INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 13, Issue 12, (2023) E-ISSN: 2222-6990

From Framing To Enframing: Reflections On The Technical Ethics Of Nudge In Journalism

Chenjin Jia[a], Hasrina Mustafa[a]

[a]School of Communication, Universiti Sains Malaysia, Penang, Malaysia

Correspondence: hasrina@usm.my

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v13-i12/19865 DOI:10.6007/IJARBSS/v13-i12/19865

Published Date: 09 December 2023

Abstract

The article outlines some of the status quo of research and potential of nudge and digital nudging in the field of journalism, especially in terms of news consumption and opinion shaping. A nudge is a gentle and subtle prompt or encouragement designed to influence someone's behavior or decision-making without being forceful or coercive. By combining theory and journalism practice, the paper provides insights into how this concept can be applied to influence public cognition and behavior, particularly in relation to news media. Standing from a technical philosophical stance, the paper argues that nudge technology can be positive or negative depending on the ethical considerations involved and the intentions of news producers and interface designers. Finally, the paper proposed measures to effectively apply digital nudges in creating a virtuous journalism environment. The findings from the paper are relevant for researchers interested in understanding how media can shape our opinions and behaviors, including journalists, researchers, policymakers, and members of the public.

Keywords: Nudge, Digital Nudging, Journalism, Journalism Ethics, Philosophy Of Technology

In recent years, nudge as a tool for behavior shaping and decision making has attracted significant attention in the field of behavioral economics. Nudge, coined by Richard Thaler and Cass R. Sunstein, was defined as "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives" (Thaler & Sunstein, 2008, p. 6). Hence, the concept refers to the subtle and indirect approached involved in the routine decision-making of individuals, who are treated as less rational *social person* with cognitive biases. (Thaler & Sunstein, 2008). Considering the power of the news media over public cognition and behavior, nudge has also attracted the attention of the journalism industry.

In the context of news media, the irrational characteristics of *social person* are most prominently reflected in the cognitive dimension. As elucidated by Kahneman (2011) , human thinking comprises two distinct systems, namely the heuristic system (System 1) and the

analytic system (System 2). System 1 is adept at perceiving the environment and generating short-term forecasts, while System 2 is comparatively indolent and prone to relying on System 1 to conserve cognitive resources expended in problem-solving. Consequently, people would have cognitive biases or take shortcuts in most daily thinking and behavioral decisions, which is highly similar to the elaboration likelihood model (ELM) (Tandoc et al., 2021). ELM is intended to illustrate the circumstances under which audiences are likely to take a carefully thought-out, deep-thinking route (Shi et al., 2018). Therefore, it becomes imperative to adopt a guidance approach based on the audience's thought process. Petty and Cacioppo (1986) have posited that when audiences are motivated to obtain information and could comprehend it, they are inclined to adopt the central route. This indicates that they meticulously examine the information, engage in a critical appraisal of its arguments, and consistently evaluate its viewpoints. Conversely, in situations where the audience lacks the incentive to obtain information or the ability to understand and process it, they are more apt to adopt the peripheral route. Under this route, their attitudes are influenced by superficial environmental cues and incidental clues.

Traditionally, journalists have predicated their approach on journalistic standards that prioritize precision, impartiality, openness, and responsibility in generating credible information and fostering trust among their readership. (Horne et al., 2020). With the prevalence of news platforms and social media, users are increasingly exposed to different news sources with homogeneous content (Bechmann & Nielbo, 2018). Most users typically exhibit perfunctory and cursory reading habits, merely scanning through stories expeditiously. Furthermore, even those who do not actively pursue news may encounter information inadvertently through their contacts' social media posts or while browsing the Internet. (Kümpel, 2020). Therefore, news consumers may use heuristics as a strategy in place of laborious processing of news content when judging the credibility of their news. Heuristics allow people to make decisions, form judgments or solve problems based on rules of thumb without an exhaustive comparison of all available options (Dorrestijn, 2012), leading to an overemphasis on sensational or emotionally charged stories, which may not accurately reflect the overall state of affairs. With this cognitive shortcut, nudge can be a way to counteract the bias and cognitive limitations of attitudes due to irrational factors in the news communication and consumption process, encouraging consumers to seek more balanced and diverse sources of information.

Given the background, the structure of this conceptual article as follows. First, we outline some of the status quo of research and potential of nudge and digital nudging in the field of journalism, especially in terms of news consumption and opinion shaping. Second, we critically discussed the extent to which nudge is used and designed to be transparent, reviewing unethical aspects of nudge in media and communication research. Third, we explore Heidegger's philosophy of technology, where modern technology brings not only a ready-made and constant presence, but also such holdings being prefigured toward it (Dorrestijn, 2012). Therefore, how to examine digital nudging as a new technology-based behavioral intervention and discuss the need for transparency and accountability in its technological use. Fourth, we further interrogate the design of the choice architecture under the intentionality of technology use should consider constructive technology assessment to ensure that nudge complies with technology ethics. Finally, a final reflection is made on the combination of nudge in news consumption and opinion shaping.

Nudge and Journalism

With the media depth of information dissemination self-service and increasingly diversified topics, news media are under pressure to choose sources, focus on issues and shaping public opinion. Since Nudge is non-coercive and easy to use, it could be an effective tool for media organizations in the new media technology environment (Andı & Akesson, 2021), helping news media to solve the dilemmas they face in guiding public opinions.

The Internet has exposed users to a media environment with abundant choices (Andersen et al., 2021), and in a digital existence that emphasizes embodiment and presence, the human senses can be restored on multiple levels in the digital virtual space, and human living space is constantly being explored towards retribalized (Sun & Zhong, 2020). The utilization of thinking systems, the reliance on thinking inertia and the existence of cognitive biases in real-life situations are also reflected in the digital media environment. The attributes of social person have not been subverted, but rather many nudge practices have reduced costs and expanded their reach with the advantages of the media platform's compressed space-time digital scene and high-speed convenience. For daily news, newsmakers can influence audience perceptions by framing the story. In the case of crisis events, the source and credibility of the news may not always be confirmed in the first instance. Accordingly, the use of psychological shortcuts and heuristics in crisis interventions, nudge is more effective than the use of generic authenticity signs (Horne et al., 2020).

Compared with the offline contexts, decision making in digital environments is more dependent on the human-computer interaction interface (Schneider et al., 2018). So, the interface design of human-computer interaction can have an important impact on the decision making process (Caraban et al., 2019). This influence consists of two main aspects: 1) the interface provides the necessary elements for the decision maker to access relevant information, and 2) the way the interface provides this information can have a subtle effect on the decision process, influencing the cognitive process and ultimately producing a different decision outcome than in the no-choice architecture context. This phenomenon is described by Weinmann et al. (2016) as "Digital Nudging", which refers to the "*the use of user-interface design elements to guide people's behavior in digital choice environments*"(p. 433). Users in the digital environment make most of their choices through screens and are pressured by Internet opinion. Thus, Sunstein (2019) highlights the power of social norms in his book *How Change Happens*. Social norms can be described as rules and standards that guide and/or constrain social behavior as understood by group members and without the force of law (Cialdini & Trost, 1998). As a widely accepted standard of behavior by group members, social norms are essentially a frame for moderating people's behavior and integrating social order. In the process of acquiring, spreading, transforming, breaking through and rebuilding social norms, the frames created by the nudging mechanisms are released by the Internet digital technology with a huge information cascade effect.

With the growing accessibility of information, people's limited cognitive abilities and time force them to selectively handle a particular message (Schmitt et al., 2017). This leads to selective content consumption at the discretion of their own views instead of the content diversity (Vermeulen, 2022). This selective exposure causing confirmation bias (Garrett, 2009). Communication scholars have expressed concerns that the use of nudge-based technologies, such as personalized news feeds, may lead users to inhabit *information cocoons* or *echo chambers*. This refers to the phenomenon in which users receive and consume information that confirms their existing beliefs and opinions, effectively locking them into a self-validating information environment.(Du, 2023; Möller et al., 2018). To counteract these

biases, nudge has been used in online news media to encourage users to read more than one article on a topic before forming an opinion. Kim and Dennis (2018) showed that using a presentation that highlights the source of an article prompts users to think about the author of the article and influences the extent to which they believe the article. Salient nudging makes users more skeptical of all articles, regardless of the credibility of the source.

Meanwhile, nudge is used to help shape public opinion by encouraging individuals to engage in behaviors that lead to access to accurate and useful information. Mirbabaie et al. (2021) found that a variety of digital nudging was used in a series of tweets posted via social media by local agencies during the crisis events of the Australian bushfires. it was also significantly effective for the specific topics conveyed in the tweets (e.g., emergency notifications, avoidance messages, etc.). Alternatively, news organizations can provide social norms as feedback to users about the quality of the news sources they are using (Andı & Akesson, 2021; Gimpel et al., 2021), or through fact-checking alterts (Nekmat, 2020) that flag stories that have been fact-checked or otherwise verified for accuracy.

It can be inferred that nudging has the potential to enable individuals to interact with news content in a more discerning manner, or to actively seek out a wider range of information to facilitate their evaluation of the accuracy and credibility of news coverage. Such an outcome can have significant implications for the effective operation of a democratic society, as a well-informed and engaged populace is imperative for the proper functioning of democratic institutions.

Applying Nudge Moderately In Journalism

The choice architecture of Nudge is ubiquitous in media constructed mimetic environments. A good choice system allows people to improve their ability to make trade-offs and to make choices that are beneficial to them (Thaler & Sunstein, 2008). The value characteristics of truthfulness, timeliness, and relevance that journalism pursues is one of the practices in nudging to make relevant information more reliable and easily understood. Hu (2019) argued that nudge can be applied to media systems because the ubiquitous media environment needs to be designed for choice. And nudge's goal of enabling citizens to make the best choices about their health, wealth and well-being needs to be achieved precisely with broader media technologies and the fine-grained management of information flows. In reality, nudge is behind every choice of interface design presentation (Thaler et al., 2013). Mechanisms such as (i) disclosure and simplification, (ii) social norms and peer pressure, (iii) agenda setting and emotional priming, (iv) anchoring and priming effects, and (v) providing interaction and feedback are all important tools and common instruments of nudge (Jesse & Jannach, 2021). That is, in the design of choice architecture, the public opinion environment and social influence created by the media are the key factors for behavioral decisions.

In recent years, the realm of digital nudging has substantially expanded across the globe as a burgeoning academic domain. With regard to comprehensive implementation scenarios, several scholars have investigated the implementation of digital nudging in the areas of sustainable consumption (Demarque et al., 2015; Vandenbroele et al., 2020), online education (Plak et al., 2022; Weijers et al., 2022), green transportation (Anagnostopoulou et al., 2020), and social media (Masur et al., 2021; Mirbabaie et al., 2021; Nekmat, 2020), with the majority having demonstrated effective advancement. However, digital nudging can be counterproductive in certain situations (Hummel & Maedche, 2019). With no neutral way to present choices, all decisions related to user interface design influence user behavior (Schneider et al., 2018). Driven by utilitarianism, some nudge designs ignore their ethics and

transparency for the sake of satisfying the interests of third parties. This manipulation rather than nudge design leads to compromised information security and privacy of users, which contradicts the original definition of nudge.

Due to the possible lack of some prominence, some nudge are difficult to examine or monitor (Glaeser, 2006), as they do not attract as much attention as mandates and injunctions (Barton & Grüne-Yanoff, 2015). Aral (2020) critiques social media for quietly analyzing what it uses and then giving a large number of different options for what users should read, buy, and believe, and then it learns something new from the user's choices and iterates and optimizes the options it gives. This reflects the fact that the nudge, which leads people to a better life, has the possibility of being transformed into a profit-seeking tool after the penetration of commercial logic (Halpern, 2015).

As capital forces continue to ramp up their grip on technology in the marketplace, digital nudging has changed from the well-intentioned use of behavioral effects to open and systematic testing of how to exploit cognitive biases. The malicious use of interface design to trick users to the undesirable features is referred to as digital black nudge and dark patterns (Luguri & Strahilevitz, 2021; Reisch, 2020). Hornuf and Mangold (2022) discussed five archetypes of digital dark nudge strategies, where some deceptive companies put users at risk of privacy disclosure and even financial loss by creating friction, forced registration/renewal, click fatigue, hidden payment, and misleading design to inconvenience users. It has been found that digital darkness nudge has been widely used in various industries, practically manipulating the behavior of users (Mathur et al., 2019; Petticrew et al., 2020; Sin et al., 2022). Manipulated designs may violate the law, however, digital dark nudge often operates in a legally difficult to manage gray area, which makes it difficult for users to defend their rights and for government agencies to regulate.

Remarkably, besides the malicious use of nudge to manipulate users for benefits, nudge is progressively integrated with big data and computer algorithms. Yeung (2017) coined the term hypernudge to describe the combination of behavioral science and computer science in algorithmic regulation. It arranges nudge in a technology-mediated manner to continuously influence human behavior, including through real-time or reconfiguration and dynamic personalization (Mills, 2022), since human behavior can indeed be manipulated by priming and regulating, using rewards and punishments. Driven by utilitarianism, designers use their knowledge of human behavior and user preferences to implement deceptive features that are not in the best interest of the user (Gray et al., 2018), and even algorithms can autonomously explore manipulative strategies that may be harmful to the user (Albanie et al., 2017). According to Mills (2022), hypernudge possesses properties of personalization, predictive ability, and hiddenness that may prevent users from recognizing nudge or from rejecting being nudged because the technology enables them to fade into the context. And as attention shifts from technology to the ends that technology promotes, technology itself can easily become hidden in a philosophical sense (Susser, 2019) . The design process of hypernudge requires not only rational algorithmic decisions, but also a new “invisible hand” of behavior prediction and modification (Zuboff, 2015).

Gatekeeping has always been considered one of the most important hallmarks of professional journalism (Mitchelstein & Boczkowski, 2009). For journalism, the extent of nudge transparency and application is an ethical focus that needs to be shared between the choice architect and the gatekeeper. Therefore, journalists as architects of choice with a public spirit, need to nudge people in directions they might not choose on their own, thereby helping readers make better choices themselves (Thaler et al., 2013). However, for a variety

of reasons, journalistic practices (i.e., news recommendation systems) may conflict with the notion of personal autonomy and freedom from manipulation of users. Helberger et al. (2018) found that if nudge is designed to achieve normative goals that individual users may not approve of the personalization may be perceived as manipulative for some users It has also been argued that users were unable to distinguish between commercial goals and personalized uses of news, resulting in a negative bias in their perception of news personalization due to concerns about surveillance and privacy (Monzer et al., 2020).

Therefore, a moderate nudge must address the tension between applying the nudge and respecting user autonomy. User autonomy and transparency are key considerations in the design of an ethical news nudge that increases user trust and satisfaction.

A Technical Philosophical View Of Nudge In Journalism

In the context of behavioral economics, *nudge* is considered as a *framing* for the design of behavior as a purposeful means, and the understanding of the nature of the nudge technique remains instrumental in the usual sense of prescribing meaning in the stimulus-response information process. Nudge technology is not just a functional tool, but a mediator that intervenes in the relationship between people and the world, influencing users' perceptions and actions, experiences and practices in the process of using it, and thus influencing people's ethical behavior decisions (Jia, 2018). However, the greater the risk of misuse of technology, the more urgent the desire to control it. Viewing nudge through the perspective of the philosophy of technology reveals that the essence of nudge is the mutual regulation of technology and human cognitive action. People shape their own behavior in the use of nudge technology, and how people perceive nudge in turn influences the future direction of nudge design, and the philosophy of technology opens the two-way shaping of technological tools and social culture into the realm of nudge research.

Enframing is a specific paraphrase of the German word *Gestell* that Heidegger uses to reveal the nature of technology in his exploration of the relationship between man and technology (Heidegger, 1977). He refers to Enframing as a way of *stellen*, in which technological intentionality is embodied in the constellation. First, he corrects the misconception of the traditional critique of technology from four perspectives: the constitutive material, the external form, the purpose of use, and the effect of technical artifacts, which, rather than leading to a certain result, incur a possibility (Heidegger, 1997). Technology is driven and triggered by a secondary cause that helps people shape the context in which a certain function is achieved. Next, the essence of modern technology is the aggregation of the rules of installation, the means of operation, the architecture of presentation, and a series of other ways of decontextualization. In other words, the enframing of technology is not only an executive framing for developing, changing, storing, distributing, and transforming things, but it is also the substrate for all these operations. The use of technology is inevitably influenced by the activity possibilities offered by the technological enframing, thus shaping one's own behavior and one's relationship to the world.

Based on Heidegger's philosophy outlined above, purpose in the ethics of technology is the guiding vision for the design and use of technologies that regulate human existence. This vision can be expressed as the goal of designing and adapting technologies so that they become our own devices (Tenner, 2003). Modern technology, with its instrumental and computational character, reduces everything to a mere resource or standing reserve, including human beings (Miller, 2015). Therefore, enframing is the process by which we view the world in a technologically determined way. Because both enframing and nudge involve

manipulating perceptions to shape behavior or beliefs. And both technology and media are used to influence the way people perceive and interact with the world around them. So even though Heidegger sees enframing as a negative outcome of modern technology, nudge in journalism can be positive or negative, depending on the intentions of the news producer and interface designer and the ethical considerations involved.

While traditional journalism production guides the public with a content framing, the presentation of digital news can add digital nudging to produce a moderating effect on users' news consumption behavior. The French sociologist Latour uses the term *scripting* to describe how designers embed their assumptions and expectations into technological artifacts, thus influencing the interaction with users (Latour, 1988). In Latour's view, technology is not a neutral tool that people can use freely, but rather a medium that shapes the users' behavior and choices according to the designer's preconceived worldviews. The concept of scripting emphasizes the power dynamics between designers and users, as the former have a significant influence on the latter's behavior and perceptions through the technology they create. This has important implications for the design of technologies, as it highlights the need for designers to be aware of their biases and assumptions and to consider the potential impact of their design choices on users.

From the perspective of explaining how technological artifacts constitute patterns of human behavior, Latour reveals that the true picture of nudge's influence on human behavioral decisions is that whether one is aware of its presence and whether or not it is consciously applied in the design of choice structures, nudge's technological moderating effect is ubiquitous and unavoidable. In the new media technology environment, the choice architect presents all the information through the interface, and the interaction interface frames the user's usage, thus influencing the human behavioral decision. Human decision-making behavior is the result of the joint action of individual intention, social structure, technological artifacts, and media environment (Latour, 2007). Therefore, it is the responsibility of the choice architect to use nudge consciously to develop and design new technologies that optimize human ethics and practice decisions.

However, we should be aware of the possible negative consequences of the boosting technology itself, such as a lack of exercise in the cognitive abilities of the human as an agent. Bovens (2008) argues that the short-term success of nudge may be contradicts to long-term failure. The long-term effects of nudge may lead to the infantilization of the agent (e.g., depriving the agent of responsibility for his or her own well-being concerns). Since nudge technology focuses on changing the choice architecture, if the development of human choice capabilities is neglected, it may result in agent dependence, making it impossible to resist cognitive biases and eventually making it impossible for people to live normally without technology.

Nudge has also sparked debate about technology and choice freedom. Verbeek (2011) believes that freedom is not the lack of compulsion and constraint, but the place of existence in which human beings become aware of their existence. On the one hand, technology constitutes freedom through the material environment in which man exists and forms his own style. On the other hand, technology forms an association with human beings, and this association becomes the place where freedom resides. Although Seiler and Sunstein strongly defend nudge as a form of Libertarian paternalism, which influencing human action without prohibiting other options, critics continue to view nudge as a kind of manipulation. According to Dworkin (2015), liberal paternalism is a theory that allows the government to intervene in the choices that individuals make for welfare, without being excessively intrusive or infringing

on their liberty. Journalism can be categorized as a broad form of paternalism, as it involves non-state actors.

Although nudge does not prohibit other options and the interference with liberty is minimal, it threatens the individual's control over his or her choices and ability to evaluate his or her options. In contrast to paternalistic interventions, nudge needs to be designed with optionality. In this way, agents who want to be nudged can go along with it, and agents with different preferences can easily circumvent nudge. For journalism, this may involve further consideration of transparency as a journalistic norm. For this to be achieved both external and internal conditions need to be addressed. The external condition is that to avoid nudge, you need to know that you are being nudged in the first place, which requires that nudge has enough transparency (Lepenies & Małecka, 2015), like displaying the purpose of nudge in the interface, or providing the option to accept nudge or not. Following the internal conditions, Saghai (2013) states that to be able to resist nudge effortlessly, agents should have the ability to draw attention and inhibit it. While people are limitedly rational, so the ability to resist nudge pressure needs to be increased by improving the agent's media literacy (e.g., using highlighting to help users identify misinformation and providing feedback to assess the credibility of the source).

Promoting Virtuous Journalism Through Ethical Technology

To prevent nudge from being reduced to a new form of technological determinism, it is crucial for nudge to operate within more ethical and democratic design structures and processes. Designers should take responsibility for being society shapers, focusing on the larger societal impact of their work rather than solely pursuing profit or catering to consumer needs (Kiskola et al., 2022). Thaler and Sunstein (2008) mention that "a choice architect has the responsibility for organizing the context in which people make decisions ... there is no such thing as a 'neutral' design"(p. 1). In the view of Verbeek, the Dutch philosopher of technology, the centrality of the autonomous subject in ethical theory needs to be viewed holistically when human behavior is determined not only by their own intentions but also by the material environment in which they live (Verbeek, 2006). The inspiration of technological intentionality lies in making choice architects consciously think about how to orient the design of technological artifacts toward helping shape human morality, and to address potential negative impacts that nudge. While traditional ethics treats the individual as autonomous, rational, and self-regulating, the technological intentionality approach advocates for a consideration of the mediating role of technology, including how it affects and shapes human subjectivity. As such, nudge design carries a responsibility and a duty to consider the moral implications of technology. By adopting this approach, designers can ensure that their work supports positive behavior change and contributes to a more ethical and responsible use of technology.

In the design of nudge technology, it is important for designers to fully consider potential user behavior before settling on an architectural design. This involves considering the ways in which users interact with technology, as well as their motivations and decision-making processes. For example, in the context of online news sites, many platforms have optimized their content to fit algorithms that determine distribution and audience reach. This has reduced the role of news editors and curators in deciding what content is presented to audiences. To design nudge technology that is effective and beneficial, designers must anticipate how users will engage with the technology and aim to create a user experience that is helpful and informative, while also respecting the autonomy and independence of

individuals. By adopting this user-focused approach, designers can ensure that the technology they create is ethical and socially responsible.

First, fully imagine the possible user behavior during the use of nudge technology before choosing an architectural design. As discussed in the previous subsections, many online news sites and news information software have begun to systematically optimize content to fit the logic of platform distribution algorithms to reach a wider audience and potentially increase revenue after publication (Møller, 2022). However, this increasing reliance on digital intermediaries has eroded the privileged position of news content curators and editors that news media have traditionally occupied (Kleis Nielsen & Ganter, 2018). The gatekeeper's nudge aims to create a regulated version of the algorithmic gatekeeper by prioritizing content that is deemed important and relevant by the audience. This approach can be particularly effective in addressing issues such as the spread of fake news. Rather than attempting to dispel rumors after they have already been widely circulated, nudge technology can be used to prevent and control the spread of misinformation from the outset. For instance, designers can incorporate digital nudges that discourage users from sharing unverified content or encourage the reporting of misleading information. By using this approach to address the problem of fake news, we can create a more responsible and trustworthy online environment that benefits society.

A growing number of social media platforms, including Weibo, Twitter, and YouTube, are implementing information labeling systems to verify the accuracy of posted information (Andı & Akesson, 2021). These labels act as social norm-based nudges, providing users with technical regulation rather than interfering with their ability to share information. By using digital nudges to limit the spread of false information, these platforms are helping to create a more objective and transparent online environment. Furthermore, while news recommendation systems are becoming increasingly personalized, nudges can be employed to recommend a diverse selection of articles that resist cognitive biases (Mulder et al., 2021). By identifying meaningful diversity indicators, these nudges help to mitigate the subjective nature of personalization and promote a more balanced, varied news consumption experience for users.

Since a biased nudge can lead to negative outcomes for users, as it may lever users' cognitive biases to promote behavior that is ultimately harmful or counterproductive. It is essential, therefore, that architects adopt a transparent approach to design and clearly state their intentions in creating nudges. This allows users to make informed decisions about whether to accept the nudge, based on their own preferences and values. Another effective solution is to involve users in the design process. Designers can obtain more contextual information, reduce potential biases, and ensure that the nudges created are aligned with user preferences and values. In an effort to reduce the news content bias that can result from uncivil online news comments, some news sites have recently attempted to disclose users' comment history (without any personal information) through nudge to prompt users to avoid posting vicious content online (Pu et al., 2020). In the Chinese context, platforms such as Weibo have chosen to improve the transparency and credibility of nudge-based technologies by disclosing the IP attribution of their users and issuing official accounts to provide additional context and situational information regarding the use of the feature. This user-oriented normative nudge can significantly enhance the coupling and coordination between user perception and action experience, making the nudge tool more effective in promoting positive behavior change.

The democratization of nudge technologies is essential to promote ethical and responsible behavioral changes. In addition to emphasizing user participation, it is crucial to ensure transparency and education in the design process. This includes the establishment of nudge gatekeepers at all levels of technology ethics, from the selection of architects to the validity and verification of nudge technologies, to the transparency of the implementation process and the gathering of user feedback. Through these measures, designers can promote accountability, transparency, and user empowerment in the development and implementation of nudge-based technologies, enabling nudges to exist as a powerful tool for promoting positive behavioral change in a fair, ethical, and democratic manner.

Conclusion

The intersection of behavioral economics and journalism presents an area of research and innovation that holds promise for creating a more informed and engaged citizenry. Nudge can be leveraged to mitigate the biases and cognitive limitations that can hinder rational decision-making in the context of the news media, encouraging individuals to seek out diverse sources of information, critically evaluate evidence, and better understand the context of news stories. However, the ethical implications of using digital nudging in journalism are essential and raise important questions about the use of persuasive techniques to influence audience behavior. The manipulation of audience decisions, potential impact on journalistic credibility, and transparency must be carefully considered. While nudge can be an effective tool for promoting positive behavior change and encouraging critical thinking, ethical challenges, and the risk of compromising journalistic integrity must be addressed. Thus, the use of nudge in journalism should be guided by transparency, ethical principles, and a dedication to promoting diverse perspectives and critical thinking among readers. Further research is necessary to explore the potential risks and benefits of nudge in journalism and develop ethical guidelines for its use.

Funding Details

This work was supported by the Digital Culture and Media Research Center of UESTC under Grant Reconstructing the communication mode serves the community-level governance [211038].

Disclosure Statement.

The authors report there are no competing interests to declare.

References

Albanie, S., Shakespeare, H., & Gunter, T. (2017). Unknowable Manipulators: Social Network Curator Algorithms.

Anagnostopoulou, E., Urbančič, J., Bothos, E., Magoutas, B., Bradesko, L., Schrammel, J., & Mentzas, G. (2020). From mobility patterns to behavioural change: Leveraging travel behaviour and personality profiles to nudge for sustainable transportation. *Journal of Intelligent Information Systems*, *54*(1), 157–178. https://doi.org/10.1007/s10844-018-0528-1

Andersen, K., Ohme, J., Bjarnøe, C., Bordacconi, M. J., Albæk, E., & De Vreese, C. H. (2021). *Generational Gaps in Political Media Use and Civic Engagement: From Baby Boomers to Generation Z*. Taylor & Francis. https://doi.org/10.4324/9781003111498

Andı, S., & Akesson, J. (2021). Nudging Away False News: Evidence from a Social Norms Experiment. *Digital Journalism*, *9*(1), 106–125. https://doi.org/10.1080/21670811.2020.1847674

Aral, S. (2020). *The Hype Machine: How Social Media Disrupts Our Elections, Our Economy, and Our Health--and How We Must Adapt*. Currency.

Barton, A., & Grüne-Yanoff, T. (2015). From Libertarian Paternalism to Nudging—And Beyond. *Review of Philosophy and Psychology*, *6*(3), 341–359. https://doi.org/10.1007/s13164-015-0268-x

Bechmann, A., & Nielbo, K. L. (2018). Are We Exposed to the Same "News" in the News Feed? *Digital Journalism*, *6*(8), 990–1002. https://doi.org/10.1080/21670811.2018.1510741

Bovens, L. (2008). The Ethics of Nudge. In M. J. Hansson & T. Grüne-Yanoff (Eds.), *Preference Change: Approaches from Philosophy, Economics and Psychology.* (pp. 207–220). Springer. https://philarchive.org/rec/BOVTEO-8

Caraban, A., Karapanos, E., Gonçalves, D., & Campos, P. (2019). 23 Ways to Nudge: A Review of Technology-Mediated Nudging in Human-Computer Interaction. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–15. https://doi.org/10.1145/3290605.3300733

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In *The handbook of social psychology, Vols. 1-2, 4th ed* (pp. 151–192). McGraw-Hill.

Demarque, C., Charalambides, L., Hilton, D. J., & Waroquier, L. (2015). Nudging sustainable consumption: The use of descriptive norms to promote a minority behavior in a realistic online shopping environment. *Journal of Environmental Psychology*, *43*, 166–174. https://doi.org/10.1016/j.jenvp.2015.06.008

Dorrestijn, S. (2012). Theories and Figures of Technical Mediation. In *Design and Anthropology*. Routledge.

Du, Y. R. (2023). Personalization, Echo Chambers, News Literacy, and Algorithmic Literacy: A Qualitative Study of AI-Powered News App Users. *Journal of Broadcasting & Electronic Media*, *0*(0), 1–28. https://doi.org/10.1080/08838151.2023.2182787

Dworkin, G. (2015). Defining Paternalism. In T. Schramme (Ed.), *New Perspectives on Paternalism and Health Care* (pp. 17–29). Springer International Publishing. https://doi.org/10.1007/978-3-319-17960-5_2

Garrett, R. K. (2009). Echo chambers online?: Politically motivated selective exposure among Internet news users1. *Journal of Computer-Mediated Communication*, *14*(2), 265–285. https://doi.org/10.1111/j.1083-6101.2009.01440.x

Gimpel, H., Heger, S., Olenberger, C., & Utz, L. (2021). The Effectiveness of Social Norms in Fighting Fake News on Social Media. *Journal of Management Information Systems*, *38*(1), 196–221. https://doi.org/10.1080/07421222.2021.1870389

Glaeser, E. L. (2006). Paternalism and psychology. *University of Chicago Law Review*, *73*, 133–156.

Gray, C. M., Kou, Y., Battles, B., Hoggatt, J., & Toombs, A. L. (2018). The Dark (Patterns) Side of UX Design. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–14. https://doi.org/10.1145/3173574.3174108

Halpern, D. (2015). *Inside the Nudge Unit: How small changes can make a big difference*. WH Allen.

Heidegger, M. (1977). *Question Concerning Technology, and Other Essays, The* (12.2.1976 edition). Harper Torchbooks.

Heidegger, M. (1997). The Age of the World Picture. In A. I. Tauber (Ed.), *Science and the Quest for Reality* (pp. 70–88). Palgrave Macmillan UK. https://doi.org/10.1007/978-1-349-25249-7_3

Helberger, N., Karppinen, K., & D'Acunto, L. (2018). Exposure diversity as a design principle for recommender systems. *Information, Communication & Society*, *21*(2), 191–207. https://doi.org/10.1080/1369118X.2016.1271900

Horne, B. D., Nevo, D., Adali, S., Manikonda, L., & Arrington, C. (2020). Tailoring heuristics and timing AI interventions for supporting news veracity assessments. *Computers in Human Behavior Reports*, *2*, 100043. https://doi.org/10.1016/j.chbr.2020.100043

Hornuf, L., & Mangold, S. (2022). Digital Dark Nudges. In L. Hornuf (Ed.), *Diginomics Research Perspectives* (pp. 89–104). Springer International Publishing.
https://doi.org/10.1007/978-3-031-04063-4_5

Hu, Y. (2019). Design of media system selection. *Journalism and Mass Communication*, *3*, 28-30+42. https://doi.org/10.15897/j.cnki.cn51-1046/g2.2019.03.004

Hummel, D., & Maedche, A. (2019). How effective is nudging? A quantitative review on the effect sizes and limits of empirical nudging studies. *Journal of Behavioral and Experimental Economics*, *80*, 47–58. https://doi.org/10.1016/j.socec.2019.03.005

Jesse, M., & Jannach, D. (2021). Digital nudging with recommender systems: Survey and future directions. *Computers in Human Behavior Reports*, *3*, 100052
. https://doi.org/10.1016/j.chbr.2020.100052

Jia, H. (2018). Nudge and Its Enlightenment for Technological Design. *Studies in Dialectics of Nature*, *34*(6), 44–50. https://doi.org/10.19484/j.cnki.1000-8934.2018.06.007

Kahneman, D. (2011). *Thinking, Fast and Slow* (1st ed). Farrar, Straus and Giroux.

Kim A., & Dennis A. R. (2018). *Says Who? The Effects of Presentation Format and Source Rating on Fake News in Social Media* (SSRN Scholarly Paper No. 2987866). https://doi.org/10.2139/ssrn.2987866

Kiskola, J., Olsson, T., Rantasila, A., Syrjämäki, A. H., Ilves, M., Isokoski, P., & Surakka, V. (2022). User-centred quality of UI interventions aiming to influence online news commenting behaviour. *Behaviour & Information Technology*, *0*(0), 1–33.
https://doi.org/10.1080/0144929X.2022.2108723

Kleis Nielsen, R., & Ganter, S. A. (2018). Dealing with digital intermediaries: A case study of the relations between publishers and platforms. *New Media & Society*, *20*(4), 1600–1617. https://doi.org/10.1177/1461444817701318

Kümpel, A. S. (2020). The Matthew Effect in social media news use: Assessing inequalities in news exposure and news engagement on social network sites (SNS). *Journalism*, *21*(8), 1083–1098. https://doi.org/10.1177/1464884920915374

Latour, B. (1988). *Science in Action: How to Follow Scientists and Engineers Through Society* (Revised ed. edition). Harvard University Press.

Latour, B. (2007). *Reassembling the Social:* An Introduction to Actor-Network-Theory (1st edition). Oxford University Press.

Lepenies, R., & Małecka, M. (2015). The Institutional Consequences of Nudging – Nudges, Politics, and the Law. *Review of Philosophy and Psychology*, *6*
. https://doi.org/10.1007/s13164-015-0243-6

Luguri, J., & Strahilevitz, L. J. (2021). Shining a Light on Dark Patterns. *Journal of Legal Analysis*, *13*(1), 43–109. https://doi.org/10.1093/jla/laaa006

Masur, P. K., DiFranzo, D., & Bazarova, N. N. (2021). Behavioral contagion on social media: Effects of social norms, design interventions, and critical media literacy on self-

disclosure. *PLOS ONE*, *16*(7), e0254670. https://doi.org/10.1371/journal.pone.0254670

Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites. *Proceedings of the ACM on Human-Computer Interaction*, *3*(CSCW), 1–32. https://doi.org/10.1145/3359183

Miller, V. (2015). *The Crisis of Presence in Contemporary Culture: Ethics, Privacy and Speech in Mediated Social Life*. SAGE.

Mills, S. (2022). Finding the 'nudge' in hypernudge. *Technology in Society*, *71*, 102117. https://doi.org/10.1016/j.techsoc.2022.102117

Mirbabaie, M., Ehnis, C., Stieglitz, S., Bunker, D., & Rose, T. (2021). Digital Nudging in Social Media Disaster Communication. *Information Systems Frontiers*, *23*(5), 1097–1113. https://doi.org/10.1007/s10796-020-10062-z

Mitchelstein, E., & Boczkowski, P. J. (2009). Between tradition and change: A review of recent research on online news production. *Journalism*, *10*(5), 562–586. https://doi.org/10.1177/1464884909106533

Möller, J., Trilling, D., Helberger, N., & van Es, B. (2018). Do not blame it on the algorithm: An empirical assessment of multiple recommender systems and their impact on content diversity. *Information, Communication & Society*, *21*(7), 959–977. https://doi.org/10.1080/1369118X.2018.1444076

Møller, L. A. (2022). Between Personal and Public Interest: How Algorithmic News Recommendation Reconciles with Journalism as an Ideology. *Digital Journalism*, *10*(10), 1794–1812. https://doi.org/10.1080/21670811.2022.2032782

Monzer, C., Moeller, J., Helberger, N., & Eskens, S. (2020). User Perspectives on the News Personalisation Process: Agency, Trust and Utility as Building Blocks. *Digital Journalism*, *8*(9), 1142–1162. https://doi.org/10.1080/21670811.2020.1773291

Mulder, M., Inel, O., Oosterman, J., & Tintarev, N. (2021). Operationalizing Framing to Support Multiperspective Recommendations of Opinion Pieces. *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 478–488. https://doi.org/10.1145/3442188.3445911

Nekmat, E. (2020). Nudge Effect of Fact-Check Alerts: Source Influence and Media Skepticism on Sharing of News Misinformation in Social Media. *Social Media + Society*, *6*(1), 2056305119897322. https://doi.org/10.1177/2056305119897322

Petticrew, M., Maani, N., Pettigrew, L., Rutter, H., & Van Schalkwyk, M. C. (2020). Dark Nudges and Sludge in Big Alcohol: Behavioral Economics, Cognitive Biases, and Alcohol Industry Corporate Social Responsibility. *The Milbank Quarterly*, *98*(4), 1290–1328. https://doi.org/10.1111/1468-0009.12475

Petty, R. E., & Cacioppo, J. T. (1986). The Elaboration Likelihood Model of Persuasion. In R. E. Petty & J. T. Cacioppo (Eds.), *Communication and Persuasion: Central and Peripheral Routes to Attitude Change* (pp. 1–24). Springer. https://doi.org/10.1007/978-1-4612-4964-1_1

Plak, S., van Klaveren, C., & Cornelisz, I. (2022). Raising student engagement using digital nudges tailored to students' motivation and perceived ability levels. *British Journal of Educational Technology*, *n/a*(n/a). https://doi.org/10.1111/bjet.13261

Pu, J., Chen, Y., Qiu, L., & Cheng, H. K. (2020). Does Identity Disclosure Help or Hurt User Content Generation? Social Presence, Inhibition, and Displacement Effects. *Information Systems Research*, *31*(2), 297–322.

https://doi.org/10.1287/isre.2019.0885

Reisch, L. A. (2020). Nudging hell und dunkel: Regeln für digitales Nudging. *Wirtschaftsdienst*, *100*(2), 87–91. https://doi.org/10.1007/s10273-020-2573-y

Saghai, Y. (2013). Salvaging the concept of nudge. *Journal of Medical Ethics*, *39*(8), 487–493. https://doi.org/10.1136/medethics-2012-100727

Schmitt, J., Debbelt, C., & Schneider, F. (2017). Too much Information? Predictors of Information Overload in the Context of Online-News Exposure. *Information Communication and Society*, *21*, 1151–1167. https://doi.org/10.1080/1369118X.2017.1305427

Schneider, C., Weinmann, M., & vom Brocke, J. (2018). Digital nudging: Guiding online user choices through interface design. *Communications of the ACM*, *61*(7), 67–73. https://doi.org/10.1145/3213765

Shi, J., Hu, P., Lai, K. K., & Chen, G. (2018). Determinants of users' information dissemination behavior on social networking sites: An elaboration likelihood model perspective. *Internet Research*, *28*(2), 393–418. https://doi.org/10.1108/IntR-01-2017-0038

Sin R., Harris T., Nilsson S., & Beck T. (2022). Dark patterns in online shopping: Do they work and can nudges help mitigate impulse buying? *Behavioural Public Policy*, 1–27. https://doi.org/10.1017/bpp.2022.11

Sun, T., & Zhong, B. (2020). Multitasking as multisensory behavior: Revisiting media multitasking in the perspective of media ecology theory. *Computers in Human Behavior*, *104*, 106151. https://doi.org/10.1016/j.chb.2019.09.027

Sunstein, C. R. (2019). *How Change Happens*. The MIT Press.

Susser, D. (2019). Invisible Influence: Artificial Intelligence and the Ethics of Adaptive Choice Architectures. *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society*, 403–408. https://doi.org/10.1145/3306618.3314286

Tandoc, E. C., Lee, J., Chew, M., Tan, F. X., & Goh, Z. H. (2021). Falling for fake news: The role of political bias and cognitive ability. *Asian Journal of Communication*, *31*(4), 237–253. https://doi.org/10.1080/01292986.2021.1941149

Tenner, E. (2003). *Our Own Devices: The Past and Future of Body Technology* (1st edition). Knopf.

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness*. Yale University Press.

Thaler, R. H., Sunstein, C. R., & Balz, J. P. (2013). Choice architecture. In *The behavioral foundations of public policy* (pp. 428–439). Princeton University Press. https://doi.org/10.1515/9781400845347

Vandenbroele J., Vermeir I., Geuens M., Slabbinck H., & Kerckhove A. V. (2020). Nudging to get our food choices on a sustainable track. *Proceedings of the Nutrition Society*, *79*(1), 133–146. https://doi.org/10.1017/S0029665119000971

Verbeek, P. P. (2006). The Morality of Things – A Postphenomenological Inquiry. In E. Selinger (Ed.), *Postphenomenology: A critical companion to Ihde.* (pp. 117–128). State University of New York Press.

Verbeek, P. P. (2011). *Moralizing Technology: Understanding and Designing the Morality of Things*. University of Chicago Press.

Vermeulen, J. (2022). To Nudge or Not to Nudge: News Recommendation as a Tool to Achieve Online Media Pluralism. *Digital Journalism*, *0*(0), 1–20. https://doi.org/10.1080/21670811.2022.2026796

Weijers, R. J., Ganushchak, L., Ouwehand, K., & de Koning, B. B. (2022). "I'll Be There": Improving Online Class Attendance with a Commitment Nudge during COVID-19. *Basic and Applied Social Psychology*, *44*(1), 12–24.
https://doi.org/10.1080/01973533.2021.2023534

Weinmann, M., Schneider, C., & Brocke, J. vom. (2016). Digital Nudging. *Business & Information Systems Engineering*, *58*(6), 433–436. https://doi.org/The Ethics of Nudge

Yeung, K. (2017). 'Hypernudge': Big Data as a mode of regulation by design. *Information, Communication & Society*, *20*(1), 118–136.
https://doi.org/10.1080/1369118X.2016.1186713

Zuboff, S. (2015). Big other: Surveillance Capitalism and the Prospects of an Information Civilization. *Journal of Information Technology*, *30*(1), 75–89. https://doi.org/10.1057/jit.2015.5