening to the crowd has long been suggested as a strategy that producers will benefit from (Naisbitt, 1984)

Moreover, the power of the crowd seems to be something that the core cannot compete against, meaning that producers of fashion should incorporate consumer data in decision-making. However, findings in this thesis suggested a dilemma; should fashion be about pleasing the crowd by giving them what the fashion big data suggest they would like? Or, should fashion also try to challenge the ruling perceptions of taste? The following interview statement exemplifies such questions:

«Should we be dictating what people want? Or giving them things that they do not really need? [...] using the data in order to say: Oh, well, people in Oslo like blue whatever, so I am going to make more of them because they really like it and therefore, we will sell more things because we are going to give them something they are really into [...] Is it the most responsible business model; trying to use data to replace creativity and intuition?» (Hawkins, 2020).

This dilemma seems to be something to consider when taking data-driven approaches to fashion trend research and forecasting. It is not necessarily wrong to give people what they already like, and it is vital to meet consumer needs to stay relevant as a fashion company. At the same time, some of the results hinted that the fashion industry should not forget to challenge perceptions of taste and aesthetics. Recognising such essential aspects of fashion seems to be of relevance in decision-making processes based on consumer data.

One of the other informants, Edu, interpreted the intention of data analytics in the fashion industry as a way of telling businesses what products are most likely to sell based on what is already popular or growing in popularity. Edu found that the question asked in data analytics of fashion information is: What does the market want? Edu suggested that approaches including data analytics do not necessarily apply to fashion as art because the analytics confirm what is already out there and the response from a fashion designer should then be to make something different, a contrast so that it becomes avant-garde or art.

4.2.3 Sustainability: Avoid overproduction

So far, this thesis has highlighted to high pace and prediction-biases as suggested reasons to use AI in fashion trend forecasting. This section will address sustainability as another crucial reason to use AI. Results in this thesis indicated that the growing sustainability awareness and ongoing climate debates have significant influence over decisions and strategies in the fashion industry, also concerning the implementation of AI in fashion trend forecasting. Most of the informants and websites addressed sustainability, and it seemed from the results that technological development and AI can be helpful to reduce the environmental impact of fashion production.

Several of the informants explicitly addressed overproduction as a major problem in the fashion industry. According to Mardal, reports suggest that there is an alarming amount of fashion

products circulating in the market, and many more than there are people in this world. Hence the need to actively address overproduction and find solutions to reduce or end this problem. Hansrud suggested that the Norwegian fashion industry primarily takes an interest in new technology, such as AI-supported planning because it appears to be a suitable method to avoid overproduction. Hawkins underlined the necessity of reducing waste in the fashion industry and highlighted this as a critical factor and reason to use AI in fashion trend forecasting.

Findings from the websites indicated that all three trend agencies have sustainability as part of their strategies. Heuritech, being an AI-based forecasting agency, included sustainability as a central topic on its website. Similar to some of the informants, Heuritech addressed overproduction as a big problem in the fashion industry. As a solution to this problem, Heuritech suggested that AI will help cut down on overproduction in the fashion industry because it forecasts more precisely. According to the Heuritech website, «50% of forecasting errors could be avoided thanks to artificial intelligence» (Heuritech, 2020)

Prediction accuracy

One suggested strategy to avoid overproduction and reduce waste is to rely on AI-supported planning and to create on-demand. According to several of the informants, AI opens up to opportunities for the fashion industry to create on-demand and generally be more accurate to satisfy consumer needs. One informant highlighted prediction accuracy as one of the advantages of using AI in fashion trend forecasting:

«Artificial intelligence can let us use data in a way that makes the processes, services, and products more accurate» (Mardal, 2019).

Instead of basing predictions on past sale statistics, AI might facilitate collection of information from many more sources to spot upcoming trends or unfulfilled needs:

«most companies make decisions based on what has happened in the past, and there are huge fashion businesses and huge product businesses that say, well, we sold many million units of this last year and the year before and the year before that, so, we will just make it again. Instead of thinking: How is the world changing? How can we satisfy some needs that people will have?» (Hawkins, 2020).

Besides the suggested benefit of AI to predict with higher precision than other methods in fashion trend forecasting, the literature does not seem to go in detail to address AI as a solution to the sustainability issues. On page eleven of this thesis, I referred to a statement from Black (2019) because she has called out for new solutions to ensure a more sustainable fashion industry in a broader sense; not only environmentally but also socially and economically. This thesis found indications of a growing perception of AI in fashion trend forecasting as part of the new solutions to reduce unsustainable practices in the fashion industry. However, the findings in this thesis seemed to cover the environmental and economic aspects primarily; because reducing overproduction and cutting waste is beneficial for the environment and the profitability of fashion businesses.

4.3 AI: Suggested challenges

Besides the suggested opportunities of AI discussed above, it is also possible to explore some proposed concerns regarding the use of AI in fashion trend forecasting. Difficulties identified, in this thesis, are issues concerning selecting and interpreting datasets correctly to obtain meaningful fashion trend predictions. Moreover, the interview findings revealed concerns about the lack of understanding that AI-supported trend prediction systems will have concerning aspects of fashion that are profoundly human or tactile, which some of the informants suggested do not translate well to the digital realm.

4.3.1 How to select and interpret fashion big data

This subsection focuses on concerns or aspects suggested relevant in the process of selecting and interpreting datasets to apply in fashion trend forecasting. Hawkins described AI as both a challenge and an opportunity in fashion trend forecasting. An opportunity because it enables analysis of big data to understand what people are watching, reading, and generally what interests them. On the other hand, she suggested that AI can be a challenge because of the risk of being blindsided by the data. This statement indicated the importance of correct handling and interpretation of data. Datasets with much noise, also called outliers, can be a challenge because they mess with the output of predictive models as it becomes harder to interpret the information correctly (Luce, 2019, p. 113).

Besides interpreting data correctly, the selection of data sources will also have an impact on the outcome of the data analytics. Existing research indicated that it is relatively common to extract datasets from social media to apply in AI-supported fashion trend forecasting. Results in this thesis strengthened this impression as the findings from the websites revealed that all three agencies used information from social media.

According to Mardal, several companies in the Norwegian fashion industry are already using AI to optimise strategies and processes. However, based on what Mardal described, these companies seemed to use AI primarily to perform data analytics of company data to get insights about customer behaviour. Mardal did not know about any Norwegian fashion companies that extract and analyse data from the various online sources, such as pictures or comments from social media. The Norwegian fashion industry is relatively small. Therefore, such findings may indicate that AI-supported trend predictions using datasets from various media platforms, such as magazines, Instagram or blogs, is not yet widespread in the Norwegian fashion industry.

The situation seemed to be similar in Denmark as both Gaede and Hawkins indicated little widespread use of AI in the Danish fashion industry as well. Concerning AI and data analytics in fashion trend forecasting, and particularly the understanding of data-driven trend predictions, Gaede revealed a perception that, perhaps, most fashion brands in Denmark do not have sufficient insights to comprehend such processes:

«I do not think that they (the fashion brands) will be very much aware of what those analytics that they are looking at actually come from» (Gaede, 2019).

To summarise these findings: Adding social media data or qualitative data, such as pictures or user-generated comments, got highlighted in the literature because it supposedly could generate more precise or representative fashion trend forecasts (Ren et al., 2019, Matzen et al., 2017). However, based on results in this thesis, such approaches are perhaps not widely introduced. At least not among smaller-scale fashion businesses and trend agencies. Moreover, questions of implementing user-generated data are complicated because of various concerns regarding the execution and intention of leveraging such data. After briefly discussing some different thoughts concerning the selection and interpretation of datasets, I proceed to results about the balance between AI and the work that trend forecasters do.

4.3.2 Defining roles: What AI will do and what the forecaster will do

All informants suggested that AI will become increasingly significant in the fashion industry in the future, also in the fashion trend forecasting sector. With such prospects, it becomes critical to understand the implementation process, what will be the obstacles, and how will people in the fashion industry perceive these new technological support systems? The role of AI in the fashion industry might be challenging to understand at first, especially if there is a lack of defined strategies to implement and use such technology (Thomassey and Zeng, 2018, p. 2). Gaede had introduced the idea of using AI to some players in the Danish fashion industry. Still, she found that there was a lack of interest or will to explore AI at the time, and the following interview statement indicated the type of responses she got:

«it is paradoxical how conservative and how old fashioned the (fashion) system still is. That is a big paradox because they are saying that we can still make money as we have always done, so why should we invest in new and faster systems? What is the return of investment? Why do we need to design via artificial intelligent systems? Or why bring in new technology?» (Gaede, 2019).

Gaede concluded with a suggestion that other industries in Denmark, such as the finance industry are further ahead than the fashion industry when it comes to exploring AI. According to Hawkins, the fashion industry used to be, in general, a leader in terms of innovativeness. She described the fashion industry as ‘being ahead of everything’, but she has found that recently, fashion is perhaps surpassed by other categories that push ahead, like the beauty industry.

Aesthetics and emotions

Although the informants generally understood AI, they also expressed a few concerns regarding how the fashion industry is to interpret the role of AI in fashion trend forecasting. The main concerns were related to aspects of fashion that will be hard for a machine to grasp, such as aesthetics, emotions, and tactility. Moreover, some of the informants highlighted the abilities and integrity of the trend forecaster, such as the in-depth knowledge about trends, to suggest that this will still be decisive for the final forecasting touch.

Fashion is a complex industry between creative expression and business intents. Most of the informants stated whether they have a commercial or artistic approach to fashion. However, and despite their varied perspectives, most of them identified challenges of AI in fashion

because trends appeal to creative and emotional aspects in humans. Interestingly, so many as three of the six informants used the same word to discuss fashion trends, namely emotions. They highlighted the emotional element of fashion as something that is generally hard to predict, and perhaps even harder for an AI-system:

«regardless of technological developments, fashion and clothes are about emotions which are very hard to predict. [...]. Of course, using artificial intelligence to collect data and information efficiently lies in the background, as a suitable tool. However, what will hit and what will miss, to put it that way, has a lot to do with emotions, which is hard to predict» (Hansrud, 2019).

One of the other informants, Stangbye, seemed a bit more open to believing that AI will eventually be able to understand the emotional aspects of fashion. As technology develops, Stangbye suggested that it will be harder to distinguish machine-made from human-made fashion aesthetics. McAfee and Brynjolfsson (2017) also suggested that AI would be able to comprehend aesthetics. They explained how «the things we find beautiful, or that appeal to our taste and senses – are complex, and understanding them is difficult [...] but it's not impossible» (McAfee and Brynjolfsson, 2017, p. 117). Nevertheless, possible or impossible, letting AI do the entire job does not seem fair to a creative industry like the fashion industry. Therefore, it will be essential to find the best ways to combine AI and human intelligence in the development of new trends.

Combining abilities: A balance between AI-efficiency and the forecaster's trend expertise

One of the main claims from McAfee and Brynjolfsson (2017) was a suggestion that decisions would be better if minds and machines work together. This thesis found varied opinions concerning to what degree AI will replace or support parts of the trend forecasting process in the fashion industry. Gaede, like some of the other informants, experienced a need for better systems in the fashion industry:

«for the designers [...] to reach more globally and to reach more in-depth, we definitely need to interact with new systems in order to use our time and competences in a better way. So, I think it (AI) is definitely going to be more widespread; it is just a matter of time before the systems are being developed and they are good enough to be used» (Gaede, 2019).

Implementing advanced systems means that there will be combinations of minds and machines operating in fashion trend forecasting. A focus then should be to find out how to best combine the mind of a fashion trend expert, either designer or forecaster, with AI to get valuable results, both economically and creatively. Mardal shared some thoughts about what the design processes will look like when machines play a more substantial role:

«I also believe that artificial intelligence will replace parts of the design process [...] because the trends will increasingly be created by the market and not by the designers. [...]. A big part of the design process today is to map trends, and when that part is done by artificial intelligence, then the design process will be more of a machine-made decision» (Mardal, 2019).

In a situation such as the one described above, the process of planning and designing new clothing will rely less on expert judgement and intuition and more on data that provides information about what the market wants. One of the other informants added a different perspective to this discussion. Hawkins suggested that the combination of humans and intelligent machines will be an opportunity for humans to excel:

«machines are not that great at creativity or forming lots of new connections and thinking of things in a different way. That is the real opportunity for us as people to excel and to shine. So, I think that the combination of the two (AI and people), and that is the future opportunity; being able to work with machines, work with AI, work with technology to combine human skills and human ability with machine ability to be able to do something even better than either could do alone. And I think that that is a great opportunity» (Hawkins, 2020).

Findings from the websites indicated a focus to communicate that fashion forecasting is increasingly combining the work of forecasters with new technology. In the About WGSN-section, the agency claimed to have been the first forecasters to use a combination of high-end technology and human ingenuity in their work with the global creative industry (WGSN, 2020). The WGSN website showed that, besides combining minds and machines as described above, WGSN also combines the work of computer engineers and fashion trend experts.

Trend knowledge and fashion attributes

Some of the informants suggested that AI will be essential in the quantitative parts of the forecasting process as a tool to gather information. At the same time, they suggested that human

forecasters will have the final qualitative touch. Gaede questions the ability of AI to understand things like; what colours go together, and if it will have enough knowledge about trend theory:

«fashion is still very much a part of the physical world; it is physical garments it has a bodily structure. And for that, we need technology to evolve even further to grasp that element» (Gaede, 2019)

Gaede suggested that AI will be helpful to collect information and support forecasters to gain an overview of the present. Nevertheless, she questioned whether the current AI-technology has that proper forecasting element which is needed in the fashion industry to anticipate trend development based on comprehensive trend knowledge. Current research indicated that it was common to use trend information from fashion websites or online magazines as a method to create fashion attributes to apply in the training of AI-prediction models (Al-Halah et al., 2017, Beheshti-Kashi et al., 2018). Such examples demonstrated the need for knowledge about trends, or availability of relevant trend information as a foundation to make data-driven trend predictions. However, the significance of proper trend knowledge and the importance of creating relevant fashion attributes seems insufficiently covered in current research.

Unfortunately, there was not much information on the websites to discuss the relevance of fashion attributes in a broader context. Still, a picture from the Heuritech website seems to demonstrate quite well how an AI system might recognise fashion attributes in an outfit-picture. This screenshot below taken of the Heuritech website illustrates what type of fashion attributes might be considered relevant in data analytics of fashion trends (Heuritech, 2020):



Figure 4. Screenshot of heuritech.com May 2020 illustrating the use of fashion attributes

These sections have highlighted reasons to use AI in fashion trend forecasting and discussed some of the concerns or challenges of implementing such technology in a creative industry. The next part will present results related to media platforms.

4.4 Media platforms: Introduction of results

At this point, I have presented and discussed results concerning the use of AI in fashion trend forecasting. In the following sections, I will concentrate on the results of this thesis that describe aspects of the second category of the analytical framework: **Media platforms**. These results will respond to **RQ2: How do various media platforms work as sources to fashion information?** The results concerning media platforms are divided into two main themes with subthemes based on what I found in the analysis.

Theme 1 – Dissemination of fashion in the digital age

- From print to digital
- Information overload
- Digital fashion: An early phase

Theme 2 – Use of media platforms in trend research

- Social media
- Online versus offline

The first theme will discuss findings that describe perceptions concerning the role of various media in the circulation of fashion information in the digital age. The second theme will look into the usefulness of media content in the context of fashion trend research and how trend forecasters or designers might turn to the Internet when mapping out new trend proposals.

4.5 Dissemination of fashion in the digital age

This section will briefly introduce how some of the informants described their perceptions of fashion media in the digital age. I did not address print media or the transition from print to digital media in the interviews. Still, many of the informants described fashion dissemination in the contemporary media landscape by pointing to how it is different from the print era. Mardal suggested that fashion magazines have lost much of their previous power, and several other informants gave similar statements. These findings match the description of how the emerging crowd challenges the core (McAfee and Brynjolfsson, 2017). Competition from digital platforms means that the previous core of magazines in fashion media is challenged by online spaces that people from the crowd can fill up with their sense of fashion:

«the traditional print media play a less significant role. The fashion magazines are under pressure, and they are declining in numbers here in Norway [...], and that is because of digital media and social media, which are taking over and which are preferred by the consumers» (Hansrud, 2019).

Despite social media's central role, Hansrud suggested that mainstream media are still relevant in the circulation of fashion information, such as newspapers that write about the business side of fashion. He also highlighted a couple of big magazine-titles from the print era that have managed to stay relevant despite the fierce competition from online media. It is hard for print media to compete against the digital because the digital has the advantages of instant, free, and perfect (McAfee and Brynjolfsson, 2017). Nonetheless, even if big players like VOGUE offer online versions of their magazines, Gaede suggested that these previous giants are less significant compared to many of the other platforms that provide fashion content on the Internet.

As current research has found, there are relatively remarkable differences between print and digital fashion magazines (Rodríguez et al., 2017). From my interpretation of some of the interview findings, it seems that the transition from print to digital in terms of fashion dissemination had a quite broad effect. There are more ways to access fashion information, and a majority of people seek out information from sources that are quite different compared to only a decade ago. In the next section, I will discuss how the amount of fashion-related content in the contemporary media landscape affects practices of fashion trend forecasting.

4.5.1 Information overload

Results of this thesis indicated that the vast amount of fashion-related content on the Internet is both a challenge and an opportunity in the fashion industry. The AI-experimentations reviewed earlier in this thesis applied large datasets extracted from various platforms, and this illustrated that some have made it their strategy to get the most out of available information online. What does the information overload mean in terms of traditional fashion planning and trend forecasting? The literature about developments in the fashion trend forecasting sector made a clear suggestion: «No one can escape information overload» (Giertz-Mårtensson, 2018, p. 227).

McAfee and Brynjolfsson addressed the constant stream of information to describe that it challenges our ability to orientate. Explicitly about information overload, they suggested that people might find it annoying and therefore filter rather aggressively through it, which means that crucial information might get lost in the filtering process (McAfee and Brynjolfsson, 2017, p. 44). Several of the informants highlighted the information overload as one of the biggest challenges in terms of keeping an overview of trends. Consequentially, one informant described a need for navigation:

«there are trends for anything, and that does not help [...] a company saying: Which trend should I choose? What direction should I go? With digitalisation and globalisation, and everything alike, the technology [...] all trends have become accessible. [...] you can argue for any kind of trend, you just need time and research, and then you can do that. But that is not accurate, that is not business necessarily, so there needs to be some kind of navigation» (Gaede, 2019).

This experience that Gaede described, that there are many trend variations to pick among, is similar to an observation that Reilly and Hawley (2019) presented in their study of fashion

trends in social media. These scholars suggested that the online environment with interactive platforms contains a bunch of micro-trends, which makes it harder for companies to identify which trends to invest in or not. Given the situation with micro-trends, it appears that the work of a forecaster is more significant but also more complicated. Similar to Gaede, Stangbye also discussed information overload and the difficulty of spotting trends. He compared the current situation to how it used to be when print magazines dominated fashion media:

«so much content is being produced, you cannot keep track of where the trends are all the time [...] it (fashion dissemination) happens in so many more channels, and many of those channels are also very fragmented, and this makes it difficult to keep control of what is suddenly a trend. In the past, you could buy three magazines, and then you knew what was going to happen, but now you have to pay more attention» (Stangbye, 2019).

What these two informants described was a need for a method to regain overview or control of the development of fashion trends, something that appears to be a bit lost since the explosion of fashion content online. The word fragmented seems essential because it describes a characteristic of current fashion media that differs relatively much from traditional fashion dissemination which was easier to follow as it came from a few established players (Rocamora, 2012, p. 100). The information overload seems overwhelming for players in the fashion industry, making it more complicated for brands to position themselves in what appears to be an oversaturated market.

Despite this lack of overview of trends in the current media landscape, Stangbye suggested that some people have an exceptional talent to spot new fashion before it becomes mainstream by seeking it out from the deep corners of social media. He mentioned the current creative director of Louis Vuitton as someone who actively seeks out design or trend inspiration from social media. What Stangbye described is an opportunity found in the digital media landscape where creators of fashion can take advantage of the vast library of fashion information as part of the creative or commercial planning. Giertz-Mårtenson claimed that some of the big fashion companies could find it useful to leverage the available information online to achieve more tailored insights instead of solely rely on official trend reports from agencies (2018, p. 228). However, turning the fast-changing and uncontrollable load of information into a manageable fashion library probably requires a considerable amount of resources and time.

All three websites, Heuritech, Trendstop and WGSN, directly or indirectly addressed the information overload in the contemporary media landscape and its impact on processes in fashion trend forecasting. These findings from the websites, combined with suggestions from the interviews, indicated that it would be relevant to address what the information overload does to the development of fashion trends.

Current literature suggested that trends are no longer possible to predict as the social media environment takes the lead in shaping trends (Reilly and Hawley, 2019, p. 91). However, based on what I could find in this thesis, I suggest that the situation is more nuanced than what Reilly and Hawley suggested. It seems that some trend forecasting agencies have made it their tactic to take the challenge of information overload and turn it into an opportunity through leveraging big data and AI, as the following screenshot from Heuritech will illustrate:

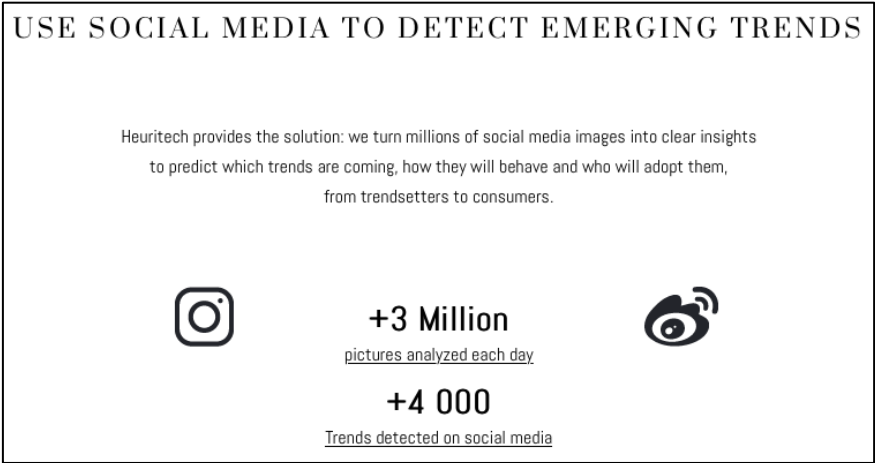


Figure 5. Screenshot of heuritech.com March 2020 illustrating social media analytics

Figure 5 is a screenshot of a section on the Heuritech website that shows the amount of social media pictures Heuritech claimed to analyse daily. Heuritech seemed confident about this forecasting method and suggested great value from such analytics of social media, which is similar to what several of the AI experimentations claimed (Beheshti-Kashi et al., 2018, Gabale and Subramanian, 2018, Matzen et al., 2017, Ren et al., 2019). What Heuritech seemingly wanted to offer fashion companies by promoting this method was a way of tackling the information overload in social media, with the intent to turn the uncontrollable ocean of information into something manageable. Another interesting aspect to notice from this screenshot is how Heuritech deliberately highlighted Instagram as an essential source of fashion

big data by including the Instagram logo. Moreover, the screenshot also shows that Heuritech applied the term trendsetters. The role of Instagram and trendsetters in fashion trend forecasting will be discussed later in this chapter based on what I found about these themes in my analysis.

4.5.2 Digital fashion: An early phase

One of the informants suggested that the fashion industry has yet to fully leverage all existing digital opportunities and markets, and she used digital clothing and outfits for avatars in the gaming industry as an example. Concerning digital clothing collections, both Gaede and Hansrud mentioned Carlings; a Scandinavian fashion brand that recently launched a collection of digital garments to wear ‘digital-only’(McDowell, 2019). This digital clothing collection from Carlings was made of bits instead of atoms and is a striking example of what McAfee and Brynjolfsson describe as information goods (2017, p. 135).

Furthermore, Gaede suggested that there are huge opportunities for fashion companies to meet demands in other digital markets, such as the gaming industry. She described how it is common in video and computer games to select outfits for the avatars, and she suggested that popular fashion brands, like Chanel or Gucci, should leverage this opportunity and make available branded outfits for gamers to dress avatars with. However, as Gaede explained, there is still a tactility-challenge to overcome in the creation of digital fashion.

4.6 Use of media platforms in trend research

The empirical data collected in this thesis indicated that many different media will be relevant to discuss in terms of where people tend to seek information about fashion and trends. The informants mentioned a variety of media, including newspapers and magazines, both print and online, fashion films, social media platforms, and also professional fashion websites. Some of the findings in this thesis were indicating that the current fashion media landscape lacks more variety in terms of the quality of the content or the characteristics of the platforms. Some of the interview statements suggested that the existing platforms in the fashion media landscape do not necessarily cover all needs for optimised fashion communication, at least not in terms of fashion business-to-business.

Edu found that a lot of the fashion-related content on the Internet is a bit watered-out and that there is a need for more fashion-nerdy stuff. Edu talked about how the fashion industry needs a different type of platform for sharing creativity and innovation at an earlier stage of the trend shaping process, meaning; before something appears on Instagram because then it usually old news for designers and forecasters. Two of the informants explicitly expressed appreciation of professional fashion platforms, and the website of The Business of Fashion (BoF) in particular:

«the professional platforms, such as Business of Fashion, BoF, we all go in there every day to read and receive newsletters and the like» (Edu, 2019).

«I definitely see Business of Fashion, BoF, as really important, and they are the ones doing a more in-depth analysis of the terms and the trends [...], or the things buzzing in the fashion industry, and also doing very in-depth coverage of the catwalks» (Gaede, 2019).

Given the scope of this thesis, it is not possible to delve into each of these media platforms. As a result, and in line with the analytical framework to explore the digital infrastructure of AI, media platforms, and media users, I concentrate on findings that described qualities of fashion content in social media.

4.6.1 Social media

All of the informants seemed to recognise that social media has become an essential part of the fashion media landscape. Some mentioned it briefly, while others went into detail about specific social media platforms. Particularly Instagram frequented often in the data material. All except for one of the informants mentioned Instagram, and as previously shown, the Heuritech website explicitly communicated an interest in Instagram-content. However, it appears that even small samples, like in this thesis, will reveal relatively differentiated opinions related to the role of media in fashion dissemination and shaping of trends.

The two samples in this thesis gave slightly different impressions regarding the use of social media in fashion trend forecasting. The interview results indicated a more complex situation where some aspects of social media were highlighted as problematic in terms of using it in forecasting work. At the same time, Heuritech, Trendstop and WGSN communicated social media as an integral part of their forecasting work without questioning challenges in these types

of sources. Either way, it appeared to be an understanding in both samples that social media somehow would influence how trends develop in contemporary fashion.

Gaede described social media content as too present for it to function optimally as a starting point for trend research and for predicting future trends. Instead, Gaede suggested that it would be helpful to use social media for confirmation to check if a trend she forecasted came through. The following subsections will highlight perceptions of how specific social media platforms are relevant as they seemingly can become integrated tools or sources of inspiration in the shaping of fashion.

Fashion blogs and Pinterest: Steady relevance

The literature review indicated that the fashion blog as a genre or a concept has repeatedly been the topic in research on newer fashion media (Rocamora, 2012, Engholm and Hansen-Hansen, 2013, Duffy, 2015). However, the results of this thesis indicated that fashion blogs have become less dominant in discussions about fashion media as there were few mentions of blogs in the collected empirical data. This result does not mean that fashion blogs are irrelevant. Instead, it suggests that fashion media have come to a situation where fashion information is spread out across many more platforms and thus taking away some of the previous focus on blogs.

Both Mardal and Stangbye mentioned the social media platform Pinterest as relevant in the context of fashion. It was a bit interesting to find that while two of the informants highlighted Pinterest, none of the websites seemed to give this platform any particular attention. Mardal suggested that many fashion companies are taking advantage of various media platforms as part of the process when they plan new collections, and he used Pinterest as an example:

«brands today can use Pinterest as a starting point in the production, they can use Pinterest to define a target group and kind of use it as a mood board for the production» (Mardal, 2019).

Previously, I suggested that current research findings concerning some of the identified characteristics and roles of fashion blogs seem fitted to describe how other platforms also can contribute to similar functions in the fashion media landscape. In a study of fashion blogs, Engholm and Hansen-Hansen (2013) compared the street style blog to the trend forecasters' mood boards. This interview statement above indicated something similar, only with Pinterest as the mood board instead of blogs.

Instagram

Instagram is the media platform that appeared most frequently in the collected empirical data. The Heuritech website explicitly highlighted Instagram as a source of fashion big data. Because of these results, it seems that Instagram plays a central role in the current fashion media landscape and particularly in the dissemination of fashion trends. However, it will be incorrect to interpret these findings alone to claim that fashion content on Instagram is the most useful in the development of fashion trends.

The interview findings indicated that Instagram is relevant in fashion media mainly because many consumers and fashion businesses use this platform. Instagram holds an enormous amount of fashion-related content. Therefore, Instagram becomes highly relevant in discussions about fashion media. However, based on the interview statements about Instagram, there are various ways to interpret the function of Instagram in the context of fashion trend forecasting.

According to a couple of the informants, it is particularly the characteristics of typical fashion content observed on Instagram that makes it a bit tricky to use as a source in fashion trend forecasting. Edu explained that Instagram content mostly confirms the mainstream in fashion, which is not helpful if the goal is to get new disruptive design ideas:

«On Instagram, it ends up being very processed, you know: Sharing a photo shared by someone else, which was already shared by someone else, and so on. Or, I copied a photo that I saw someone had, and they had already copied someone else. So, it is very processed, but then you get an excellent impression of what is mainstream» (Edu, 2019).

Similar to Edu's observation concerning Instagram content, de Perthuis and Findlay (2019) suggested that the Instagram feed seemed like an endless repetition of the same kinds of images and representations of fashion, which did nothing to challenge the established perception of the fashionable ideal. Despite these concerns that the average fashion content on Instagram is not disruptive enough, the overall impression from the results in this thesis indicated that Instagram still holds a dominant position in the fashion media landscape:

«in the fashion world, trends previously also happened on Tumblr for example, but Tumblr has died out a bit, there are many forums that have died out after Instagram came» (Stangbye, 2019).

Stangbye expressed a perception of Instagram as highly relevant and also influential in the fashion industry, and he suggested that Instagram holds this position in fashion media because Instagram content is mostly visual. His observation adds to previous descriptions of Instagram as relevant in the spreading of fashion trends because of the visual nature of the platform (Casaló et al., 2018, p. 2). Stangbye suggested that there is a lack of product-context in current fashion media because of the eminent focus on visual content in platforms such as Instagram, which builds on the previously claimed perception that fashion imagery overshadows the products (Black, 2019, p. 115)

Changing environment on Instagram?

An article on the Heuritech website suggested that there was a significant change in fashion content on Instagram during the Covid-19 pandemic (Mollard, 2020). The article referred to a report from Facebook that suggested that Instagram use went up during the pandemic. Moreover, the article claimed that Instagram content had changed; that people shared fewer images of luxury fashion during the pandemic. Instead, people shared pictures of outfits to wear at home; such as loungewear and sweatpants, and also gym clothes for workout-sessions at home. Ultimately, more people could identify with the content. There was also an increasing engagement in communication between users to share honest reviews of fashion. With this article, Heuritech suggested that the interest in fashion on Instagram did not disappear during the pandemic; rather, it changed character. It will be interesting to see whether this tendency will continue after the coronavirus pandemic.

Moreover, a specific hashtag, #wearyourwardrobe, apparently grew in popularity during the pandemic, which perhaps indicate that some Instagram users wanted to promote sustainability awareness in the fashion industry (Mollard, 2020). This hashtag seems like an initiative to get people to wear what they already have in their wardrobes instead of purchasing new clothes. The hashtag also seems like an effort to make it more acceptable to appear on Instagram wearing the same outfits several times. Reilly and Hawley claimed that young media users would not post several pictures wearing the same outfit, which led to a «need to purchase new outfits frequently» (2019, p. 90). Recent observations, as described in the Heuritech article, might indicate that the social media environment of fashion trend-sharing is transforming.

4.6.2 Online versus offline

The preceding sections highlighted qualities of fashion media in the digital age. Besides identifying challenges related to the information overload, I discussed how content from various media platforms can become valuable when brands or forecasters prepare new trend proposals. This section will concentrate on results concerning the Internet as part of the toolkit for trend research in the fashion industry.

Some of the informants claimed that conducting trend research online might be problematic because of algorithms that curate the selection for each media user. Despite such concerns, results in this thesis indicated that the Internet could be a treasure trove in search for emerging fashion trends as an additional method to the usual city scouting. Edu suggested that the media landscape is playing a massive role in the fashion industry because of how it has become an accessible go-to-place for fashion research. This was something Edu had observed in class as students usually turned to the Internet when asked to do research:

«when we were students, if someone told us to do research, you could hear all the chairs scraping against the floor, and people were out the door within 2 minutes. [...] Now it is like this: People, let us start researching, and then it becomes completely silent. Everyone is sinking into their phones or laptops» (Edu, 2019).

According to Edu, it is not without concerns that students seek directly to the Internet and its many different platforms to do trend research. Edu pointed to the risk of being fooled by algorithms. Instead of getting new impulses, the students might get exposed to what they already like. Because of this concern, Edu would instead encourage the students to go out to find inspiration offline as well, and the students were usually pushed out into the streets, to libraries, museums, theatres, and cinemas.

Similar but on a much larger scale, the forecasting agencies are also sending their employees to do trend research out in the streets. Findings from the websites revealed that employees from WGSN usually would visit ninety-five countries each year (WGSN, 2020). This finding indicated that WGSN wanted to communicate out to possible clients that they integrate travels to key places and attend key events to conduct trend research.

Hawkins suggested that AI-supported online trend research probably will generate a bit different results compared to going on a trip to scout a country or a city for new trends and tendencies. However, she pointed to the climate debate and suggested that there is a need, or an expectation, that the fashion industry also will have to reduce the amount of travelling that has been common. Therefore, she suggested that conducting AI-supported online trend research will be a more sustainable option compared to offline scouting. Despite possible limitations in online fashion content, Hawkins described opportunities in the contemporary fashion media landscape; almost as fashion forecasts in disguise because there is so much free content available. She suggested that a combination of online and offline trend research will be optimal:

«And my belief is the two combined, the combination of the desk research and the in-field scouting, is the best solution. But it's not always financial possible» (Hawkins, 2020).

These sections have highlighted the use of media platforms in the context of fashion trend research and forecasting. In the next sections, I will present the results related to media users.

4.7 Media users: Introduction of results

This last part of the results section concentrates on the third category of the analytical framework: **Media users**. These results will respond to **RQ3**: *How does media users' online participation affect the shaping of fashion trends?* From my analysis of the collected empirical data, I could identify three main themes concerning media users. These themes reflect the suggested relevance of media users broadly in the context of fashion trend dissemination, and mainly in the context of fashion trend forecasting. The three themes are:

Theme 1 – Increased connectivity, but lack of transparency

- Consumer-producer relationship in social media
- Consumer needs

Theme 2 – Content creators

- Storytelling and advertising

Theme 3 – Trendsetting

- Subcultures
- Influencers

- Tendencies

The first theme, ‘Increased connectivity, but lack of transparency’, addresses the opportunities of direct communication between fashion companies and consumers in digital platforms to understand how this affects strategies among players in the fashion market. Mainly, this theme focuses on tendencies of connectivity in the digital age and how it impacts the process of mapping out new fashion trends. This theme touches upon concepts from the literature such as customer social participation (Chae and Ko, 2016), and smart consumer experience (Kim et al., 2014). The results indicated that increased connectivity could give the consumers more influence in trend-shaping; perhaps the crowd overwhelms the core (McAfee and Brynjolfsson, 2017, p. 307). On the other hand, the results also indicated that the lack of transparency in the fashion value chain still blocks the opportunity for an ideal consumer-producer relationship.

The second theme, ‘Content creators’, sheds light on the enthusiasm among media users to create fashion content. By discussing fashion companies as content creators, this theme builds on current research of mediatisation in the fashion industry (Rocamora, 2019). Moreover, the results indicated the relevance of acknowledging that some consumers, as media users, reach a level of professionalism and become integrated into core practices in the fashion industry, to discuss this, I apply the concept of aspirational labour (Duffy, 2015).

The third theme, ‘Trendsetting’, was one of the more complicated ideas to examine in this thesis. The results indicated that the current complexity of media users renders it harder to identify clear routes of trendsetting or trend-spreading. Moreover, the interview results suggested broader tendencies as the real trendsetting factors and questioned whether popular media users could be seen as trendsetters or not. In contrast, the website results indicated a particular focus on media users, such as influencers. Being able to identify which tendencies in the current media users-environment will have any real impact on trends seems essential in fashion trend forecasting. This third theme refers to trickle-down and bubble-up (Lillethun, 2011) to explore how these old trend theories apply to contemporary fashion.

All three themes related to media users: Increased connectivity, but lack of transparency, Content creators, and Trendsetting, will be presented and discussed in the following sections.

4.8 Increased connectivity, but lack of transparency

Comprehension of how the digital infrastructure connects consumers to fashion companies will arguably strengthen the understanding of what might lead some trend offerings to become more successful than others. Previous research suggested great success for fashion companies that manage to connect with customers through social media (Chae and Ko, 2016). Results of this thesis revealed such success stories. One of the interview statements demonstrated relatively well that opportunities of interactive platforms have changed how fashion companies operate. This interview statement referred to local effects in parts of the Norwegian fashion scene:

«digital media and especially social media are used by many and with an excellent effect. Successful stores that I talk to say that the most important part of the job as a store owner is to get good pictures to post in social media, it makes them better at selling whole outfits [...] because customers want the whole outfit showed in the picture» (Hansrud, 2019).

Hansrud also claimed that those retailers in Norway that managed to take advantage of interactive platforms had a significant competitive advantage towards those who struggled a bit more to get up and running online. Fashion companies, as media users, have an opportunity to reach customers via social media, as indicated by the interview statement above. Based on the context of this interview finding, I will suggest that local stores might have a particular opportunity, if done right, to reach out to nearby customers. These local customers might enjoy following a local store on social media and interact with the content, and perhaps also take part in the store's social media aesthetics by posting outfits online and tagging the store.

According to Chae and Ko, one of the consequences of customer-brand participation in social media is an «intimacy that was present only among firms in the past» (2016, p. 3810). However, considering the information overload in the current media landscape described earlier in this thesis, it seems increasingly difficult for fashion companies to stand out in the online crowd and achieve such intimacy with customers. It might be relevant to understand the nature of such intimacy and interaction via social media to anticipate what such environments can do to trends.

Kim et al. (2014) proposed that the digital age had led to a paradigm shift in fashion consumerism, and they identified the rise of smart consumer experience (SCE). SCE involves, among other things, transparent communication and co-creation of business strategies with consumers (Kim et al., 2014, p. 13). Based on findings in this thesis, it seems that some aspects

of SCE are strategies rather than the reality in the fashion industry at this point. Edu considered the relationship between producers and consumers of fashion as non-existing in terms of how limited insights consumers have about core processes in the fashion industry. One of the other informants described something similar as she pointed to how little consumers know about what goes on behind the scenes of some of the most significant players in the fashion industry:

«I think that the very old big established industry leaders, whether it is VOGUE, or whether it is Elle or whether it is Gucci, you can see less of what goes on behind their walls» (Hawkins, 2020).

However, based on suggestions from the informants, aspects of SCE appear central in the mission about reinventing the fashion system. Despite the current lack of insights, Edu was optimistic and believed that youths' engagement in the climate debate would impact the consumer experience as there will be a higher demand for transparency. Moreover, Mardal suggested that it would be vital for fashion companies to gain trust from consumers through honest communication of product information and also in ways of doing marketing. These findings indicated that SCE is currently still an ongoing process as values such as transparency and honesty are not yet the standard, but the goal that many fashion companies will aim for to stay competitive.

According to Stangbye; communication from fashion companies was like a monologue in the past. However, because of social media, he suggested that it transforms into a dialogue instead. He highlighted the opportunity to send messages to brands or connect in other ways. Such dialogues will logically be of varying qualities, and online culture seems to inspire fashion brands to explore different approaches, by for example implementing Internet memes as part of the dialogue with consumers as Skjulstad found to be the case with Vetements (2018).

The following sections will briefly touch upon some of the suggested consequences of such two-way communication between fashion companies and consumers, and this will indicate what such connectivity means in terms of forming new fashion trends.

Consumer needs

How will the increased connectivity affect practices of fashion trend forecasting? The literature predicted a growing strategy to co-create value between brands and consumers in the fashion industry (Kim et al., 2014). Findings in this thesis indicated a relatively significant focus on co-

creation; some of the informants highlighted this as a leading strategy and hinted that it would only become more widespread in the next years. One of the informants, Mardal, suggested that it will be essential to consider consumer needs as a guiding force in the creation of new fashion products. Moreover, he claimed that the fashion market is operating with another approach to supply and demand because of social media:

«Working with trend forecasting in the past [...] there was some predictability in what you were doing. You knew what was going to have an impact within a certain period of time [...] you were able to hit the right trends, but with social media, this has completely changed. In the past, you had a push effect, where products were pushed into the market. Now we see a pull effect; products are being pulled into the market based on consumer needs. It is increasingly the consumer who creates the trends» (Mardal, 2019).

On the other hand, basing fashion trend forecasts solely on market demand or consumer needs might result in less innovative styles or trends in fashion, according to what one of the other informants indicated. Gaede suggested that average consumers do not necessarily always anticipate what they will want in the future; she explained this using the iPhone as an example:

«the consumers do not know what they want tomorrow or in two years. They do not necessarily have the possibility to imagine that. [...] the great example is the iPhone. No-one knew that we needed that. ‘Oh, hey, I want a minicomputer with a seven-inch screen, and I want to carry it around with me all the time’, nobody could articulate that» (Gaede, 2019).

These results seemed to reveal the ongoing transformation of the fashion system; that the fashion industry slowly tries to reshape the practices of planning trends to more clearly incorporate consumer needs and at the same time, not dismiss the innovative side of fashion. According to current literature, consumers are getting more influential in shaping trends because of social media (see Braun 2015 in Reilly and Hawley, 2019, p. 87), which indicates that the crowd challenges the previous dominance of the core in fashion creation.

Furthermore, given the opportunities of AI in fashion trend forecasting as described earlier in this thesis, it will be easier to leverage the preferences of the crowd and make them the basis of new trend proposals. Lev Manovich explored the role of AI in terms of developing aesthetics in a variety of creative fields, among them fashion, and he questioned what the increasingly

widespread use of AI would eventually do to aesthetics in terms of diversity (2018, p. 5). He also hinted about a future where AI and big data would possibly guide us «towards choices preferred by the majority» (Manovich, 2018, p. 5).

4.9 Content creators

In this section, I will describe some of the ideas that I identified in the analysis concerning content creators in fashion media. It seems relevant to identify aspects of content creators to understand qualities of the content that ends up being applied in data analytics for fashion trend forecasting. The results, from both samples, signified that the digital version of expressing fashion is increasingly becoming the standard. Gaede described a perception that there is more focus on pictures shared in social media and less focus on walking in the streets in terms of how people express fashion nowadays. Such tendencies make available much trend-related information online, as people are very enthusiastic about showing fashion digitally.

Part of such enthusiasm among consumers to share fashion digitally might be driven by the opportunity to obtain a career in fashion, and this type of motivation has been described by Duffy as aspirational labour in the context of fashion blogging (2015). Based on the following interview statement, I argue that aspirational labour seems like a suitable description of what drives consumers to create fashion content. Hansrud was describing that some media users managed to get a foot inside of the fashion industry by being fashion bloggers:

«I have been observing the phenomenon (fashion bloggers) for the last ten years and see that the tendency is the same as whenever new things are blooming in the fashion industry. It grows fast and uncontrolled at first. Ten years ago, a whole bunch of primarily young girls, emerged and wanted success as a blogger. And then the result was a lot of weird and not too serious stuff. Now it has, in recent years, as I see it, been normalized. [...]. Some have dropped out, and the most talented have continued and become professionalised» (Hansrud, 2019).

This finding, combined with claims from the literature (Duffy, 2015), indicated that there would be a motivation among some consumers to use media as a way of getting a job in fashion. Such motivation will arguably affect the quality of the content shared by such media users. I suggest that this tendency of aspirational labour in fashion media has a relatively broad effect on

contemporary trend dissemination, which will characterise much of fashion-related big data. Moreover, consumers are not the only ones aspiring to create fashion content. The following subsection will highlight the role of fashion companies as content creators.

4.9.1 Storytelling and advertising

This section will address how fashion companies take on the role of content creators or media producers, and how this might impact the qualities of fashion trend dissemination. Storytelling was a word that appeared several times in the interview data as some of the informants used this word to describe a growing tendency among fashion companies to use media to tell stories:

«it is interesting how fashion companies are more able to use media as a way to tell their story, I think storytelling has been talked about for many years as being more important, but I think that it is interesting how some brands now are becoming content producers, and they are making films and telling their story in a different way» (Hawkins, 2020).

Stangbye suggested it will be essential for fashion businesses to focus on storytelling because it establishes more product-context, which is something he found to be missing in contemporary media where the circulation of images without any proper context dominates. He suggested that one single product-picture in a feed on Instagram or Facebook would not provide enough context for the consumers to understand why they should choose one product over another similar product. If the consumers knew more about the story behind a specific product, they would at least be able to make more informed purchasing decisions.

According to Stangbye, storytelling was a much more significant part of fashion media in the print era, and he suggested that a revival of this focus would seem like a good strategy in digital media. A while back, Instagram launched a new function called Stories which enables sharing of sequences of content available to watch for twenty-four hours instead of posting a single picture on the Instagram feed. Stangbye referred to this Stories-function on Instagram and suggested that it signalled the re-emerging interest in storytelling.

What these interview results indicated about fashion companies as content creators support claims from the current literature. Several have described the tendency that fashion companies

increasingly merge practices as they engage in both fashion production and media production (Edelkoort, 2014, Rocamora, 2019).

Rocamora mentioned the tendency that fashion companies become producers of media as part of her approach to study changes in the fashion industry via the concept of mediatisation (2019). That several informants had identified the growing tendency among fashion companies to produce media, suggests that this is a relatively significant development. I suggest that it becomes relevant to study such practices as mediatisation of fashion, in line with what Rocamora claims. Besides producing garments, fashion companies can create additional value by using platforms to provide fuller context about products and tell stories in new ways that they were not able to in the pre-Internet era, and this affects fashion dissemination. On the other hand, as a consequence of how fashion companies create content in the digital age, fashion media is very much characterised by marketing in disguise:

«I think the way that advertising is done has changed as well, which has a huge influence. Everything is in a branded content, sponsored content, advertorials, that sort of thing» (Hawkins, 2020)

Hawkins indicated that this sort of situation in fashion media makes it harder for consumers to distinguish between what is advertising or not, and it would require more substantial filtering. Edelkoort suggested that marketing spreads fashion like viruses (2014). The interview statement above indicated that some would experience the fashion media landscape as packed with advertising, which supports the claim from Edelkoort. A significant part of the available fashion big data in digital platforms is advertorial content. As a result of this, data-driven trend predictions might reveal the popularity of trends that were ‘planted’ by brands in various media. Such data analytics would perhaps reflect what products the fashion companies want to spread, rather than what regular people in the streets want to wear.

At this point, I have highlighted connectivity between fashion companies and consumers, I have also tapped into the idea of consumers and fashion companies as content creators in the fashion media landscape. The next section will discuss trendsetting.

4.10 Trendsetting

To gain a better understanding of how fashion trends might spread in the digital age, conceptualised as fashion big data, I will highlight some of the results that indicated perceptions of trendsetting and how the old theories of trickle-down and bubble-up might apply to digital fashion dissemination. Several of the informants mentioned trickle-down and bubble-up, which indicated the relevance of such theories still. However, it seemed from the interview statements that the complexity and speed of the current fashion market render the process a bit faster and messier compared to before:

«In the past, it (spread of trends) used to be a clear route. It came from the aristocracy; it came from the catwalk, it came from royalty, and then it filtered down. And then it came from TV and celebrities and filtered down, and then all of a sudden it started coming from the streets and bubble up, and I think that it (trends) still comes from all of those things. It just comes from more and more places, and they all blend into one another» (Hawkins, 2020).

According to Hawkins, trends will usually emerge from multiple places and eventually blend into one another. I will propose a train of thought, loosely based on what Hawkins reflected upon in the interview: The fashion trend forecasters have an opportunity to influence the direction of trends as they decide what to present in the trend reports. The fashion designers can set trends when deciding what to create. Eventually, what the majority of consumers in the mainstream market or specific consumer segments select will be the dominant trends. The process of selection goes the other way around as well. It can start from the consumers who influence what the designers will want to make, which again affects the trends presented by the forecasters. Ultimately, what routes trends might take seems harder to anticipate.

Another interview statement also indicated the relevance of trickle-down and bubble-up, and she suggested that such processes go faster in the current fashion market:

«the old-time theories about bubble-up and trickle-down are still relevant today: that it (a trend) can start from the catwalk and trickle down through the market. It is going directly and a little bit faster to volume market now with the players that we have there, but it can also be something that bubbles up from some kind of subculture» (Gaede, 2019).

This interview finding also indicated the relevance of subcultures as possible trendsetters of fashion. Several of the informants and websites mentioned subcultures. However, based on my

analysis, I suggest that the process of bubble-up, that trends would organically bubble-up from various subcultures in society, is transforming due to the impact of the digital infrastructure. By this, I mean that the digital infrastructure will be decisive in terms of reach and visibility of subcultures when much of trend research happens online. This is not necessarily a concern, but something to be aware of. The digital infrastructure enables a more direct way to access subcultures by, for example, spotting them on Instagram as suggested in the following interview statement:

«trends are often created at the grassroots level. I still think it happens in the big cities, in the nightlife and subcultures—there are not many subcultures left—but it is in a way in subcultures on Instagram that trends are created, and then the brands adopt them, and then they hit much wider after a while. And then, the role of the media is to help spread that message so that it hits much wider» (Stangbye, 2019).

However, this statement also indicated that the mainstream media would still be essential in the further spreading of new trend innovations that emerge from subcultures. In a way, the final stages of how subcultures become trendsetters of fashion are very similar to what Suzuki and Best (2003) described concerning the Kogaru subculture in Japan in the 1990s. The Kogaru style spread via word of mouth and communication technologies available at the time (mobile phones), and eventually, it got picked up by television and magazines (Suzuki and Best, 2003). What appears to be the major difference in such processes of trend-spreading in the current fashion landscape, is that the fashion industry can access information about subcultures online and therefore speed up the spreading process.

With this next finding, I expand the focus from subcultures as trendsetters to also include a discussion of the role of fashion influencers:

«some of the new stuff, the all-time underground, and the subcultures can begin in an influencer, social media channel, so I am searching for that, for what is new, what is not necessarily mainstream and popular, have a look at that, and see how different stylings and how new approaches to fashion come out» (Gaede, 2019).

One possible definition of fashion influencers is to understand them as «public personalities with a significant social media following who use their profiles to aestheticize and monetize their lifestyle in various ways» (de Perthuis and Findlay, 2019, p. 7).

4.10.1 Fashion influencers

The research I did in advance of the interviews made it seem like influencers were considered central as trendsetters in the fashion industry, partly because of how Yoox highlighted that they had focused on influencers when they applied AI-supported collection planning (Wightman-Stone, 2018). Moreover, current literature has identified influencers on Instagram as essential opinion leaders in fashion (Casaló et al., 2018). However, in my analysis of the collected empirical data, I identified a more nuanced perspective concerning the role of influencers in the broader context of fashion, and in the particular context of fashion trend forecasting.

All three websites mentioned influencers. It seemed that Heuritech had a particular focus on pictures shared by influencers on Instagram (recall the Instagram logo in the screenshot of the Heuritech website on page 65). That all three websites mentioned influencers strengthened the initial impression that these specific media users were central in fashion trend forecasting practices. On the other hand, the results from the interviews partly rejected the idea of applying influencer content in fashion trend forecasting work.

The interview sample represented varied opinions concerning the role of influencers. All of the informants, except for one, mentioned influencers, which indicated that a majority of the interview sample recognised influencers as visible and active media users who are increasingly integrated into fashion industry processes, especially in terms of marketing. Some of the informants suggested that influencers could be seen as trendsetters, while others found the influencer-position to be a bit problematic, or at least they questioned whether influencers could be regarded as trendsetters of fashion.

According to Mardal, influencers are extremely valuable in fashion marketing because they represent real-life people as opposed to static models. However, he considered the phenomenon of fashion influencers as artificially arranged. What Mardal described was that influencers are real people, but the circumstances are not authentic, the influencer-position is in a way created to sell products and to move the fashion communication from a static space and over to a more three-dimensional concept that involves real-life people.

Gaede shared yet another perspective concerning influencers; she explained that some of the user profiles with the most considerable following in social media might not be the most valuable in trend research:

«I do not use the big influencers, like Kim Kardashian, or something like that; it is too present» (Gaede, 2019).

This interview statement indicated that the influencer concept is quite broad. Edu suggested that the word influencer is new and sometimes a bit easy to criticise. Edu suggested that influencers in fashion media today appear a bit self-proclaimed as trendsetters compared to trendsetters of the past, such as supermodels in the late 1980s and early 1990s. Alternatively, influencers consider themselves as far ahead concerning new trends, but the reason for this might be that they often are the first to receive clothes from new collections:

«the influencers get things sent as the first in the launch, so they probably think that they are at the front, really far ahead [...] and then they wear these new products and become incredibly valuable as marketing posters» (Edu, 2019).

To discuss the implications of this interview statement above, I will refer to a suggestion from Suzuki and Best. They claimed the following: «Just as elites cannot dictate trendsetter's choices, trendsetters cannot control their followers; every stage in the diffusion of fads and fashions involves selection» (Suzuki and Best, 2003, p. 75). If one understands an Instagram influencer as a trendsetter in fashion, then the elites seem to partly be able to dictate the trendsetter's choices because they pay influencers to promote their new products. At the same time, this is an agreement between the influencer and the fashion brand. Therefore, it is a result of selection. However, this type of selection is appearing a bit more elitist and less organic compared to earlier characteristics of trendsetting processes. Moreover, Hawkins explained that fashion influencers would also be influenced by something before influencing others:

«the influencers are excited by what they see others wearing on Instagram. Or they see brands that they like [...]. So, at one point, they are inspired and influenced by the brand, they are influenced by others, and then they have an influence on a bunch of other people. So, [...] I do not think that there is direct trendsetting in every market [...] there is no hierarchy, there is no clear line, it is a big fat mess» (Hawkins, 2019).

Based on what I found in my analysis, it appears that a better title for most influencers would be trend followers rather than trendsetters, and this is according to the definitions of trendsetters and trend followers presented by Kongsholm and Frederiksen (2018). Trend followers are similar to trendsetters, as a contrast, trend followers inspire the mainstream while the trendsetters will always try to stay ahead of the mainstream (Kongsholm and Frederiksen, 2018, p. 177). With these findings, I suggest that I discovered a gap between how regular consumers understand trendsetting and how professionals in the fashion and trend industries understand trendsetting. Consumers would perhaps perceive influencers as trendsetters. From a fashion industry perspective, on the other hand, the influencers might be viewed as trend followers.

Trendsetting tendencies in society

Several of the informants mentioned broader tendencies in society as the most significant trendsetting factors rather than specific media users or groups in society. Hansrud seemed convinced that aspects of sustainability and to care for the environment would be the most relevant in terms of trendsetting in the fashion industry. Edu also highlighted that the increased focus on sustainability would shape trends:

«I think it (sustainability) is going to control a lot of what we do going forward because we have to pay attention to how things are done in production and manufacturing. What will happen to the waste? Quality: How long will this garment live? How far does it have to travel to reach the customer? All these things that can end up being sustainable will affect how the trends will be» (Edu, 2019).

Interestingly, all of the informants viewed sustainability as one of the ruling tendencies in the fashion industry. Most of the informants suggested that the demand for sustainability increasingly would come to shape fashion trends, and two of the informants used colouring as an example to explain how sustainability impacts the production of garments:

«just a thing like; these colours lead to emissions. Then these colours will not be used. I think that we are all a little bit forced into it—and if sustainability is not necessarily trendsetting—at least it is steering the trends» (Edu, 2019).

«one sees a growing trend in using natural colours. It is about the sustainable aspect that more and more people want to dye clothes in colours

that come from nature to avoid using so many chemicals» (Stangbye, 2019).

Stangbye seemed convinced that sustainability would increasingly affect trends in fashion. On the other hand, he also found sustainability to be kind of a buzzword without any real meaning. This experience indicated that there is still a long way to go before the fashion industry is truly sustainable, and his claim was supported by several of the other informants. Hansrud suggested it would be vital that fashion companies respond to the conscious consumer movement and produce more sustainable fashion, but he also claimed that the actions so far were mostly marketing stunts. Edu pointed to the amount of greenwashing in the fashion industry, and Gaede described the conscious consumer movement as somewhat paradoxical:

«We see a lot of motivation to buy more conscious, but when it comes to the point of purchase when they are in the store with the garment in their hand, something else happens, and that will be the emotional preference that comes to the top of mind. And not necessarily what they know to be a good choice. And that is why we can still see people flocking to Primark, but yet still screaming about or participating in some kind of climate demonstration as well» (Gaede, 2019).

Given the complexity of impulses that affect fashion, as described in these past sections, Hawkins claimed that it is harder for fashion businesses to understand what to create next. She also suggested that it requires more creativity from the producers to be able to identify what will be useful in the future. Trend forecasters have a reputation for being influential tastemakers in the fashion industry (Giertz-Mårtenson, 2018, p. 213). Hawkins suggested that it would be essential to develop the role of fashion trend forecasters in terms of establishing morally right decisions, to ensure a socially and environmentally responsible way to help and guide fashion businesses. Hawkins identified a need for the human ability to filter out and determine the best route among all possible paths to take. At the same time, she highlighted AI a tool that can help forecasters to filter out the noise to identify what is going to be the essential aspects to act upon in the future.

5 CONCLUDING DISCUSSIONS

In this thesis, I have explored how practices of fashion trend forecasting are transforming in the digital age. To do this, I concentrated on the impact from digital infrastructure to understand broader implications of AI, media platforms, and media users, and how these aspects, together and individually, reshape how trends are being developed in the fashion industry. The inspiration for this analytical perspective came from McAfee and Brynjolfsson (2017) as they have suggested that the digital future with intelligent machines, innovative platforms, and the enthusiastic crowd will reshape businesses across all industries.

Reflections on the results concerning AI

The AI relevant results in this thesis indicated that the interest in AI in the fashion trend forecasting sector is part of a broader mission to reinvent the entire fashion system through novel solutions. The interview results indicated that AI would be helpful first and foremost in quantitative work, to speed up the collection of data and help the forecasters to navigate the information overload. The two samples indicated benefits of AI-supported trend forecasting to avoid overproduction in the fashion industry. Data-driven trend predictions, as opposed to predictions based on the intuition of the forecaster, are likely to be less biased and more representative of crowd preferences. However, concerning the outcomes of AI-supported trend predictions, I observed a worry among some of the informants that fashion can lose some of its ability to shock or surprise by inventing something that the consumers did not anticipate or thought that they needed.

This thesis identified at least three strategies concerning the use of AI in fashion trend forecasting. One strategy is to depend on big data as the primary guide in product development to ensure meeting consumer needs, which then will render the forecasters and designers less significant because trend proposals will be machine-made and data-driven decisions. A second strategy might be to consider findings from data analytics as manifestations of the mainstream and therefore create a contrast instead to serve the purpose of fashion as art. A third strategy is seemingly a combination of the first two; let the machines help with collection and navigation to prevent too visible biases in the selection, while forecasters and designers get the final say based on their integrity as knowledgeable trend experts.

The interview sample in this thesis primarily represented Scandinavian fashion markets. The results indicated that AI-supported fashion trend forecasting had not been widely applied in parts of the Scandinavian fashion markets, at least not among small-scale players. Reasons for this could be that sophisticated use of AI is still relatively new to the fashion industry, and the use of big data in Europe is not necessarily without complications due to the General Data Protection Regulation (GDPR).

Reflections on the results concerning media platforms and users

It seemed, from my analysis, to be a tendency to view content in contemporary fashion media in contrast to fashion media in the pre-Internet era. Therefore, I suggest that my results indicated a perception of current fashion media content via a lens that compares it to what was earlier. As a result of this, digital fashion content is still regarded as a bit new. When the first waves of fashion blogs emerged, they disrupted the previous boundaries of established fashion media (Rocamora, 2012, Engholm and Hansen-Hansen, 2013). Later on, media users such as bloggers and influencers aspired for careers in fashion and became notable players in the fashion media landscape, particularly in fashion marketing (Duffy, 2015, Casaló et al., 2018, de Perthuis and Findlay, 2019). Results of this thesis indicated that some of those media users who engaged significantly in fashion content creation have achieved professionalism. Because of this, the situation of media user participation in fashion have reached a state of normalisation.

The effects of online participation and sharing of fashion content may seem less disruptive since it has become the new normal. Compared to earlier, it seems harder to identify the direction of trend development, given that the new normal in fashion media is a state of fragmentation and overload. It will be interesting to see the long-term implications of this fragmentation and overload. AI is promoted as a solution to regain overview. Trend agencies and fashion companies use AI to filter out relevant information from social media (Heuritech, 2020, Mau, 2018), and non-fashion companies are also getting involved in the fashion market because of access to fashion big data on the Internet (Luce, 2019, p. 104).

A majority of findings suggested that Instagram plays a crucial role in terms of fashion dissemination due to its visual characteristics, which works well to spread trends (Casaló et al., 2018, p. 2). However, and despite Heuritech's strategy to focus on Instagram-content, the results of this thesis indicated that Instagram might be problematic to use in traditional fashion trend forecasting. This as a result of various aspects, such as the perception that there is little

variety in Instagram content; everything is the same, and it mostly feeds the mainstream. Moreover, the dominant focus on visual content in platforms like Instagram is causing a lack of product-context, which might reduce the fashion products to be perceived merely as images rather than physical goods (Black, 2019, p. 115).

Concerning how contemporary fashion spreads, results of this thesis indicated that the invisible power of the digital infrastructure might manipulate such processes. Initially, trickle-down and bubble-up happened relatively organically as new impulses spread through society (Lillethun, 2011). As a contrast, the current liaisons of digital infrastructure are arguably having an impact when it comes to which impulses get through the noise of the Internet, and which impulses drown in the information overload. Unlike before, fashion designers or trend forecasters access subcultures through their smartphones or computers, by digging through the algorithms of Instagram or other key platforms. Instead of bubble-up, the process changes to ‘digging-up’.

The interview results suggested that online participation, particularly in social media, enables direct communication between consumers and fashion companies. As a result of this, consumer needs are more visible and will become more influential in the creation of new fashion. However, my analysis indicated that there might be a gap between how the fashion industry thinks about optimising systems in production-planning and how it thinks about optimising connectivity between producers and consumers. Even if the digital infrastructure of AI, media platforms, and media users allow crowd-preferences to become central in the shaping of fashion trends, such underlying mechanisms are very much invisible to regular consumers, and the consumer-producer communication in the fashion industry is still not sufficiently transparent.

5.1.1 Summary of main findings

The interview results indicated a great interest among fashion and trend professionals to talk about change and to address what is different in the current fashion industry as compared to before. The websites indicated that there is a focus to develop smart solutions for efficient and accurate fashion trend predictions. In comparing the results of the two samples, I suggest that the most useful finding that this thesis offers is a nuanced perspective regarding how to experience the transformation of the fashion system and how it impacts the planning and forming of trends. I will describe what constitutes this main finding. Among current

circumstances that render the traditional fashion system and forecasting methods outdated and in need of new tools, systems or solutions, the results of this thesis highlighted the following:

- (1) ***The high pace and information overload.*** The exceptional high pace in the fashion industry with a rapid change of trends, which boomed in the digital age with the explosion of fashion information online, makes it harder to keep track of trends and identify clear routes of trend spreading. However, if able to navigate the stream of information (with or without AI), some will find the amounts of information valuable as an enormous fashion library of accessible mood boards offering insights about trends from the deep corners of the Internet.
- (2) ***Sustainability:*** Cutting down on the unsustainable practices of the fashion system is of high priority. The fashion system needs reinventing, and AI is part of the solution to reduce waste by avoiding extreme overproduction.
- (3) ***The focus on consumer needs.*** The fashion industry tries to open up and let the consumers take part in the shaping of fashion. Trend predictions based on big data will likely be valued over expert judgement among those players who mainly focus on satisfying consumer needs.

The research questions

RQ1: *How and to what degree does AI affect methods of fashion trend forecasting?*

Developed AI prediction models will offer fashion trend forecasters and designers efficient methods to filter through information. It will be less needed to travel in hunt for trends as big data in many cases will provide forecasters with sufficient insights. Vast amounts of data will support decisions that result in less biased trend proposals. Nevertheless, the trend knowledge of the forecaster will still be needed for the final forecasting touch because of aspects of fashion that AI might not fully grasp at this point, such as tactility and emotional value. As a result, AI will play a significant role in the future of fashion trends, but it will not replace every part of the trend forecasting process. Still, the fashion industry has a long tradition for idolising fashion gurus and experts. I suggest that some find it unfitted for the creative and artistic purpose of fashion to apply AI and big data analytics in trend forecasting. The balance between minds and machines will probably, for some time still, vary significantly among fashion trend forecasters depending on whether they see the need for AI or not.

RQ2: *How do various media platforms work as sources to fashion information?*

The easy access to fashion-related content in numerous online media platforms have made the Internet a vast fashion library. Media platforms have become a large part of the daily routines for many fashion businesses, including those who work with trend forecasting. Because of the tendency that both the fashion core and the crowd turn to the Internet for information about fashion, means that digital representations of fashion become very central in people's perception of contemporary fashion. The infrastructure of digital platforms will be decisive in terms of the visibility and reach of fashion content. Moreover, online trends might become more visible in the fashion scene compared to some of the impulses that are less or not present online.

RQ3: *How does media users' online participation affect the shaping of fashion trends?*

Media users affect the shaping of fashion trends, either directly or indirectly. As a direct way of participating, they can engage actively with brands online and get to feel included in co-creation of value and take part in the brand aesthetics. Indirectly, media users affect trends as they leave behind valuable information; fashion big data. With AI, these big data can turn into useful insights. The quality of fashion big data will evolve as more media users share fashion-related content, and also as they start exploring new forms of expression in new types of platforms. Media users can communicate fashion interest by using hashtags like #ootd, or recently, #wearyourwardrobe. These types of hashtags tell something about an attitude among media users, either to come up with a new outfit each day (#ootd) or by promoting more sustainable fashion by using what is already in their closets (#wearyourwardrobe).

5.2 Conclusion

I find that the following suggestion from McAfee and Brynjolfsson describe the overall impression from the results of this thesis: «Machines can make better decisions in an increasing variety of fields, but there's still a huge role for humans. Likewise, turning the dial all the way to “platform” or all the way to “crowd” does not guarantee success» (2017, p. 331).

On one hand, it would be an opportunity missed not to take advantage of the digital infrastructure of AI, media platforms, and media users in fashion trend forecasting. On the other hand, relying too heavily on fashion content from media platforms and the needs expressed by

media users, might ignore the purpose or essence of fashion. I propose, based on the results of this thesis that the fashion industry is still only at the beginning of exploring opportunities for optimised use of AI, media platforms, and media users. I argue that one of the main challenges in the development of trends will be to successfully incorporate a strategy that meets consumer needs, and at the same time, dares to introduce new creative fashion inventions.

5.3 Suggestions for future research

A state of deep mediatisation in fashion?

I argue based on the results of this thesis that it will be increasingly relevant to discuss the use of AI as a deepening of the mediatisation of fashion. In the field of mediatisation research, some scholars are describing a state of deep mediatisation. Researching deep mediatisation involves looking at the implications of digital infrastructures; such as data and algorithms (Hepp, 2020, p. 6). The results in this thesis indicated that there is a growing interest in AI-supported methods in fashion trend forecasting. Such dependency on data analytics and AI will arguably contribute to a state of deep mediatisation in the fashion industry. Therefore, for future research, I suggest exploring the concept of deep mediatisation in the fashion industry. Such studies could concentrate on digital infrastructures to understand what a state of deep mediatisation means for the future of the fashion system.

How the fashion industry adopts new platforms

Results in this thesis indicated that fashion blogs, which were previously given much attention in studies of fashion media, marked the start of a broadening of fashion media that continues through other media platforms today. Fashion blogs were barely mentioned in the empirical data that I collected, which made it seem that blogs are now competing against other social media in terms of what platforms most people use when seeking fashion information. As new platforms emerge, the horizon of fashion content expands. For future research, I suggest that it will be essential to understand how the fashion industry adopts new platforms.

Democratisation of fashion trends?

Another topic for future research is the question concerning if and how the digital infrastructure of AI, media platforms, and media users can render fashion trends more democratic. This thesis does not offer any particular insights regarding this question. However, I will suggest that trends predicted based on vast amounts of consumer-generated data from social media means that the

preferences of the crowd are involved in the trend-shaping process. Such strategies will seemingly make forecasting a bit more democratic compared to previous methods where those consumer preferences were not as easily accessible. On the other hand, how democratic is it if the consumers are not aware that the digital infrastructure enables analysis of their preferences?

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