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Nudge Theory in Finance and Public Policy: A Review of Evidence, Policy Applications, and Controversies

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Abstract: This study examines the development, applications, and controversies of nudge theory, with particular emphasis on its role in financial decision-making and public policy. It seeks to clarify how nudge-based interventions influence behavior, where they are most effective, and what ethical and practical limitations shape their application. The study adopts a narrative review approach within the interdisciplinary framework of behavioral economics. Relevant literature was identified, categorized, and synthesized from major academic and policy sources, with particular attention to studies on finance, public administration, digital nudging, and ethical debate. The review focuses on theoretical developments, empirical applications, and critical discussions concerning transparency, autonomy, contextual dependence, and long-term effectiveness. The review shows that nudge-based interventions can positively influence behavior in several domains, particularly retirement savings, consumer finance, public health, and public service delivery. Evidence is strongest in structured decision environments, especially where default rules, simplified procedures, and salient information presentation reduce cognitive burden and improve participation. However, the findings also indicate that nudge effects are context-dependent, uneven across populations, and sometimes limited in long-term persistence. Furthermore, digital nudging introduces additional concerns relating to algorithmic opacity, privacy, and manipulation. Nudge theory offers substantial practical value as a behavioral policy tool, particularly when integrated with institutional and contextual considerations. Nevertheless, its effectiveness cannot be assumed to be universal, and its ethical legitimacy depends on transparency, proportionality, and accountability. Future research should strengthen the evaluation of long-term effects, develop ethically grounded transparent nudging frameworks, and examine how personalized and digital nudges can be governed responsibly in finance and public policy.

Keywords: Behavioral Public Policy, Choice Architecture, Nudges, Policy Design, Financial Decision-Making

1. Introduction

Policymakers across diverse fields increasingly operate in decision-making environments shaped by cognitive limitations, institutional complexity, and rapidly evolving socio-technical conditions. Traditional policy instruments, including regulation, financial incentives, and information provision, generally assume that individuals are able to process information rationally and act in accordance with policy objectives (Calnitsky & Dupuy-Spencer, 2013; Urbina & Ruiz-Villaverde, 2019). However, substantial evidence indicates that real-world decision-making frequently departs from these assumptions, thereby producing persistent gaps between policy intentions and policy outcomes (Kahneman & Tversky, 1979; Munien & Telukdarie, 2025). Consequently, policy scholarship has increasingly turned toward governance instruments that acknowledge bounded rationality and behavioural constraints. In particular, behavioural policy tools have attracted growing attention because of their potential to influence behaviour in ways that are both cost-effective and politically feasible (Tversky & Kahneman, 1981).

Within this broader intellectual and policy shift, nudge theory has emerged as one of the most influential behavioural approaches. As an intervention strategy intended to shape decision-making behaviour, it has received extensive scholarly attention across psychology, economics, medicine, behavioural science, and public policy. Since its formal articulation in 2008, it has developed into a prominent cross-disciplinary area within the social sciences (Sunstein, 2014). Moreover, several developed countries, including the United Kingdom, the United States, Sweden, the Netherlands, and Denmark, have incorporated nudge-based approaches into public policy implementation, while the United Kingdom, under Prime Minister David Cameron, established a dedicated Behavioural Insights Team to support government policy delivery (Richard H. Thaler & Cass R. Sunstein, 2008). Originally rooted in behavioural economics, nudge theory focuses on the design of choice architectures that guide behaviour while preserving freedom of choice. By drawing on predictable decision biases, such as inertia, framing effects, and loss aversion, nudges seek to align individual decisions more closely with long-term welfare and collective policy goals (Richard H. Thaler & Cass R. Sunstein, 2008). Over the past two decades, nudge-based interventions have increasingly been incorporated into policy toolkits across areas such as financial regulation, consumer protection, public health, and environmental protection (Atalay, Lou, & Slonim, 2026; Kaizoji & Miyano, 2016).

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Additionally, this expansion has been accompanied by a growing body of empirical evidence derived from field experiments and policy applications. For instance, studies have shown that nudges can positively influence healthy food choices in public health contexts (Beshears, Choi, Laibson, & Madrian, 2006). Similarly, a meta-analysis of 55 Chinese- and English-language experimental studies published between 2008 and 2022 examined the effectiveness of nudge-based interventions in the field of energy conservation (Sunstein, 2014). Nudge strategies have also been widely applied in environmental policy to encourage green consumption patterns and environmentally responsible habits(Sunstein, 2014). Beyond its initial conceptual formulation, nudge theory has increasingly been linked to insights from cognitive neuroscience, thereby shedding light on the mechanisms underlying intuitive and reflective decision-making processes (Kaizoji & Miyano, 2016). Furthermore, recent developments in digital environments have expanded both the scope and the influence of nudges in contemporary governance settings (Atalay, Lou, & Slonim, 2026).

Despite the rapid expansion of research on nudge theory, important limitations remain within the existing literature. First, many prior studies focus on specific domains, such as retirement savings, health behaviour, or digital environments, without providing an integrated perspective that bridges financial decision-making and public policy applications. Second, existing reviews often emphasise the effectiveness of nudges while devoting comparatively less attention to the heterogeneity of evidence, particularly with regard to methodological rigour, contextual dependence, and long-term sustainability. For example, some intervention studies have been criticized for limited methodological diversity and insufficient attention to long-term effects (Mertens, Herberz, Hahnel, & Brosch, 2022). In addition, the international TIDieR checklist, which expands the reporting standards associated with the CONSORT and SPIRIT statements, may provide a useful reference point for assessing the methodological rigour of different intervention studies (Kaizoji & Miyano, 2016). Third, ethical debates, particularly those concerning transparency, autonomy, and digital governance, remain fragmented, thereby limiting a fuller understanding of the broader implications of nudge-based interventions.

Moreover, the literature on nudge interventions varies considerably in methodological rigour and evidential strength. While some findings are supported by randomized controlled trials (RCTs), which are widely regarded as the gold standard for evaluating intervention effectiveness and safety because they strengthen causal inference by balancing known and unknown confounding factors between groups (Sunstein, 2014), as well as by large-scale field experiments, particularly in areas such as pension participation and savings behavior, other studies rely primarily on laboratory experiments, observational evidence, or conceptual argumentation. This variation raises important questions regarding the generalizability, robustness, and long-term effectiveness of nudge-based interventions. Therefore, a critical synthesis that distinguishes among different forms of evidence is essential for a more accurate assessment of their policy relevance.

Against this background, the central question guiding this review is: how and under what conditions do nudge-based interventions influence behaviour in finance and public policy, and what ethical and practical limitations shape their effectiveness? To address this question, the review develops an integrated conceptual framework for organising the heterogeneous literature on behavioural nudging in financial decision-making and public policy. More specifically, the framework structures the existing evidence along three dimensions: intervention types, underlying behavioural mechanisms, and decision outcomes. With regard to behavioural mechanisms, it incorporates key cognitive and emotional biases commonly discussed in behavioural finance, including anchoring effects, framing dependence, the disposition effect, cognitive errors, and emotional biases, all of which contribute to deviations from rational financial decision-making. This structure provides a consistent analytical lens through which empirical findings can be compared and interpreted across diverse domains. As a result, it enhances conceptual clarity while facilitating a more evidence-based interpretation of the literature.

In response to the identified gaps, this study offers a structured narrative review that integrates the theoretical development, empirical evidence, and ethical considerations of nudge theory within a unified analytical framework. More specifically, the review seeks to clarify where nudges appear to be most effective, where the evidence remains mixed, and how ethical and institutional considerations shape their implementation. In the financial domain, developments such as big data-driven personalised wealth management products, intelligent loan approval systems, and smart investment advisory tools, as documented in relevant empirical studies, illustrate the application value of nudge-like approaches (Sadeghian & Otarkhani, 2024). In the field of public policy, practices such as default rules, procedural simplification, and incentive structures demonstrate how nudge theory has been operationalised, while also providing an empirical basis for examining the effectiveness and ethical implications of these interventions (Richard H. Thaler & Cass R. Sunstein, 2008). In this way, the study contributes to a more balanced and policy-relevant understanding of nudge theory and identifies directions for future research on its design and governance.

For conceptual clarity, this review adopts the following definitions. A nudge refers to any intervention that alters choice architecture without removing options or substantially changing economic incentives (Richard H. Thaler & Cass R. Sunstein, 2008). Digital nudging refers to nudging in which the choice environment is digitally mediated (Jesse & Jannach, 2021). Precise nudging, or personalised nudging, refers to interventions informed by individual-level behavioural data, thereby enabling tailored modifications in the presentation of choices (Mills, 2022). These distinctions are maintained throughout the review in order to differentiate nudges from mandates, traditional incentives, and purely informational interventions.

2. Methodology

This study adopts a narrative review methodology to synthesise the literature on nudge theory in finance and public policy. A narrative review was considered appropriate because the field is conceptually broad, methodologically heterogeneous, and dispersed across multiple disciplinary traditions, including behavioural economics, finance, public policy, digital governance, and applied behavioural science. Accordingly, this approach makes it possible to integrate theoretical development, empirical evidence, and ethical debate within a single interpretive framework, while also accounting for contextual variation across policy domains.

The literature search was conducted using three major academic databases: Google Scholar, Web of Science (WoS), and Scopus. WoS, developed by Clarivate, is widely recognised for its rigorous journal selection standards and strong academic reputation (Green et al., 2006; Grant and Booth, 2009; Mongeon & Paul-Hus, 2016). It indexes a substantial body of scholarly materials, including journal articles, books, and conference proceedings (Green et al., 2006; Martín et al., 2021). Similarly, Scopus, developed by Elsevier, is one of the largest abstract and citation databases and provides broad disciplinary coverage,

including high-quality international and regional publications (Snyder, 2019). Google Scholar was used as a supplementary search source because of its broad accessibility and its capacity to identify additional interdisciplinary and policy-oriented materials that may not always be captured consistently in conventional indexing databases (Boeker et al., 2013).

The search focused on English-language publications produced between 2000 and 2026. The search strategy employed combinations of terms such as "nudge," "choice architecture," "behavioural public policy," and "financial decision-making." These terms were selected in order to capture both the foundational literature on nudge theory and more recent studies addressing its application in finance, public administration, digital environments, and policy design. In addition, backwards and forward consideration of highly cited and conceptually influential works was used to ensure that major contributions to the field were not overlooked Snyder, 2019).

The inclusion strategy prioritised peer-reviewed journal articles, influential working papers, and policy reports that contributed meaningfully to the theoretical, empirical, or ethical understanding of nudge-based interventions. More specifically, studies were selected if they advanced at least one of the following dimensions: (1) the theoretical development of nudge theory, (2) the empirical evaluation of nudge-based interventions, or (3) the ethical and institutional debate surrounding their application. Particular emphasis was placed on publications directly relevant to financial behaviour and public policy implementation, as these two domains constitute the central analytical focus of the present review. At the same time, the review was guided not only by topical relevance but also by the significance and interpretive value of the selected studies. Therefore, preference was given to works that were either conceptually influential, empirically robust, widely cited, or particularly relevant to major debates concerning effectiveness, contextual dependence, transparency, autonomy, and digital governance. This strategy was intended to ensure that the review remained analytically focused while also reflecting the breadth of the field.

Given the narrative nature of the review, the search and selection process was not designed to be exhaustive in the manner of a systematic review. Unlike systematic reviews, narrative reviews do not necessarily require full retrieval protocols, formalised screening flows, or quantitative effect-size aggregation (Mongeon & Paul-Hus, 2016). Consequently, the present study may be subject to limitations commonly associated with narrative synthesis, including selective citation and the possibility of omission. However, in line with accepted standards for high-quality narrative reviews, deliberate efforts were made to maintain a balanced, critical, and representative coverage of the literature by incorporating seminal works, recent empirical studies, and major ethical and policy-oriented contributions (Martín et al., 2021).

The included literature was examined through a structured analytical lens rather than summarised descriptively. More specifically, the selected studies were analysed in relation to their intervention types, underlying behavioural mechanisms, domains of application, methodological characteristics, and reported outcomes. This analytical strategy enabled the review to compare findings across heterogeneous bodies of literature and to identify both convergent and divergent patterns in the evidence. It also supported a more systematic interpretation of where nudge-based interventions appear most effective, where the evidence remains mixed, and how contextual and ethical factors shape implementation across finance and public policy settings. After the identification and selection of relevant literature, the included studies were analysed through a structured interpretive framework. Specifically, the review examined studies according to intervention type, underlying behavioural mechanism, domain of application, methodological design, reported outcomes, and ethical or contextual limitations. This analytical strategy enabled comparison across heterogeneous studies and supported the identification of recurring patterns, divergences, and research gaps in the literature on nudge theory in finance and public policy.

The conclusions of this review should be interpreted within the methodological boundaries of a structured qualitative narrative synthesis rather than a statistically aggregated evidence assessment. The study does not employ meta-analytic techniques, nor does it claim exhaustive coverage of all relevant publications. Instead, its purpose is to provide a conceptually integrated, critically informed, and policy-relevant synthesis of the literature on nudge theory in finance and public policy. While this approach allows for breadth, interpretive depth, and interdisciplinary integration, it also means that the findings are shaped by qualitative judgment in study selection, thematic organisation, and evidence interpretation. Therefore, the review is best understood as a structured narrative contribution designed to clarify the state of the field, identify major debates, and indicate directions for future research.

3. The Development Logic of Nudge Theory

The formulation of nudge theory by Richard Thaler and Cass Sunstein represents an important development in behavioural economics, particularly regarding policy tools. Thaler was later awarded the Nobel Prize in Economic Sciences in 2017 for his contributions to behavioural economics and related fields. Thaler and Sunstein systematically elaborated the concept of choice architecture in *Nudge: Improving Decisions About Health, Wealth, and Happiness* (Richard H. Thaler & Cass R. Sunstein, 2008). At the theoretical level, the concept of nudging rests on three basic principles (Anderson, 2010). First, individual judgment and decision-making are shaped by systematic biases, such as status quo bias, loss aversion, and time discounting. These biases have been supported by a substantial body of experimental research. For example, with regard to loss aversion, when individuals are presented with a gambling scenario involving a 50% probability of winning USD 50 and a 50% probability of losing USD 50, the proportion willing to participate is often lower than the neutral benchmark, thereby reflecting a tendency to weigh losses more heavily than gains (Tversky & Kahneman, 1981). Likewise, the price at which individuals are willing to sell an item they already possess is often higher than the amount they would initially be willing to pay to acquire it, thereby illustrating the endowment effect (Kahneman, Knetsch, & Thaler, 1990). Regarding status quo preference (Samuelson & Zeckhauser, 1988), as demonstrated in laboratory and field experiments, individuals tend to select the default or existing option even in decision-making settings with no transition costs or substantial uncertainty (Brot-Goldberg, Layton, Vabson, & Wang, 2021).

Second, these deviations from rational choice are not random; rather, they can be influenced through the design of situational prompts and decision environments (Meissner, Gassmann, Faure, & Schleich, 2023). Third, policymakers and institutional designers can use this predictable irrationality to improve public decision-making outcomes (Committee on Future Directions for Applying Behavioural Economics to Policy, Board on Behavioural, Cognitive, and Sensory Sciences, Division of Behavioural and Social Sciences and Education, & National Academies of Sciences, Engineering, and Medicine, 2023). Thaler described this normative orientation as liberal paternalism, a framework that seeks to provide guidance while preserving freedom of choice (Anderson, 2010).

Following the emergence of nudge theory, researchers quickly began to examine its validity through controlled experiments and field-based studies. One of the most influential empirical demonstrations concerns automatic pension enrollment. Madrian and Shea (2001) found that shifting pension plans from active enrollment to default participation substantially increased participation rates, thereby providing strong evidence for the power of default effects. This conclusion has also informed practical discussions on pension system design. In China, for example, as the personal pension system has been expanded nationwide, the problem of "hot account opening, cold contribution" has received growing attention, and default investment services have been discussed as a possible strategy for improving participation and contribution behaviour (Brot-Goldberg, Layton, Vabson, & Wang, 2021). Similarly, in the United Kingdom, occupational pension arrangements incorporate comparable forms of default participation mechanisms across schemes (Kapeliushnikov, 2015). More recent evidence has likewise shown that default rules continue to exert substantial influence on participation rates and behavioural choices in public insurance contexts. In the United States, for instance, default options have been shown to have large and persistent effects on insurance and medication behaviour (Kapeliushnikov, 2015). Collectively, these early findings provided a strong empirical foundation for nudge theory and also encouraged governments in multiple countries to establish dedicated behavioural insights units that integrate psychological insights into policy design (Brot-Goldberg, Layton, Vabson, & Wang, 2021).

However, the theory has also attracted substantial criticism. Gigerenzer (2015), for instance, argued that excessive reliance on situational guidance may create risks of cognitive manipulation. He further suggested that the effectiveness and legitimacy of nudges may vary considerably across different cultural and institutional contexts (Gigerenzer, 2015). Therefore, although nudge theory has become an influential framework for understanding and shaping decision-making, its theoretical promise has continued to be accompanied by important debates concerning autonomy, legitimacy, and contextual variability.

3.1. Theoretical Expansion: Digital Empowerment and Algorithmic Nudging

3.1.1. Digital Transformation: Algorithmic Nudging and Platform Design

Although the theoretical foundations of nudging are rooted in behavioural economics, its practical implementation has been significantly reshaped by advances in digital technology and data infrastructure. In the 2020s, the rapid development of digital platforms, big data, and artificial intelligence (AI) has transformed the way nudges are designed and deployed. More specifically, nudging has evolved from manually constructed choice architectures in laboratory or offline settings to digitally mediated systems embedded in virtual environments, mediated by interface design, algorithmic recommendations, default settings, behavioural feedback, and personalised prompts. As a result, digital nudging can influence users' decision-making more flexibly, more frequently, and on a much larger scale (Lopez-Persem, Domenech, & Pessiglione, 2016).

In fintech and personal finance applications, algorithmic nudges are now widely used. Additionally, algorithms can help reduce overtrading and encourage users to develop sound saving habits. For example, some money management and savings applications employ holistic saving strategies, default portfolio diversification, and automated reminders to combine default options with simplified choices in digital financial environments. In doing so, these applications make it easier for users to select prudent savings or investment options. This design represents a typical form of digital nudging because it preserves the full set of options while altering default settings and the presentation of information at the point of first encounter with the decision environment, thereby reducing decision-making costs (Jesse & Jannach, 2021).

However, digital nudging generates not only efficiency and convenience but also a range of ethical and institutional challenges. In addition, concerns about unfair digital practices, including algorithm-driven price discrimination and manipulative data use, have intensified public debate and highlighted the risks of improper deployment of digital technologies, including digital nudging (Huang, Chen, Luo, & Lin, 2024). First, platform and algorithm designers exercise substantial control over the construction of choice architecture, which may lead to implicit influence over user cognition and choice (Meske, Amojo, Poncette, & Balzer, 2019). Second, algorithmic recommendation and ranking mechanisms may generate a series of significant problems. For instance, they may contribute to information overload and create an "information cocoon" that restricts users' exposure to diverse perspectives, particularly when platforms prioritise content that merely reinforces existing preferences in order to maximise user engagement (Lopez-Persem, Domenech, & Pessiglione, 2016). At the same time, the "black box" nature of algorithmic operations may weaken users' right to know, while manipulated rankings or curated hot-search lists may expose users to misleading or inaccurate information without their full awareness (Jesse & Jannach, 2021). Moreover, platforms often gain excessive discursive power through algorithmic control over information flows, thereby reflecting a clear structural bias in favour of platform interests. In parallel, the collection and analysis of user data may result in privacy leaks and other harms, including data-driven price discrimination that undermines users' fair rights and interests (Lopez-Persem, Domenech, & Pessiglione, 2016). Therefore, the academic community has increasingly called for transparent nudging. This perspective requires that algorithms disclose the logic of their interventions and allow users to view, modify, or exit default settings at any time, thereby safeguarding both independent choice and the right to know (Luo, Kumar, & Yazdanmehr, 2023).

4. Application and Empirical Evidence in the Financial Field

4.1. Investor Behaviour Intervention

Behavioural nudging has become a central approach in addressing systematic deviations from rational financial decision-making, particularly in the areas of retirement savings and consumer credit. Across the literature, a relatively consistent pattern emerges: interventions that modify choice architecture, rather than directly altering economic incentives, can elicit substantial behavioural responses. However, the magnitude and persistence of these effects vary considerably depending on context and intervention design (Table 1).

In the context of pension participation, one of the most robust and policy-relevant applications of nudging is automatic enrollment in workplace pension schemes. Evidence from large-scale policy evaluations indicates that default enrollment mechanisms can substantially increase participation rates. For example, data from China's corporate annuity program show that employee participation rates grew at double-digit rates from 2007 to 2014 but then declined sharply after 2015, highlighting the need to consider automatic enrollment mechanisms to improve participation (Chen & Hu, 2025). Although participation effects are often strong, the literature remains inconclusive regarding whether such interventions improve retirement adequacy

in a broader sense. For instance, research based on the China Health and Retirement Longitudinal Study found that overall retirement income adequacy among older adults in China remains relatively low, with significant differences by gender, education, region, and type of residence. Additionally, factors such as pensions, children's support, and social welfare exert significant effects on the adequacy of retirement income (You et al., 2019). This practical case highlights an important limitation in focusing on enrollment outcomes without giving sufficient attention to adequacy and long-term welfare consequences.

Within consumer credit markets, a substantial body of evidence shows that repayment behaviour is highly sensitive to framing effects and salience manipulation. Traditional credit card statements that emphasise minimum repayment amounts tend to create anchoring effects, whereby consumers disproportionately use the suggested minimum as a reference point for their repayment decisions. According to evidence discussed in a Tsinghua University source, when only the minimum repayment amount, described as the "old anchor," is displayed on a credit card bill of £997, a larger proportion of consumers tend to choose the minimum repayment option (Keys & Wang, 2019). This behavioural bias can reinforce suboptimal repayment patterns, as consumers who repeatedly choose the minimum payment may quickly incur substantial interest charges. Experimental and field evidence further suggests that increasing the salience of total repayment costs, such as future interest accumulation and long-term repayment trajectories, can significantly increase intentions to repay in full, particularly among individuals who would otherwise default to minimum payments (Navarro-Martinez et al., 2011). For example, because a minimum repayment covers only a small proportion of the total bill, the remaining balance is carried forward to the next billing cycle and accrues additional interest, whereas full repayment helps individuals avoid those costs and maintain a stronger credit profile (Li, Wang, Gao, Li, & Sun, 2024). However, these effects are often short-term and may weaken over time as cognitive attention shifts.

Digital interventions extend these insights by showing that timely reminders and interface design changes can meaningfully alter repayment behaviour. Randomised controlled trials indicate that SMS-based repayment reminders can reduce delinquency rates by approximately 11% to 18%, with stronger effects observed among younger users (Cadena & Schoar, 2011). Similarly, redesigning repayment interfaces to reduce the prominence of minimum-payment options leads to a measurable decline in suboptimal repayment choices, underscoring the importance of choice architecture in digital financial environments (Guttman-Kenney et al., 2025). Nevertheless, the evidence also indicates that the effectiveness of nudges is non-monotonic with respect to intervention intensity. In other words, excessive reminder frequency may generate cognitive overload and psychological reactance, thereby reducing responsiveness by more than 30% when reminders exceed optimal thresholds (Sachdeva & Gilbert, 2020). This interpretation is consistent with findings that excessive task switching depletes cognitive resources and that frequent digital interruptions contribute to attentional fragmentation (Lee & Schumacher, 2024). Moreover, evidence that a substantial proportion of adults experience attention-distraction problems in multimedia environments further supports the argument that overly frequent reminders may trigger cognitive overload rather than support better financial decisions (Gilbert et al., 2020).

Recent developments in fintech and behavioural disclosure practices have further expanded the scope of nudging interventions. Emerging evidence suggests that AI-driven personalised disclosure systems can improve decision quality by tailoring financial information to individual cognitive profiles and behavioural tendencies (Despard, Roll, Grinstein-Weiss, Hardy, & Oliphant, 2023). For example, intelligent investment advisors use machine learning algorithms to analyse market trends and personal investment preferences, thereby providing investors with customised investment recommendations intended to support more rational and efficient decision-making (Sadeghian & Otarkhani, 2024). At the same time, simplified disclosure formats have been shown to reduce disparities in financial decision-making across literacy levels, thereby enhancing informational equity (Ho, Sun, Yang, & Li, 2023). Relevant research also indicates that financial literacy levels among Chinese residents vary across age groups, gender, and educational background, and that these differences are reflected in financial decision-making outcomes (Zhao, Dai, Chen, & Li, 2024). While sustained financial participation may partially narrow these gaps, simplified disclosure formats appear to provide an additional mechanism for promoting informational equity. However, these developments also raise unresolved concerns regarding privacy, algorithmic transparency, and the ethical boundaries of behavioural personalisation.

Collectively, the available evidence suggests that behavioural nudges in financial decision-making are most effective when they operate through clear, salient, and low-friction modifications to choice architecture. For example, adjusting the presentation of investment information to reduce anchoring effects that cause investors to over-rely on initial price signals may enhance the effectiveness of nudges (Arora & Rajendran, 2023). However, these effects remain heterogeneous across contexts, sensitive to intervention intensity, and often limited in their long-term persistence. For instance, nudges aimed at mitigating loss aversion may perform well in short-term investment settings but may fail to maintain their influence as investors later respond to market volatility and herd behaviour (Jie Gong, 2024). These findings highlight the need for a more structured understanding of when and why nudges work, rather than treating them as universally effective policy tools.

Table 1: Evidence mapping of empirical studies on behavioural nudging in financial decision-making

Domain	Intervention (Nudge type)	Behavioral mechanism	Study design	Main findings	Limitations
Pension participation	Automatic enrollment (default option in pension schemes)	Status quo bias; inertia; procrastination	Policy evaluation / natural experiment	Automatic enrollment significantly increases participation in workplace pension schemes; participation rate reaches approximately 88% under default settings	Cannot isolate long-term adequacy of savings vs participation effects
Consumer credit	Minimum repayment salience in credit card statements	Anchoring effect; cognitive bias toward suggested amounts	Field data / behavioral analysis	Minimum payment framing anchors consumers to lower repayment levels and	Limited external validity across regulatory environments

Domain	Intervention (Nudge type)	Behavioral mechanism	Study design	Main findings	Limitations
				reinforces suboptimal repayment behavior	
Consumer credit	Full repayment reminders + disclosure of future interest costs	Salience; cognitive reframing	Experimental study	Providing explicit cost information increases full repayment intention and reduces debt accumulation	Effects are mainly short-term
Consumer credit	Loss-framed repayment messages (default risk emphasis)	Loss aversion	Behavioral experiment	Emphasizing negative consequences of default improves short-term repayment behavior	Uncertain long-term behavioral persistence
Digital credit	SMS repayment reminders	Attention nudging; reminder effect	Randomized controlled trial (RCT)	SMS reminders reduce delinquency rates by approximately 11%–18%, with stronger effects among younger users	Diminishing returns with repeated exposure
Digital credit	Redesign of repayment choice architecture (digital interfaces)	Choice simplification	Field experiment	Reducing prominence of minimum repayment option decreases selection of suboptimal repayment behavior	Context-dependent on platform design
Behavioral intervention intensity	High-frequency reminders	Cognitive overload; psychological reactance	Field experiment	Excessive reminders (>2 per week) reduce user responsiveness by over 30%, indicating nudge fatigue	Optimal intervention dosage remains unclear
Financial disclosure	Simplified disclosure and cost visualization	Reduced cognitive load; improved salience	Experimental study	Improves understanding of repayment costs and promotes more rational repayment decisions	Effects vary by financial literacy level
Fintech nudging	AI-driven personalized financial disclosure	Personalization; adaptive framing	Emerging empirical + conceptual evidence	Enhances decision quality by tailoring financial information to individual profiles	Ethical and privacy concerns remain unresolved
Investment decision-making	Social distance framing in self–other risk decisions	Social cognition bias	Experimental study	Information framing significantly influences risk perception and investment choices	Mechanisms require further empirical validation
Financial fairness	Simplified financial disclosure formats	Reduction of information asymmetry	Experimental / policy analysis	Reduces financial literacy gaps and improves equality in decision quality	Potential trade-off between simplicity and information completeness

Note: This table provides an evidence mapping of key empirical studies on behavioural nudging in financial decision-making. It is intended to synthesise representative findings across different domains rather than to conduct a systematic review or meta-analysis. These studies mainly focus on behavioural biases such as herd effect, loss aversion, and anchoring effect that affect financial decision-making (as summarised in related behavioural decision-making theories developed since the 1970s), and are based on research frameworks including prospect theory and bounded rationality theory. The classification of studies is based on intervention type, behavioural mechanism, research design, and reported outcomes. Abbreviations: RCT = randomised controlled trial.

4.2. Financial Product Design

Information disclosure plays a central role in financial decision-making, particularly in investment- and risk-related contexts. However, a substantial body of evidence suggests that traditional disclosure formats are often overly complex, leading to information overload and reduced user comprehension. For example, the annual financial reports of listed companies in China often extend to hundreds of pages and have become increasingly lengthy over time, making it difficult for non-professional and ordinary investors to understand their content (Alduais, Ali Almasria, Samara, & Masadeh, 2022). Similarly, when banks disclose financial product information in overly complex, technical language, investors may become confused and unable to accurately understand product characteristics and associated risks(Hibbeln, Metzler, & Osterkamp, 2025). As a result, suboptimal engagement among retail investors has become a notable concern. Within the framework of behavioural nudging, information nudges seek to improve decision quality by restructuring how information is presented rather than altering its substantive content, thereby enhancing cognitive accessibility and reducing decision-making friction.

Empirical and conceptual studies consistently indicate that the effectiveness of information nudges depends strongly on presentation format and cognitive framing. For instance, a study examining 32 typical data-news cases on social platforms found that the presentation of information in headlines was a key factor in driving high-traffic dissemination, while static infographics were more consistent with platform contexts and user preferences, thereby demonstrating the importance of presentation format in shaping the effectiveness of information nudges (Zhou et al., 2024). In addition, behavioural decision research shows that social distance and framing effects significantly influence self–other risk judgments, which suggests that

individuals do not evaluate financial risks in a context-independent manner. More specifically, one study involving 160 participants found an interaction between psychological distance and framing effects in risk decisions: under distant conditions, participants' risk decision scores were higher under positive frames than under negative frames, whereas under close conditions, the pattern was reversed(Raue, Streicher, Lermer, & Frey, 2015). Likewise, experimental evidence based on college student samples indicates that individuals making decisions for friends or strangers tend to display greater risk preference than those making decisions for themselves. Furthermore, when social distance is close, higher risk probability is associated with greater risk preference, whereas under more distant conditions, higher risk probability is associated with lower risk preference(Cai, Hu, Zhang, & Quan, 2023). At the same time, framing effects have also been shown to influence decision preferences in self–other financial decision-making contexts, thereby indicating that variations in information presentation can systematically alter perceived risk and willingness to participate in investment decisions. In this sense, disclosure cannot be regarded as neutral; rather, it is behaviorally consequential(Zhou et al., 2024). This line of inquiry, therefore, highlights the importance of incorporating psychological distance and contextual framing into the design of financial information systems.

In parallel, developments in financial technology have enabled more adaptive forms of disclosure, particularly through AI-driven personalisation. Emerging evidence suggests that personalised disclosure systems can improve decision quality by tailoring information complexity, format, and salience to individual user characteristics, thereby reducing cognitive burden (Sadeghian & Otarkhani, 2024). However, the empirical evidence regarding long-term behavioural outcomes remains limited. For example, studies on information disclosure transparency, including research based on the Shenzhen Stock Exchange's 2001–2003 information disclosure assessment results, have found that transparency significantly affects institutional investor behaviour(Wang Jiping, Zhang Nan, & Guo Tiantian, 2014). Nevertheless, comparable in-depth empirical investigations into the long-term behavioural effects of algorithmic transparency remain scarce. At the same time, concerns regarding algorithmic transparency and data privacy continue to persist, as research on privacy information disclosure behaviour among mobile learning users shows that privacy concerns have tangible effects on users' behavioural decisions and may create conditions for behavioural manipulation(Mourali, Novakowski, Pogacar, & Brigden, 2025).

From an equity perspective, simplified disclosure formats have been shown to reduce disparities in financial decision quality across different levels of financial literacy. Simplification strategies increase accessibility for low-literacy groups and can contribute to more inclusive financial decision environments, although the extent to which they significantly improve decision accuracy may vary across contexts (Ho, Sun, Yang, & Li, 2023). Nevertheless, this benefit may involve a trade-off between simplicity and informational completeness, thereby raising important normative questions regarding the optimal level of disclosure in regulated financial markets.

Overall, the literature suggests that information nudging is most effective when disclosure design is aligned with cognitive constraints, user heterogeneity, and decision context. However, the existing evidence remains fragmented across experimental settings and across the relationships among cognitive mechanisms, technological implementation, and policy-level outcomes. As indicated in relevant research on financial big data applications, issues such as data quality limitations, technical bottlenecks, and shortages of skilled personnel further intensify the disconnect between technological implementation and practical outcomes(Graduate Researcher, Master of Science in Management Information Systems, College of Business, Lamar University, Texas, USA, et al., 2024). Similarly, cases involving credit risk assessment and financial market prediction reflect the absence of a unified logical chain that links cognitive decision-making processes to policy-oriented outcomes (Spitzer, Abstiens, & Karmasin, 2025). Future research should therefore seek to develop a more integrated framework that connects information design features with behavioural and welfare outcomes in financial decision-making. Such a framework should combine cognitive mechanisms, technological tools such as cloud computing and data mining, and policy guidance in order to better serve practical financial scenarios.

5. Real-World Cases of Nudging in Public Policy

5.1. Resource Allocation Policy: Social Incentive Promotion in Sustainable Transportation

In recent years, the integration of climate policy and urban governance has positioned sustainable transportation as an important emerging area for the application of nudge theory. Whereas traditional transportation policies typically rely on price-based incentives, such as fuel taxes, or punitive mechanisms, such as traffic restrictions, nudge theory emphasises the voluntary adoption of green mobility through non-mandatory and relatively low-cost behavioural interventions. Relevant studies have examined the formation and drivers of green travel behaviour from the perspective of nudge theory, using methods such as questionnaires and field interviews, and have proposed corresponding promotional measures. These findings provide initial support for the practical value of nudge theory in encouraging sustainable travel behaviour (Spitzer et al., 2025). Additionally, the book *Green Nudging* illustrates, through a series of case-based analyses, how behavioural economics can guide individuals toward more environmentally friendly transportation choices, thereby further underscoring the relevance of nudge theory in this field (Spitzer et al., 2025).

In this context, social incentive nudges have shown considerable potential in promoting public transportation and shared mobility. A multi-city experiment conducted by Polci et al. (2025) found that when commuting applications provided social visibility rewards, such as green badges and carbon-credit leaderboards, to low-carbon travellers, public transportation use increased by 18%, while carbon emissions declined by approximately 11% (Polci & Cinella, 2025). The authors argue that this form of social visibility activates mechanisms related to reputation, motivation, and social identity, all of which are central to socially oriented behavioural influence.

Furthermore, behavioural tracking studies suggest that social rewards may be more durable than monetary incentives. Grelle et al. argue that when users' low-carbon travel behaviour is recognised by a reference group, this recognition can strengthen intrinsic motivation and gradually foster habitual green travel behaviour (Grelle, Kuhn, Fuhrmann-Riebel, & Hofmann, 2024). By contrast, purely economic subsidies often lose their effect once the subsidy period ends. At the same time, the proliferation of digital platforms has provided an important technical foundation for such interventions. In the Green Move experiment conducted in Tokyo, Japan, users' carbon emissions were calculated in real time from travel data and then visualised as social points (Schmaus, Creutzig, Koch, Nachtigall, & Molkenthin, 2025). The results showed that applications incorporating public leaderboards and team-based competition achieved participation rates that were 32% higher than versions that provided

only individual feedback. This finding suggests that social comparison is a particularly important psychological mechanism in stimulating collective action (Kroker & Lange, 2024).

However, such social incentives have also generated significant debate regarding fairness and privacy. Lahoti et al. point out that although behavioural data visualisation may strengthen social incentives, the absence of anonymity can expose individuals to moral pressure and even social exclusion effects (Lahoti, Hanji, Kamble, & Vemuri, 2023). Therefore, scholars increasingly advocate the principles of transparency and voluntary participation in order to ensure that social incentive mechanisms in public policy remain ethically legitimate as well as psychologically effective. In this respect, the sustainable transportation literature demonstrates both the practical promise and the normative complexity of nudge-based interventions.

5.2. Public Service Policy: The Design of Loss-Aversion Framing for Health Insurance Participation

Low participation in health insurance remains a long-standing public management challenge in many countries. For example, around 10% of the population in the United States remains uninsured, while the health insurance coverage rate in India is only about 30%(Hooley, Afriyie, Fink, & Tediosi, 2022). In Germany, although private health insurance coverage has remained stable, the scope for expanding commercial health insurance is relatively limited due to the broad reach of the social health insurance system (Busse, Blümel, Knieps, & Bärnighausen, 2017). Under these conditions, traditional policy instruments, such as subsidies and coercive administrative measures, are often costly and may produce only limited results. For example, in China's basic medical insurance system, the traditional practice of encouraging urban and rural residents to enrol through administrative mobilisation, which can function as indirect coercion, has encountered substantial bottlenecks due to insufficient policy incentives and weak enforcement mechanisms. Consequently, problems such as dropout and interrupted participation have emerged (Teklemariam, Mohammed, Bogale, Urgie, & Beshah, 2025). Meanwhile, fiscal subsidies, although widely used as a policy tool, do not always guarantee sustained participation and may even produce unintended distortions in enrollment behaviour (Spitzer et al., 2025).

Behavioural economics has shown that individuals are generally more sensitive to losses than to gains (Munien & Telukdarie, 2025). On this basis, loss-aversion framing has become an important direction in the design of nudges for public health insurance and health policy more broadly. Experimental studies have shown that individuals' willingness to participate in insurance, vaccination, or related health programs increases significantly when communication strategies shift from emphasising the benefits of participation to emphasising the risks associated with non-participation. This suggests that framing-based nudges can activate risk sensitivity, thereby promoting public health and insurance-related decision-making (Lahoti et al., 2023).

Evidence from China further illustrates this point. In a randomised controlled trial examining childhood influenza vaccination, researchers found that when parents received a digital reminder message framed around the health risks of not vaccinating, their children were significantly more likely to be vaccinated than those in the control group. More specifically, the vaccination rate in the loss-framed group was 24.0%, compared with only 9.4% in the control group. The adjusted relative risk was 2.50 (95% confidence interval, 1.27-4.94), and the effect remained evident at the five-month follow-up (Wang et al., 2025). These findings suggest that large-scale public health interventions can benefit substantially from carefully designed framing strategies delivered through digital channels.

Nevertheless, the ethical boundaries of nudging remain a major concern in this context. As Blumenthal-Barby and Burroughs (2012) argue, behavioural interventions may, if left insufficiently regulated, move beyond gentle guidance and evolve into more vertically imposed forms of influence in public policy. More specifically, some scholars warn that the use of emotionally charged or fear-based messages, especially through digital channels such as SMS or app notifications, may undermine individuals' independent judgment and amount to a form of soft coercion. This risk is particularly pronounced when the target audience lacks the capacity to critically assess the information or when opt-out mechanisms are weak or unclear (Rebonato, 2012; Siipi, 2025). Therefore, although loss-aversion framing can be highly effective in increasing insurance and health-related participation, its legitimacy depends heavily on the transparency, proportionality, and ethical design of the intervention.

6. Controversies and Research Limitations of Nudge Theory

6.1. Effect Limitations: Situational Dependence and Long-Term Behavioural Rebound

Although numerous empirical studies have reported significant short-term behavioural effects associated with nudge-based interventions, the academic community continues to question their long-term stability and cross-context reproducibility. Nudge theory has been widely examined across psychology, economics, medical science, behavioural science, and public policy, and prior studies have suggested that nudges can positively influence behaviours such as healthy food choice and other forms of decision-making. Moreover, scholars have explored the effects of strategies such as priming, default options, social norms, and symbolic information on human behaviour (Spitzer et al., 2025). However, the evidence does not support the assumption that such effects are universally stable across domains, populations, or time horizons.

A major contribution in this regard is the meta-analysis by Mertens et al. (2022), which reviewed more than 200 choice-architecture interventions conducted between 2008 and 2020. The authors found that the overall effect size was moderate (Cohen's $d \approx 0.43$), but they also identified significant variation across intervention categories, behavioural domains, and contexts. In addition, the literature appeared to be affected by publication bias, thereby indicating that the effects of nudging are neither uniformly stable nor consistently effective across all behavioural environments (Mertens, Herberz, Hahnel, & Brosch, 2022).

Furthermore, the effectiveness of nudges is highly dependent on both situational design and cultural context. Previous studies have shown that regional and cultural norms significantly influence the acceptance and effectiveness of nudges. For example, social norm interventions that emphasise group-oriented behaviour tend to be more effective in settings that value collective responsibility, whereas in cultures that prioritise individual autonomy, excessive guidance or normative signalling may be perceived as intrusive, thereby reducing the effectiveness of the intervention (Siipi, 2025). In some cases, nudge interventions may even generate rebound effects or produce outcomes opposite to those intended. For instance, a randomised field experiment found that behavioural interventions designed to encourage the adoption of biological control through social

comparison led to a significant decline in adoption among a subset of participants. This finding is consistent with related research suggesting that social comparison and social distance can exert heterogeneous effects on behavioural decision-making, thereby implying that nudges may become counterproductive when they activate antagonistic dynamics in particular economic or relational contexts (Themistocleous & Karapanos, 2026).

At the psychological level, such adverse effects are often explained through reactance. Resistance may emerge when individuals perceive an intervention as a threat to their autonomy and respond by restoring the freedom they believe has been constrained. This phenomenon has been widely discussed in the literature on behavioural and environmental interventions and suggests that nudge design may provoke resistance or reversal behaviour when it is overly intense or poorly aligned with context (Banerjee, Galizzi, John, & Mourato, 2023). Therefore, the available evidence indicates that nudging is not a one-size-fits-all strategy. Rather, effective intervention design must account for the cultural and psychological mechanisms, social normative structures, and perceived freedom of the target population.

6.2. Methodological Flaws: Risk of Bias in Self-Reported Data

Another major limitation of nudge research lies at the methodological level. Many empirical studies rely on self-report questionnaires, laboratory tasks, or short-term field experiments, all of which may suffer from limited external validity and systematic bias. Existing meta-analyses suggest that factors such as sample characteristics, measurement strategies, and implementation settings can substantially affect the reliability and generalizability of findings. Van Kleef and Van Trijp (2018), for example, note that many nudge studies rely on controlled experiments and convenience samples, such as university students, which are not always well suited to capturing the complexity of real-world behavioural responses in policy settings. As a result, such designs may overlook the actual decision-making dynamics individuals experience in natural environments (Van Kleef & Van Trijp, 2018).

At the same time, the methods themselves may amplify self-report bias. General questionnaires and experimental tasks are often vulnerable to social desirability bias and response tendencies, as participants may present themselves in ways they consider socially acceptable in observational or evaluative settings. Consequently, discrepancies may arise between reported intentions and actual behaviour. A broad body of empirical and critical literature in the social sciences and psychology suggests that such bias can lead to overestimation of intervention effects or misinterpretation of the mechanisms underlying behavioural change (Gao, Ananthan, Yu, Wang, & Salim, 2023).

In addition, although short-term experiments and questionnaire-based studies can reveal the immediate effects of interventions, they cannot adequately capture the long-term evolution of behaviour or the sustainability of policy outcomes. This constitutes a significant limitation of many behavioural intervention studies. For this reason, an increasing number of scholars advocate the use of field-based randomised controlled trials (RCTs) and behavioural big-data analysis. RCTs are widely regarded as the gold standard for evaluating intervention effects because they follow core principles such as randomisation, control, and, where possible, blinding, thereby reducing systematic biases such as selection bias and detection bias and strengthening causal inference (Spitzer, Abstiens, & Karmasin, 2025). Moreover, embedding nudge interventions in real policy environments and evaluating them through objective behavioural records, such as consumer bills, travel data, and health insurance usage logs, can improve both external validity and policy relevance. Indeed, RCTs have been applied across fields including medicine, healthcare, education, and social development to evaluate the effects of policies and interventions (Spitzer et al., 2025).

However, data-driven research approaches also introduce new challenges. In particular, they create additional privacy risks. In the context of digital platforms and big data, if governments or private organisations collect and process behavioural data for prediction or intervention without explicit informed consent, such practices may infringe upon individual privacy and autonomy. Existing studies show that users' perceptions of privacy risk, together with the collection of personal data in e-commerce recommendation systems and online behavioural design, significantly influence trust in platforms, willingness to use personalised systems, and actual online shopping behaviour. More specifically, a heightened perception of privacy risk may lead users to reduce their online shopping frequency, shift to more reputable platforms, or even return to offline consumption (Spitzer et al., 2025). Meanwhile, factors such as privacy awareness, trust in recommendation systems, the accuracy of personalised recommendations, and the broader cybersecurity environment interact with privacy risk perception, thereby shaping users' behavioural responses and trust. This evidence suggests that future nudge research must pay close attention to ethical review standards and privacy protection mechanisms when adopting new data-driven approaches (Acquisti et al., 2018).

7. Future Research Directions and Policy Implications

7.1. Precise Nudging: Personalised Interventions Based on User Profiles

A major direction for future research lies in the development of precise nudging, that is, interventions tailored to differences in individuals' cognitive styles, risk preferences, and socioeconomic characteristics. Traditional nudging strategies often rely on a uniform choice architecture, such as default options, reminders, or simplified disclosures. However, growing evidence suggests that the same intervention may produce uneven or even counterproductive effects across different population groups. Therefore, more personalised approaches are needed to improve both effectiveness and policy efficiency.

Advances in big data analytics and artificial intelligence have made such personalisation increasingly feasible. By integrating behavioural, demographic, and contextual data, policymakers and institutions can design interventions that better match the needs and constraints of specific target groups. In finance, for example, personalised nudges may support differentiated default portfolio design, reminder frequency, and disclosure format according to age, income, or risk tolerance (Mills, 2022). Similarly, in health policy, data from wearables and mobile applications may enable more adaptive goal-setting, reminders, and feedback mechanisms that improve long-term adherence to healthy behaviour (Sadeghian & Otarkhani, 2024).

At the same time, precise nudging raises important ethical concerns. Personalised interventions often depend on the collection and processing of sensitive personal data, thereby increasing risks related to privacy, consent, and algorithmic opacity. For this reason, future research should not only examine the effectiveness of personalised nudges but also develop governance

frameworks that ensure data security, transparency, informed consent, and accessible opt-out mechanisms (Kuyer & Gordijn, 2023).

7.2. Policy Synergy: Integrating Nudges with Traditional Policy Tools

Another important implication of the literature is that nudges are rarely most effective when used in isolation. Although nudge-based interventions can influence behaviour at relatively low cost, their effects are often limited by contextual, institutional, and structural constraints. Behavioural deviations are rarely caused by cognitive bias alone; rather, they are shaped by the interaction of incentives, regulation, social norms, and organisational environments. Therefore, future policy design should move beyond the treatment of nudges as stand-alone instruments and instead examine how they can be integrated with traditional tools such as subsidies, taxation, regulation, and public communication.

This integrated perspective is particularly relevant in areas such as public health, retirement savings, and environmental policy. In public health, for example, reminders and framing interventions may be more effective when combined with time-sensitive incentives, subsidies, or educational campaigns (Murayama, Takagi, Tsuda, & Kato, 2023; Maris, Dorner, & Carlsson, 2025). In finance, automatic enrollment appears especially powerful when accompanied by tax incentives, contribution requirements, or disclosure rules that reinforce long-term participation and risk awareness (Banerjee & John, 2022). Similarly, in environmental governance, behavioural prompts are likely to have a greater impact when aligned with broader regulatory and fiscal measures, such as carbon pricing or mobility subsidies (Michaelsen, 2024). Accordingly, future research should pay greater attention to policy synergy, namely, the conditions under which behavioural, economic, and regulatory tools complement one another. Such an approach would provide a more realistic account of how nudge-based interventions operate in complex policy systems.

7.3. Ethics: Transparency, Autonomy, and Social Responsibility

The ethical debate surrounding nudging remains central to its future development. Although nudge theory is often presented as a middle ground between coercion and non-intervention, critics continue to question whether this balance can be maintained in practice. These concerns become particularly pronounced in digital environments, where nudges are embedded in interfaces, personalised through algorithms, and delivered at scale. Under such conditions, users may not fully recognise that their choice environments have been intentionally structured to shape their behaviour.

For this reason, transparency has become a central normative principle in the ethics of nudging. A growing body of research argues that users should be able to understand the existence, purpose, and logic of behavioural interventions and should retain meaningful opportunities to modify or exit them (Sunstein, 2014; Luo et al., 2023; Meske & Amojo, 2020). Existing studies suggest that transparency does not necessarily reduce effectiveness and may even improve legitimacy and trust (Bruns, Kantorowicz-Reznichenko, Klement, Luistro Jonsson, & Rahali, 2018). However, transparency alone is insufficient. Ethical evaluation must also consider distributive fairness, long-term effects on autonomy, and the possibility that repeated use of social comparison or loss framing may generate anxiety, stigma, or unequal burdens across social groups (Schmidt & Engelen, 2020; Banerjee & John, 2022; Michaelsen, 2024). Future research should therefore develop more robust ethical frameworks for nudge design and evaluation. Such frameworks should incorporate transparency, accountability, equity, and user autonomy as core principles and should test how these principles operate across different policy settings.

8. Conclusion

This narrative review examined the development, applications, and limitations of nudge theory in finance and public policy. Three main conclusions emerge from the literature. First, the empirical evidence for nudges is strongest in structured and repeated-choice environments, particularly in areas such as pension enrollment and simplified financial decision-making, where default rules and salience-based interventions can produce substantial behavioural effects. However, outside these settings, the evidence is more heterogeneous, context-dependent, and often less durable over time.

Second, digital nudging introduces new ethical and governance challenges. When nudges are embedded in algorithmically mediated environments, concerns about transparency, privacy, manipulation, and accountability become more acute. Consequently, traditional assumptions about informed choice and easy opt-out are often more difficult to sustain in digital settings. Third, nudges appear to be most effective when they are integrated into broader policy portfolios rather than treated as stand-alone solutions. In many cases, behavioural interventions work best when combined with complementary tools such as regulation, fiscal incentives, institutional design, and public communication. Taken together, these findings suggest that future research should move beyond the question of whether nudges work and instead examine when, for whom, and under what ethical and institutional conditions they work most effectively. Greater attention should therefore be given to the long-term persistence of behavioural effects, the governance of personalised and digital nudges, and the design of transparent and equitable intervention frameworks across diverse policy contexts.

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