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FROM SELF-IMAGE TO CONSUMER RESPONSE: INTEGRATING PSYCHO-CYBERNETICS INTO NEUROMARKETING THEORY

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Abstract: *This paper develops an integrative framework for understanding consumer behaviour by combining Psycho-Cybernetics with insights from neuromarketing, behavioural economics, and habit theory. Moving beyond rational models, the study argues that consumer behaviour is shaped by the interaction between self-image, automatic processes, and external marketing stimuli. Self-image is conceptualised as a regulatory mechanism that guides identity-consistent behaviour, while habits and reward systems support its automatic execution. Neuromarketing is interpreted as an external feedback system that activates and reinforces behavioural patterns through data-driven adaptation. The paper also addresses the ethical implications of these mechanisms, particularly in relation to consumer autonomy and manipulation. The proposed model contributes to the literature by offering a unified perspective on the relationship between identity, habit, and marketing systems in digital environments.*

Key words: *self-image, neuromarketing, consumer behaviour, habit formation,automaticity.*

1. Introduction

In today's digital economy, traditional models based on rational decision-making and full cognitive awareness are no longer sufficient to explain consumer behaviour. The rapid development of digital technologies, combined with the increasing sophistication of marketing strategies, has fundamentally transformed the interaction between consumers and brands. In this context, individuals are no longer passive recipients of marketing messages, but participants in complex, dynamic systems where behaviour is continuously shaped by both internal psychological mechanisms and external stimuli. As a result, classical economic assumptions regarding utility maximisation and conscious choice have become increasingly insufficient in explaining real-world consumer decisions.

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A growing body of research in behavioural economics and cognitive psychology demonstrates that consumer decision-making is largely driven by automatic and unconscious processes rather than deliberate reasoning. These findings challenge traditional rational models and suggest that behaviour follows predictable patterns shaped by cognitive biases and prior experience.

Within this framework, neuromarketing has emerged as a key interdisciplinary field that integrates insights from neuroscience, psychology, and marketing to better understand and influence consumer behaviour. Neuromarketing techniques aim to identify the neural and emotional responses triggered by marketing stimuli, thereby enabling companies to design more effective strategies that operate at a subconscious level. As noted in the literature, neuromarketing technologies have the capacity to influence consumer preferences and decision-making processes by directly targeting cognitive and emotional mechanisms, rather than relying solely on rational persuasion (Sadchenko, 2021). This shift reflects a broader transformation in marketing, where the focus has moved from informing consumers to shaping their perceptions and behaviours.

Despite these advancements, there remains a significant gap in the theoretical integration of these concepts. While behavioural economics explains irrationality and neuromarketing provides empirical tools for measuring responses, there is still a lack of a unifying framework that explains how internal psychological structures interact with external marketing systems. In this regard, the theory of *Psycho-Cybernetics* (Maltz, 1960) offers a valuable perspective. Maltz argues that human behaviour is guided by a "self-image", functioning as an internal control system that continuously regulates actions through feedback mechanisms. According to this view, individuals act in ways that are consistent with their perceived identity, adjusting their behaviour to maintain coherence between internal beliefs and external actions.

However, despite its explanatory potential, the concept of self-image as proposed by Maltz has been criticised for its limited empirical grounding and its origin outside mainstream scientific psychology. This raises the question of whether Psycho-Cybernetics can be legitimately integrated into contemporary consumer research or whether it should be treated primarily as a conceptual heuristic rather than a validated theoretical framework.

Building on this idea, the present paper aims to develop an integrated conceptual framework in which consumer behaviour is understood as the result of the interaction between an internal cybernetic system, represented by self-image, and an external system of stimuli and feedback, represented by neuromarketing. By incorporating insights from habit theory, automaticity, and reward-based learning, the paper argues that consumer behaviour is shaped by both internal identity structures and external influences. This perspective provides a more comprehensive understanding of how modern marketing strategies operate and why they are effective.

2. Literature Review

The assumption that consumers act as rational decision-makers has long been central

to economic theory; however, evidence increasingly challenges this view. Research in behavioural economics shows that decisions are often shaped by cognitive biases, emotions, and context rather than conscious reasoning. Kahneman (2011) argues that human thinking is largely driven by non-conscious processes, which enable quick decisions but also cause systematic errors. These "System 1" processes rely on heuristics and past experiences, allowing fast responses without analytical thinking.

Ariely (2008) further shows that consumer behaviour follows predictable patterns of irrationality, influenced by framing, anchoring, and social norms. People often judge value relatively rather than objectively, leading to biased decisions (Ariely, 2008; Ariely, 2012). Similarly, Mlodinow (2014) highlights the strong role of unconscious processes, suggesting that individuals are often unaware of what shapes their choices.

These findings have important implications for marketing, as they indicate that influencing consumer behaviour requires targeting subconscious processes rather than relying solely on rational arguments (Mlodinow, 2012). In practice, this means that effective marketing strategies must engage emotions, associations, and implicit memories, rather than simply providing information (Cialdini, 2009; Lindstrom, 2008). This shift from rational persuasion to psychological influence represents a fundamental transformation in the way marketing is conceptualised and applied.

Building on this perspective, consumer behaviour is not only influenced by cognitive biases but also by repeated behavioural patterns that develop over time.

Habit formation is a key mechanism behind automatic behaviour and plays an important role in shaping consumer actions over time. Many everyday behaviours do not result from repeated conscious decisions but develop through repetition in stable contexts. Over time, they become automatic and require little cognitive effort. Actions are then triggered by contextual cues rather than active thinking. This is common in consumption, where behaviours like buying familiar brands or using digital platforms become routine. As a result, behaviour is repeated through learned associations between stimuli and responses rather than continuous evaluation (Gardner et al., 2024; Verplanken and Wood, 2006).

These processes can be explained through self-reinforcing behavioural cycles linking cues, actions, and outcomes. Behaviour starts with a trigger, followed by a routine that, if rewarded, becomes more likely to be repeated. Repetition strengthens these patterns, reducing conscious control and increasing automaticity. In digital environments, such mechanisms are built into product design to encourage repeated use. Systems based on triggers, actions, and variable rewards are especially effective, as they create cycles of anticipation and reinforcement that sustain engagement and behavioural consistency (Duhigg, 2012; Eyal, 2014).

Empirical evidence shows that consumer behaviour is structured and predictable, especially in digital contexts. Behavioural data reveal that actions often follow stable patterns, allowing future behaviour to be predicted from past activity.

Within digital environments, consistent cues and feedback reinforce these patterns. Social media use illustrates this, as actions are often triggered by notifications or boredom. Once formed, such habits dominate behaviour, often reducing the role of conscious decision-making (Peters et al., 2024; Bayer et al., 2022).

These habitual behaviours are closely connected to the brain's reward system, which reinforces repeated actions through anticipation and feedback.

Habitual behaviour is closely linked to the brain's reward system, particularly the role of dopamine in reinforcing repeated actions. Importantly, dopamine is associated more with the anticipation of rewards than with the experience of pleasure itself, which means it can motivate behaviour even in the absence of immediate or substantial outcomes. This helps explain why consumers continue to engage with products or platforms despite limited rewards, as the expectation of future benefits strengthens habitual patterns (Lembke, 2021; Lieberman and Long, 2018).

Simultaneously, behaviour is influenced by a complex interaction of biological, psychological, and environmental factors (Sapolsky, 2017; Tracey, 2020). In online environments, this interaction is actively leveraged through features such as notifications and personalised content, which reinforce user engagement and contribute to the formation of repetitive behavioural cycles (Sapolsky, 2017; Eyal, 2014). These mechanisms are further intensified by the use of "variable rewards", where unpredictable outcomes are more effective in sustaining engagement than consistent ones. The uncertainty associated with such rewards increases anticipation and encourages repeated use, particularly in the context of social media (Eyal, 2014).

In this context, neuromarketing can be understood as an applied system that leverages these psychological and neurological mechanisms.

Neuromarketing can be understood as a practical application of insights from behavioural science and neuroscience, using advanced tools such as neural measurement and data analysis to study and influence consumer behaviour. By capturing physiological and neural responses, it allows for a deeper understanding of how individuals react to marketing stimuli, particularly at a subconscious level. As a result, consumer decisions are shaped not only by deliberate reasoning but also by underlying cognitive and emotional processes (Sadchenko, 2021; Kahneman, 2011).

Concurrently, neuromarketing operates as a dynamic system that continuously adapts its strategies based on real-time feedback. In digital environments, marketing is no longer static, but involves ongoing monitoring, analysis, and optimisation, which increases effectiveness through personalised content and interaction (van Laer and Lurie, 2018). This adaptability is further supported by interface design, as digital platforms are structured to encourage automatic behaviour. Through repeated use, users develop forms of "muscle memory", allowing actions to become routine and increasingly influenced by subtle design changes (Kontogeorgou et al., 2024; Bayer et al., 2022).

However, despite its potential, neuromarketing has been criticised for the possible overinterpretation of neural data and its limited ability to accurately predict behaviour, raising important concerns regarding its scientific validity (Ariely and Berns, 2010).

3. From Self-Image to Consumer Response: A Psycho-Cybernetic Model

3.1. Internal Mechanisms: Self-Image and Automaticity

To better understand consumer behaviour, it is important to consider internal psychological structures that shape perception and action. Self-image plays a key role, acting as a reference system through which individuals interpret reality and guide behaviour. Consumers do not respond directly to marketing stimuli but process them through beliefs, experiences, and identity. Behaviour is therefore an adjustment process that maintains consistency between internal views and external actions.

This idea is supported by the psycho-cybernetic perspective, which sees behaviour as part of a goal-seeking system guided by internal standards. The view that people act based on their mental representation of reality (Maltz, 1960) shows that perception is filtered through identity. As a result, marketing stimuli are effective only when they match the consumer's self-image. This explains why people prefer brands that reflect their values and identity. From a marketing perspective, symbolic value becomes more important than function, as consumers choose products not only for use but also for identity expression. The concept of image congruence shows that preferences depend on the match between brand image and self-concept (Onkvisit and Shaw, 1987), meaning that self-image shapes behaviour by guiding and reinforcing consumption patterns (Belk, 1988; Sirgy, 1982).

While self-image provides direction, consumer behaviour is largely carried out through automatic processes that do not require conscious thinking. In everyday life, individuals are exposed to a high number of stimuli, making it difficult to evaluate each decision. As a result, behaviour becomes automated and based on learned patterns and contextual cues (Duhigg, 2012; Gardner et al., 2024), a process described as automaticity. Many decisions are therefore driven by fast, intuitive thinking, which enables quick responses but increases the likelihood of bias (Kahneman, 2011).

This is closely linked to habit formation, where repeated actions become embedded and are triggered by specific cues. The "habit loop", consisting of cue, routine, and reward, explains how behaviour becomes self-reinforcing over time (Duhigg, 2012). In digital environments, such patterns are highly visible and predictable, particularly in social media use (Peters et al., 2024). Once established, habits reduce the need for conscious control and are difficult to change, showing that behaviour is often shaped by automatic processes rather than deliberate intention (Gardner et al., 2024; Verplanken and Wood, 2006).

3.2. External activation and reinforcement: Neuromarketing systems

If habits explain how behaviour is carried out, marketing stimuli act as triggers that activate these processes. In digital environments, such stimuli are designed to attract attention, generate emotional responses, and initiate behavioural actions. Unlike traditional marketing, which focuses on providing information, contemporary strategies aim to increase engagement and integrate into existing behavioural patterns.

Neuromarketing supports this approach by identifying stimuli that produce strong cognitive and emotional reactions. By analysing neural and behavioural data, marketers can design strategies that operate at a subconscious level, meaning that marketing often activates existing behavioural tendencies rather than creating new ones (Sadchenko, 2021; Kahneman, 2011). Digital platforms illustrate this clearly through the use of notifications, personalised content, and interface design, which function as triggers for automatic responses. Repeated exposure contributes to the development of routine actions similar to "muscle memory", allowing behaviour to become automatic and increasingly influenced by subtle design changes (Kontogeorgou et al., 2024; Bayer et al., 2022). Simultaneously, these systems continuously adapt through real-time data feedback, enabling ongoing refinement and increased effectiveness of marketing strategies (van Laer and Lurie, 2018).

The activation of behaviour through stimuli and habits is further supported by reward mechanisms that reinforce repeated actions. Dopamine plays a key role in this process, as it is linked to anticipation rather than direct pleasure. This explains why individuals continue engaging in certain behaviours even when rewards are limited, since the expectation of reward itself strengthens behavioural patterns (Lembke, 2021). In digital environments, this effect is amplified through the use of "variable rewards", where unpredictable outcomes increase engagement and encourage repeated use, particularly in social media contexts (Eyal, 2014). Behaviour can therefore be understood as the result of interaction between biological and environmental factors, where neural processes and external stimuli work together to shape action (Sapolsky, 2017).

However, despite its practical relevance, neuromarketing is also subject to criticism. Concerns have been raised regarding the potential overinterpretation of neural data and the limitations of these approaches in accurately predicting behaviour, which raises questions about their scientific validity (Ariely and Berns, 2010).

4. Ethical Implications of Psycho-Cybernetic Neuromarketing

4.1. Consumer autonomy and behavioural influence

The integration of psychological, neurological, and data-driven insights into marketing raises important ethical concerns regarding consumer autonomy and decision-making. As marketing shifts from providing information to influencing automatic and unconscious processes, the assumption of fully rational consumers becomes increasingly limited. Neuromarketing exposes individuals to stimuli designed to trigger fast, intuitive responses, often reducing the role of conscious evaluation.

This indicates that consumer choices are not entirely self-determined, but are partially shaped by external systems. When decisions rely on automatic "System 1" processes, individuals may not fully understand the factors influencing their behaviour (Kahneman, 2011). While aligning marketing stimuli with self-image can increase effectiveness, it may also encourage repeated behavioural patterns rather than independent decision-making, raising concerns about the boundaries of influence.

These concerns are further amplified by the use of habit-forming mechanisms in digital environments. Platforms are intentionally designed to encourage repeated interaction through triggers, routines, and rewards, transforming occasional behaviours into stable habits. Although this can enhance user experience, it may also lead to dependency and compulsive use. A particularly problematic aspect is the use of "dark patterns", which exploit cognitive biases to guide decisions without full user awareness. Such design strategies can direct users toward specific actions, while repeated exposure creates forms of "muscle memory" that make behaviour increasingly automatic and susceptible to subtle interface changes.

In addition, the predictability of behavioural patterns allows marketers to anticipate and influence user actions at critical moments. While this increases efficiency, it raises questions about whether behaviour remains truly voluntary, as individuals may be systematically guided in ways that limit independent choice.

4.2. Data, personalisation, and ethical boundaries

Another major ethical issue concerns the role of data and personalisation in neuromarketing practices. Companies are able to collect and analyse large volumes of behavioural data in order to develop highly personalised strategies based on user preferences, habits, and psychological characteristics. Although this increases relevance and engagement, it also intensifies the potential for influence, as marketing strategies become closely aligned with individual vulnerabilities.

Within this framework, the boundary between personalisation and manipulation becomes increasingly difficult to define. When marketing interventions target emotional states and cognitive biases, they can significantly shape behaviour and reduce critical reflection, particularly within reward-based systems (Lembke, 2021; Eyal, 2014). Furthermore, real-time data feedback enables the continuous optimisation of marketing strategies, exposing users to increasingly refined stimuli. This ongoing adaptation makes it more difficult to distinguish between autonomous decision-making and externally guided behaviour, raising important concerns related to transparency, informed consent, and ethical responsibility (Sadchenko, 2021).

Given these challenges, there is a clear need for ethical frameworks to guide the responsible use of neuromarketing. Such frameworks should aim to balance marketing effectiveness with the protection of consumer autonomy and well-being. Increasing transparency represents one possible approach, ensuring that individuals are aware of how their data is collected and used. At the same time, companies should avoid practices that exploit cognitive biases or encourage dependency and instead focus on supporting informed and autonomous decision-making. Regulatory intervention may also be necessary to establish clear boundaries, particularly in contexts where the risk of manipulation is high.

Ultimately, ethical neuromarketing requires moving beyond short-term performance objectives and considering the long-term impact on consumers. While these techniques offer significant opportunities for innovation, their application must remain aligned with principles of autonomy and fairness. Importantly, not all forms of influence are

inherently unethical; the central challenge lies in distinguishing acceptable persuasion from manipulation, especially in cases where personalisation may also provide genuine benefits to consumers.

5. Discussion: Towards an Integrated Model of Consumer Behaviour

Integrating Psycho-Cybernetics with neuromarketing and behavioural theories provides a comprehensive framework for understanding consumer behaviour as a dynamic process. This approach focuses on the interaction between internal identity, automatic behaviour, and external marketing systems.

Self-image acts as a central regulator, guiding behaviour toward identity-consistent actions, while habits enable automatic execution with little conscious effort. Neuromarketing interacts with these processes through feedback and reinforcement.

This model integrates identity, habit, and marketing into a unified framework, offering a clearer explanation of how strategies influence behaviour over time and highlighting the role of both psychological and technological factors.

6. Managerial Implications

From a managerial perspective, the findings of this study suggest that effective marketing strategies should focus not only on delivering information but also on aligning with the consumer's self-image and existing behavioural patterns. This implies that segmentation and personalisation should go beyond demographic variables, incorporating psychological and behavioural insights to better understand the target audience.

In addition, companies should design their products and services in ways that facilitate habit formation, ensuring that interactions are simple, intuitive, and rewarding. By creating positive feedback loops, organisations can encourage repeated engagement and build long-term relationships with consumers. However, this approach must be balanced with ethical considerations, avoiding strategies that exploit vulnerabilities or create dependency.

7. Conclusions

This study contributes to understanding consumer behaviour by developing an integrated framework combining Psycho-Cybernetics with neuromarketing, behavioural economics, and habit theory. It shows that behaviour is not purely rational, but results from the interaction between identity, automatic processes, and external marketing systems.

A key contribution is the role of self-image as a central regulator of behaviour. Consumption is not a series of isolated decisions, but a process guided by identity. Products and brands serve as symbolic tools for expressing and maintaining identity, explaining patterns such as brand loyalty and resistance to change.

The inclusion of habit theory shows how identity-driven behaviours are carried out. Once habits form, they require little effort and are difficult to change. This explains why consumers repeat actions and why informational marketing often has a limited impact. Behaviour is largely based on learned patterns rather than constant evaluation.

Neuromarketing is presented as an external system that interacts with internal processes through feedback and reinforcement. Using data and personalisation, it can identify and strengthen behavioural patterns, creating continuous feedback loops that increase marketing effectiveness.

The study also highlights the link between identity, habit, and reward systems. Behaviour is shaped by motivation, automatic execution, and reinforcement, forming a system that explains how patterns develop and persist, especially in digital environments.

However, these mechanisms raise ethical concerns. Marketing can influence behaviour at a subconscious level, reducing autonomy and increasing the risk of manipulation. This shows the need for responsible strategies that respect consumers and support informed decisions.

Practically, companies should focus on identity-based marketing and behavioural design, supported by adaptive systems. At the same time, ethical responsibility and long-term trust must be priorities.

Future research should test this model and examine its long-term effects on behaviour and autonomy. Overall, this framework offers a comprehensive approach to understanding consumer behaviour and improving marketing strategies in the digital age.

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