Towards a Pragmatic Approach for studying Normative Recommender Systems: exploring Power Dynamics in Digital Platform Markets

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Abstract

Recommender systems (RSs) have become an integral part of digital platforms, helping users to navigate through the abundance of online content and services. This paper argues that the study of normative RSs should go beyond the mere conceptualization of normativity and examine the conditions and contextual factors that might foster normative RSs.

RSs often operate within multisided markets, involving multiple stakeholders who influence and are influenced by the RS. Ideally, developers of RSs aim for value alignment among diverse stakeholders, fostering a win-win scenario. However, in practice, system providers hold more power over the design, often optimizing for their own objectives and neglecting the needs and values of other stakeholders. These imbalanced power dynamics in digital platform markets pose significant challenges to the design of normative RSs.

This paper critically examines two key economic dynamics in digital media markets that challenge the development of normative RSs. The first hurdle describes the susceptibility of digital platform markets to lock-in and monopolization due to network effects, which skews the power balance in favor system providers. A second hurdle critically examines the pervasive "attention economy" and corresponding engagement-centric logic in the design of RSs that might diverge from explicit or long-term users' preferences despite the success in increasing engagement. To illustrate the importance of these dynamics in real-world RSs, we present how these hurdles manifest in the domains of video-on-demand and news media.

In conclusion, this paper advocates for a more pragmatic approach to studying normative RSs by considering the two hurdles affecting the RS development in contemporary digital platform markets. Furthermore, it highlights the fruitfulness of this pragmatic approach by proposing policy recommendations to tackle normative challenges in RSs' design.

Keywords

Recommender Systems, Normativity, Platform Economy, Attention Economy, Multi-stakeholder, Power Dynamics, User Engagement, Digital Platform Market

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1. Introduction

Recommender systems (RSs) are increasingly adopted in digital platform markets and have been studied since the 1990s across multiple disciplines [1]. In this paper, we understand RSs as the recommendation engine, the user interface, and data sources that serve as input for the recommendations [2, 3]. RSs have proven to be powerful tools in facilitating users' navigation through and engagement with the abundance of available online information [4]. Consequently, these systems determine what information audiences are exposed to through automated curation [5]. The power of RSs and the associated risks of technological determinism (e.g. filter bubbles, echo chambers) have led to increasing interest in the ethical considerations of their design [6, 7, 8]. Recent research on normative RSs, incorporating ethics and fairness, has focused on value-sensitive design and the interests of multiple stakeholders [9]. However, it is important to take it a step further and understand normative RSs in the specific economic context of digital platforms.

This theoretical paper discusses two economic challenges for developing normative RSs in practice. Through an interdisciplinary approach, we shed light on two hurdles that challenge the development of normative RSs. Firstly, we discuss the susceptibility of digital platform markets to lock-in and monopolization due to network effects [10]. Secondly, we highlight the vulnerability of individuals to the engagement-centric logic employed in RSs' architecture [11], which resonates with the dynamics of the attention economy [12]. To illustrate these hurdles, two examples in the fields of news media and VOD have been incorporated in this paper. Finally, some regulatory suggestions are proposed, aiming to tackle these two hurdles.

2. Current Literature on Normative Recommender Systems.

The literature on normative RSs has extensively drawn upon research on value-sensitive design [9, 6, 3, 13]. This approach highlights the importance of identifying conceptual values which are relevant to the use case of a specific RS, specifying how these abstract values can be translated into affordances in the RS and metrics for designing and measuring the performance of RSs, and thus finally creating a value-oriented feedback loop [14, 15, 16]. Domain knowledge is essential in this process of translation and specification [3, 13]. Furthermore, it is essential to consider the potentially conflicting values in designing technology [17, 18].

These differing values stem from the involvement of multiple actors with distinct interests, objectives, and values, who influence and are influenced by the RS's design, operation, and outcomes [19, 20]. Abdollahpouri and colleagues [19] have introduced the multi-stakeholder perspective, distinguishing system providers, users, and society at large as distinct stakeholder groups. The multitude of varying, and often conflicting, values and objectives results in trade-offs when designing RSs [1, 13]. Smets [3] highlights the significance of shared values in RSs, emphasizing the importance to align the values of system designers and users to ensure the system's effectiveness.

Inspired by these authors' work we define normative RSs in this paper as RSs that are designed to benefit their users and society at large. This definition underscores the normative duty of system providers to make efforts to incorporate the interests of the involved stakeholders, rather

than maximizing for the platform's own interests. It is widely acknowledged that RSs hold considerable power and when the digital platform market lacks competitiveness, it can lead to detrimental effects for users and the society as a whole. These markets can be characterized as inelastic, leading to power asymmetry between system providers and other stakeholders. This power imbalance is discussed in more detail later as the first hurdle hindering the development of normative RSs. It is worth noting that the terms RSs and platforms are used interchangeably throughout this paper, since RSs are inherently integrated within platforms. This premise is critical to perform a comprehensive study of normative RSs, the platforms in which they are embedded and the markets in which they operate.

As stated earlier, the identification, operationalization and evaluation of values the RSs is designed for will be dependent on the use case of the platform [3, 13]. The exisiting RS literature focuses on ingraining desirable values in RS such as diversity e.g., [21, 22, 6], serendipity e.g., [23, 24, 25, 26], and fairness e.g., [27, 28, 29, 30] as essential for promoting epistemic welfare. However, to leverage the lessons learned from these studies, it is pivotal to ground the study on normative RSs into digital media economics.

An important note here is that the emergence of normative RSs is influenced not only by economic factors but also faces technical challenges. Think for example about the delicate balance between optimizing for long-term user retention and maximizing short-term engagement (e.g., as discussed in [31]) and the integration of diversity metrics within news recommender systems (e.g., as explored in [32]). However, we argue that the economic dynamics are often overlooked in research. By connecting value-sensitive design (VSD) with the economic context of RSs, this paper aims to enrich the existing literature.

This paper provides a preliminary step in this direction by outlining two interrelated hurdles challenging the development of normative RSs, resulting from the rationales of platform markets.

3. The first hurdle: Skewed power dynamics.

The values that are ingrained into a RS depend on the interplay and power distribution between the involved stakeholders [33]. Power dynamics between the platform owners and other stakeholders determine the way the system is negotiated, cohered and manipulated [34]. Sax [35] notes that RSs empower the systems or platform owners since they can (and will) use their dominant power on the platform to shape and reconfigure the RS design to fulfill its purposes and interests. Therefore, it is crucial to gain a deeper understanding of these underlying power dynamics that unfold with the platform econoy.

The rise of popular ubiquitous platforms have shaped the power structures within digital media markets. Dominant digital platforms exert pressure on other stakeholders to conform to the prevailing platform logics and dynamics [36]. A good example to illustrate these power relations in a real-world system is the engagement-centric design of social media platforms. Milli and colleagues [7] show that Twitter (or X)'s recommendation engine tends to amplify emotionally charged content, particularly expressions of anger and out-group animosity for high user engagement, even though users explicitly state that they prefer content that stimulates positive emotions, contains accurate information, and/or is educational compared to provocative ones [37]. Insiders at Facebook to the same issue of prioritizing engagement at the cost of its

users and the societal welfare [38]. The conflict of interests between the users and Twitter's system providers does not result in a compromise. Because social media platforms have users locked into the platform, it can prioritize its own interests, namely maximizing short-term engagement, which is pivotal to be profitable based on the advertisement-funded business model [39]. The content which users explicitly prefer conversely is not ideal for optimizing engagement [40, 41, 42]. Milli and colleagues [7] raise the concern about a need to better incorporate user demands and other explicit indicators of value into the RS to more effectively serve users.

Another example of how power dynamics may affect which values get ingrained in a RS is Booking.com's platform. Booking.com is one of the leaders in the European Online Travel Agency (OTA) market [43]. In the OTA sector, revenues are mainly generated through commissions per booking and subscriptions by item providers for more visibility on the platform [44], which are determinative in the design of its RS. The ranking of search results is based on several factors such as click frequency, brut and net bookings, the amount and speed of commission being paid, and lastly, whether the item provider is a subscriber or not [44]. Presumably, the RSs adopted on OTA platforms are designed in favor of the platform itself, which promotes those hotels which are more profitable for Booking.com at the expense of smaller and less commercially oriented hotels, as well as the interests of end users. Because of the power dynamics in the market, providers of the hospitality industry are increasingly locked into the leading platforms such as Booking.com due to network effects, and become more reliant on the platform through biased clauses [45, 46, 47]. A study by Schegg with Hotrec [43] shows that 55 percent of hospitality providers feel pressured to accept OTA's terms and conditions, and roughly 44 percent make use of OTA's subscription programs to improve ranking on their platforms [43] and they feel increasingly pressured to improve their image on these platforms [45]. This example illustrates that not all stakeholders' interests and values need to be represented symmetrically in the RS design for the platform to be successful from a commercial perspective.

In the complex network of digital media platforms system providers are usually the most powerful actors [35]. This power structure can can be attributed to the functioning of digital platform markets, where value is created by connecting different stakeholders such as users and advertisers. The more successful the platform is in this task, the more likely it survives and becomes a standard for users [48]. This implies that digital platforms are reliant on network effects for being viable in the platform economy [48, 10]. Network effects tend to lead to winner-takes-it-all markets and enable monopolization. Consequently, system providers holding market leadership will try to lock-in their stakeholders, which translates in developing and implementing RSs that increase switching costs, solidify entrenchment, and lead to greater market dominance [10]. These network effects, lock-in, and monopoly tendencies of the digital platform markets shift the power dynamics among stakeholders in favor of system providers, because one platform will emerge as the dominant player in their core business [49].

Nevertheless, in the existing literature on normative RSs the importance of these underlying power dynamics is not yet acknowledged. A telling example is the recent interdisciplinary paper with authors from both industry and academia which provides an overview of normativity in RSs: Building Human Values into Recommender Systems: An Interdisciplinary Synthesis [13]. While this article aspires to draw the outlines for studying values in RSs in the coming years, their approach is still limited in acknowledging the power relations that strongly influence

which values get ingrained in the development of RSs

Similarly, we acknowledge the value of the aforementioned study by Milli and colleagues [7] for raising concerns about the kind of content that the Twitter algorithm promotes. They state that their findings highlight "a blind spot in machine learning research on recommender systems" (p.6) and point to "a need to better incorporate user surveys and other explicit indicators of value into the recommender system to better serve users what they explicitly value and to reduce the amplification of problematic content." (p. 7, [7]). Although we agree that it is beneficial to include the users' interests and needs in the development of a RS (as is evidenced our definition of normative RSs), we do not consider the lack of consideration of users' explicit preferences in the current RS design to be a blind spot of its developers.

Notwithstanding, references to power relations within platform economy research can be found in the literature on news recommender systems. For example, Vos and Russell [36] study the weak power position of news media vis-à-vis digital powerhouses such as Facebook and Google. In today's complex high-choice media landscape, news organizations are competing for audience attention, not only among news outlets but also with social media platforms [50]. The attention economy has intensified the dynamic of news organizations to optimize for clicks and user engagement by promoting soft news topics to capture short-term gratification [51, 52]. News outlets, both commercial and public service media, face the challenge of balancing user engagement and revenues with the democratic responsibility of informing and educating the public.

Additionally Sax [35] discusses the distribution of power within news organisations and Möller [53] highlights how different power structures play a crucial role in shaping the RSs, introducing potential biases and asymmetries that shape the system and its outcomes [21]. We aim to build on the existing research literature by adding a new perspective and highlighting the distinction between commercial news companies and public news media. Although both are motivated by their democratic duty as part of society's 'fourth power' [54] and the need to reach significant audiences [55], their raisons d'etre differ significantly. As a result, these news organisations have different business models, agendas and prioritize different values. This different allocation of values is reflected in the respective RS designs. Commercial news channels operate within a market-driven environment and strive to optimise user engagement, increase time spent on their platform and build audience loyalty [56]. Public service media's primary goals are to inform and educate their audiences, promote civic engagement and stimuate public debate. However, PSM also have to adapt to the dynamics of today's media landscape to retain their audiences and pursue both democratic and commercial goals [21].

The increasing reliance on RS to optimise revenue and user engagement has led to concerns among journalism professionals about their journalistic integrity, media pluralism and the quality of information provided to users [57, 58, 59, 60, 61, 53]. The exploration of evolving dynamics within the field of journalism extends beyond the score of this paper. Instead, in the following section, we identify the engagement-centric design of recommender systems as a second hurlde for achieving normativity in RSs.

4. The second hurdle: The attention economy and engagement-centric logic.

Digital platforms often operate in what is called the attention economy [48, 11, 62]. The attention economy points to an economical context in which attention is commodified and exploited for profit making [63]. Digital platforms and the attention economy show an elective affinity (i.e., they are likely to co-occur). As argued above, the reliance on network effects plays a significant role in digital media markets. In order to increase user engagement, it seems beneficial to ensure users with free access to the platform. However, also the subscription based business model is a possibility, which is often adopted when the platform cannot rely on user generated content but instead has to rely on expensive content made by professionals. Especially in the case of the former, there is a strong elective affinity with the attention economy because these digital platforms have to make profit in order to sustain and further develop the platform. Selling attention to advertisers, charging ommissions for products sold on the platform and providing subscription programs to increase visibility on the platform are typical ways for these platforms to generate revenues. In order to optimize their profitability, these platforms will adopt an engagement-centric strategy.

Therefore, the second hurdle challenging the development of normative RSs revolves around the idea that engagement does not necessarily reflect users' value or satisfaction. Prioritising user engagement has important implications for the development of metrics used for developing recommender systems. In practice, metrics such as clicks and conversion rates will be most often a proxy of user engagement [64, 65]. However, this engagement-centric logic does not always benefit users. Many users have experienced unintended prolonged use of social media after logging in without much thought and end up spending more time scrolling than intended [62]. This is no coincidence: since platforms' business model is driven by engagement, they specifically design for it, even if this requires them to exploit human vulnerabilities [66, 67, 11].

Kahneman uncovers and explains these vulnerabilities in his book *Thinking, Fast and Slow* [68]. As a metaphor, he states that it is useful to imagine that there are two systems responsible for our cognition: system 1 is our default mode, which relies on short-term thinking, jumps to conclusions, and is prone to stereotypes and emotions; while system 2 refers to careful logical reasoning and long-term, effortful thinking. While humans tend to identify more with system 2, we predominantly operate using system 1, because of its effortless nature [68]. System 2 acts as a controller when more thoughtful reasoning is necessary, since system 1 yields to incorrect judgements and decisions. However, research suggests that system 2 tends to operate passively, with many people providing intuitive answers when there is no specific incentive to think effortfully. Research by Ariely and Wertenbroch [69] aligns with this notion, indicating that students will impulsively procrastinate when left on their own. This research underscores the idea that people only have limited self control. Studies have also shown that exerting self-control costs energy which can be depleted [69, 70, 68].

This has important implications for studying recommender systems. Users do not always act in a way that is consistent with their explicit goals, potentially leading to behavior that is harmful for themselves and for their environment. An important example that comes to mind is social media addiction. Zahrai and colleagues [62] suggest that excessive usage of social media

is strongly associated with system 1 thinking and a lack of system 2 activation. They find that exercising self-control leads to less impulsive and excessive usage of social media [62]. Social media addiction can have far reaching consequences such as endangering work-family balance and burn-out [71] and is negatively associated with self-esteem [72].

Similarly, optimizing recommender systems in digital platforms to maximize engagement might lead to unintended and negative consequences like impulsive buying and overspending on e-commerce platforms or binge- watching series on VOD platforms.

The aforementioned principles of power dynamics in the platform economy are also evident in VOD platform. The dominant power position of system providers in shaping the RS design according to their interests and values allows VOD platforms to prioritize engagement, Several studies have shown that these RSs are intentionally designed to elicit flow experiences [73, 74, 75].

The concept of flow experience was first introduced by Mihaly Csikszentmihalyi as "the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it." [76], p.4. Video-on-demand platforms design their RSs through different technological affordances enhancing the likelihood to experience flow [75]. Features like auto-playing the next video or binge-watching affordances capitalize very clearly on this potential to induce a flow experience and are widely adopted in the contemporary media landscape. This design strategy maximizes the users' stickiness to platforms, which ultimately generates value, and revenues, for VOD platforms [74].

The intentional design for flow experience is closely linked to Kahneman's theory of system 1 versus system 2 thinking as explained above. The engagement-centric logic in VOD platforms capitalizes on the vulnerabilities associated with system 1 thinking [68]. System providers deliberately trigger intuitive and automatic thinking with technological affordances which allows users to effortlessly immerse themselves in content [73].

The design for flow experience might satisfy users by immersing them in the video-watching experience and, in that way, disconnecting them from their everyday problems. At the same time, it can be problematic if it leads to a conflict between system 1 behavior (e.g., binge-watching a series) and system 2 desires (e.g., having a night of qualitative sleep). We could argue that incorporating these psychological insights can be perceived as satisfying in some ways, however, they do not necessarily benefit the users. As established earlier, engagement is not synonymous with user satisfaction. Even public service media organizations have incorporated this technique in their attempt to mimic popular streaming practices [77, 78]. However, concerns have been raised about the compatibility of such features with their normative, public service values [79].

5. Discussion

The described economic dynamics of digital platform markets, namely their proneness to monopolization and lock-in which lead to skewed power dynamics and platforms' elective affinity to, and susceptibility of users to, an engagement-centric logic, pose substantial challenges to the development of normative RSs in practice. While the research field on normative RSs holds great promise, with the existing literature presenting many useful insights, the two

hurdles described in this paper need to be addressed to harness the full potential of normative recommender systems.

To tackle these challenges, we propose two regulatory principles aimed to cultivate more balanced digital platform markets. Firstly, we call for a policy which decreases the power of platform providers. This implies 1) tackling monopolization and lock-in by policies stimulating competition or 2) more stringent regulation of platforms and the RSs embedded on them. 1) Open standards and regulations that mandate interoperability between system providers have already been proven as effective de-monopolization practices [10]. Similarly, the adoption of open standards in the Android Operating System (OS) has opened the mobile devices market to competition by reducing switching costs between mobile device brands running the OS [80]. The creation of an open standard and the obligation to adopt this open standard for, for example online social media platforms, which makes it possible to transfer your social network, generated content, likes and other data to other platforms would increase competition and give users more power in deciding how to manage their social life.

The European Union (EU) has recently implemented new regulation targeting powerful platforms, referred to as gatekeepers, operating within the EU. The Digital Markets Act (DMA) aims to prevent power abuse by these gatekeepers by formulating obligations [81]. These obligations seem to be twofold: some obligations appear to facilitate entry into the platform markets while others seem to be intended for allowing more competition in the markets on which these platforms have an influence. The DMA recognizes the skewed power dynamics within the platform ecosystem as problematic, and the formulated obligations might be effective in limiting their power as gatekeepers. Still, the current platforms will remain exceptionally powerful actors despite the DMA and therefore skewed power dynamics will probably remain a hurdle for the development of normative recommender systems.

Secondly, to counteract the engagement-centric logic in designing RSs, it is necessary to trigger people to rely on their system 2 cognition and to actively plan their digital behavior. We advocate for implementing agency tools within digital platforms. These tools would promote users to become more aware of their media consumption practices. By providing real-time feedback on their usage patterns and giving alerts to limit screen time, users are encouraged to make well-informed decisions about their digital media consumption [69]. However, the effectiveness of such measures may be limited since these can be easily ignored.. More intrusive measures might be necessary, for instance enabling users to put a timer on how long they will be using social media during a session, granting them one single opportunity to prolong their session, but afterwards impose barriers to staying on the platform for a longer time (e.g., requiring users to log in again, using multi-factor authentication). To address the problem of overspending, a similar strategy of setting a spending limit beforehand can be implemented.. For impulsive buyers, a reflective waiting period can be put in place during which customers must delay their purchases. The common denominator for these interventions is enabling and supporting users to make more deliberate choices about their digital media behavior instead of yielding to the platforms' design aimed at maximizing the time and money users spend.

This policy proposition aligns with the European Union's (EU) vision outlined in Shaping Europe's Digital Future1 presenting three pillars to guide digitization: 1) technology that works for the people, 2) a fair and competitive digital market and 3) an open, democratic and sustainable society [82].

The Digital Services Act (DSA) translates this vision into legislation. However, it is important to note that, except for the possibility to choose a non-personalized feed, the DSA does not tackle the issues raised in this paper. The DSA focuses primarily on solving issues concerning the spread of illegal and harmful content [83] rather than mitigating users' vulnerability to an engagement-centric logic possibly resulting in undesired behavior or addiction.

Regulatory bodies have been criticized for viewing the activity of online platforms as neutral and technical, while in reality, their content moderation is a highly active process influenced by their underlying business models [83, 84].

In line with the EU's vision of technology designed to work for people and stimulate a sustainable society, it is crucial to recognize the inherent biases and fallacies in users' decision-making. Therefore, recommender systems, and by extension all digital technologies, need to be designed to mitigate these biases rather than exploiting them.

In conclusion, to fully capitalize on the existing knowledge present in the literature, it is essential to consider the economic context in which RSs are developed and operated. By shedding light on the two hurdles addressed in this paper, we hope to advance the field accordingly and stimulate the development of normative RSs through the efforts from both responsible design by platform providers and targeted institutional regulations.

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