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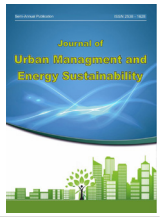

CASE STUDY RESEARCH PAPER

Designing and Explaining a Model for the Establishment of Neuromarketing in the Pricing of Iraq's Food Industry: The Mediating and Moderating Role of Consumers' Behavioural Patterns

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ABSTRACT

Iraq's food industry, one of the drivers of the country's non-oil economy, operates in a highly competitive and complex environment in which pricing has become one of the most sensitive elements of the marketing mix. Traditional pricing approaches, resting mainly on cost, competition and price elasticity, cannot fully explain the cognitive and emotional processes latent in the consumer's mind. With the rise of neuromarketing as a new paradigm in consumer-behavior research, it has become possible to measure individuals' neurological responses to price stimuli directly, without the mediation of self-report. The study set out to design and explain a model for establishing neuromarketing in the pricing process of Iraq's food industry, with particular emphasis on the behavioral patterns of Iraqi consumers. In terms of purpose the study is applied–developmental, and in nature it is qualitative, adopting the systematic grounded-theory approach of Strauss and Corbin. Data were gathered through in-depth, semi-structured interviews with 18 academic experts and senior managers of Iraq's food industry and were analyzed through open, axial and selective coding with the aid of MAXQDA 2024. The trustworthiness of the findings was established through the four criteria of Guba and Lincoln. The analysis produced a paradigm model comprising 6 main categories and 37 subcategories. The core category, "the localized establishment of neuromarketing in pricing", encompassed the dimensions of cognitive price processing, emotional response to price stimuli and unconscious decision-making. The findings showed that cultural–religious factors, income level and financial literacy, together with neuro-measurement technologies as instrumental conditions, play a decisive role in the successful establishment of the mode. The designed model shows that pricing in Iraq's food industry requires a transition from the classical rationality-based approach to a dual approach in which the consumer's neurological processing is placed at the center of pricing decisions. The theoretical implications include extending the neuromarketing literature within the context of emerging economies and enriching theories of price processing.

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INTRODUCTION

Consumer behavior refers to the set of mental, emotional, physical and social activities that people deploy in the process of recognizing a need and searching for, purchasing, consuming and even disposing of products and services (Schiffman & Wisenblit, 2019). Recent research on consumer behavior shows that people often choose products not merely on the basis of their objective function but on the basis of the symbolic, identity-related and emotional meanings they carry (Kotler et al., 2022). This does not mean that a product's function is unimportant; rather, it shows that in today's saturated markets the psychological and social roles of a product create a more durable competitive advantage than its functional features. A deep understanding of the mechanisms of consumer decision-making has therefore become the key to success in marketing programmes and a guarantor of product survival in the age of the digital economy (Ariely, 2008). In analyzing customer behavior, marketing specialists focus on the customer's mental decision-making process, which is shaped under the influence of internal stimuli (such as attitudes, values and personality) and external stimuli (such as advertising, price, discounts and social influences) (Thaler & Sunstein, 2008). Among these stimuli, price plays a special role as one of the most powerful and complex external stimuli. In his classic work, Monroe (Monroe, 2003) showed that price is not only an economic signal but also a psychological one that simultaneously performs two opposing roles: on the one hand, as a "cost" it activates loss sensitivity, and on the other, as a "quality signal" it strengthens the perceived value of the product. This duality has made pricing one of the most challenging strategic decisions in marketing. This complexity is far greater in the food industry. Unlike many goods, food products carry unique perceptual features such as taste, smell, texture and freshness that make the experience of consuming them highly emotional and multisensory (Harris et al., 2009). Moreover, in modern shopping environments (especially online stores and chain supermarkets), the consumer cannot touch, smell or taste the product before purchase and must reconstruct the product's value in their mind on the basis of visual cues such as packaging, colour, font and, above all, the price label (Plassmann et al., 2008). In such conditions, price is not merely a number but a neuro-emotional stimulus that directly affects the reward and pain regions of the brain.

Despite the vital importance of this issue, traditional market-research methods face fundamental limitations in accurately gauging the role of price in consumer decision-making. In his pioneering work, Zaltman (Zaltman, 2003) showed that more than 95 per cent of purchase decision-making processes occur at the unconscious level and that consumers are often unable to state their real motives accurately. This phenomenon, known in the literature as the "attitude–behavior gap", means that what consumers state in questionnaires does not match what they actually do at the moment of decision (Sheeran, 2002). Kahneman (Kahneman, 2011), by introducing the "two-system" model of thinking, likewise confirmed that purchase decisions are driven mainly by System 1 (fast, emotional and unconscious), whereas traditional tools can gauge only System 2 (slow, analytical and conscious). In response to these shortcomings, a new interdisciplinary field called neuromarketing took shape in the early 2000s, which, by combining cognitive neuroscience, psychology and marketing, seeks a direct understanding of consumers' brain responses to marketing stimuli (Smidts et al., 2014). Smidts and colleagues define neuromarketing as "the application of neuroscience methods to analyse and understand human behaviour in relation to markets and marketing exchanges". Zurawicki (Zurawicki, 2010) also emphasises that neuromarketing, by moving beyond insufficient self-reports, provides access to hidden layers of decision-making that are not reachable through traditional methods.

Neuromarketing tools comprise a broad

range of imaging and physiological technologies. Among the most important are electroencephalography (EEG) for measuring the brain's electrical activity, functional magnetic resonance imaging (fMRI) for tracking blood flow in different brain regions, eye-tracking for gauging visual attention, galvanic skin response (GSR) for gauging emotional arousal, and facial coding for detecting micro-expressions (Morin, 2011). Each of these tools reveals a different layer of the decision-making process, and their combination affords a more comprehensive understanding of consumer behavior. Nevertheless, the existing literature on neuromarketing faces several fundamental gaps. First, existing research has focused mainly on Western populations and developed societies, and few studies have examined cultural–neural differences in developing societies, especially the Middle East (Lee et al., 2007). Second, most studies have analyzed a single stimulus (such as price or packaging) in isolation, and no integrated model has been offered for the simultaneous interaction of several stimuli within specific cultural contexts (Plassmann et al., 2015). Third, little research has addressed the design of an "establishment model" for neuromarketing at the strategic and operational level; most studies have remained at the laboratory level and lack an applied framework for implementation in real firms. These gaps are far deeper in the context of the Iraqi market. As an emerging market with unique cultural, religious and economic features, Iraq presents a complex context for studying consumer behaviour. Factors such as the influence of Islamic values on the perception of a fair price (the notions of "barakah" and "fairness in dealing"), the sharp fluctuations of the Iraqi dinar and chronic inflation, the tribal–familial structure of decision-making, and the consumer's high sensitivity to the authenticity and halal status of food products all bear on the neuro-behavioral patterns of Iraqi consumers (Al-Janabi & Al-Ani, 2020). Yet, to date, no comprehensive study has addressed the design of an indigenous model for establishing neuromarketing in the pricing of this country's food industry. Accordingly, the main problem of the present research is: what is the optimal model for establishing neuromarketing in food-industry pricing with an emphasis on the behavioral patterns of Iraqi consumers? By identifying the causal, contextual and intervening factors affecting this establishment and formulating operational implementation strategies, this research seeks to present an indigenous, applicable model that is both theoretically grounded in recent neuroscience findings and practically compatible with the cultural–economic context of the Iraqi market (Hassan & Al-Saadi, 2021). The objectives of the present study were formulated to answer the questions raised and to design an indigenous, applicable model for establishing neuromarketing in the pricing of Iraq's food industry. These objectives help fill the gaps in the neuromarketing literature theoretically and provide an operational framework for firms active in this industry (Zaltman, 2003). Main objective: to design and explain the optimal model for establishing neuromarketing in food-industry pricing with an emphasis on the behavioral patterns of Iraqi consumers.

In pursuit of the main objective, the following secondary objectives were pursued:

•Identifying and classifying the causal, contextual and intervening factors affecting the establishment of neuromarketing in food-industry pricing in the Iraqi market, and explaining the nature of the core phenomenon of this model.

•Formulating operational strategies and interactions for implementing and establishing neuromarketing in the pricing strategies of food products, in keeping with the cultural–behavioural context of Iraqi consumers.

•Identifying and explaining the consequences of establishing the proposed model for the behavioural, cognitive and economic dimensions of Iraqi consumers, and drawing the final research model.

•The above secondary objectives reflect the six components of the paradigm model of Strauss and Corbin and allow the researcher, through a

systematic and exploratory approach, to discover, explain and present all dimensions of the studied phenomenon within an integrated model (Strauss & Corbin, 1998) (Creswell & Poth, 2018).

MATERIALS AND METHODOS

Consumer-Behavior Patterns and Models

Understanding consumer behavior without drawing on coherent theoretical frameworks and models reduces to a set of scattered observations lacking explanatory power. Over many decades, theorists of marketing and consumer behavior have designed numerous patterns and models, each attempting to explain the complexities of the consumer decision-making process from a particular angle (Hawkins et al., 2020). This section reviews the most important patterns and models of consumer behavior, from classical models to novel neuroscientific approaches.

The concept of the consumer-behavior pattern and the multiple roles in the purchase process

Before turning to the theoretical models, the concept of the "consumer" must be defined precisely. In the marketing literature, the consumer is not merely the individual who buys or uses the product but comprises a wide range of roles and actors who participate in the decision-making process. Solomon (Solomon, 2020) identifies five key roles in the purchase process: the "initiator" (who first recognises the need), the "influencer" (who affects the decision by providing information or opinions), the "decider" (who ultimately makes the final choice), the "buyer" (who carries out the financial transaction) and the "end user" (who uses the product). In many cases, especially in household purchases and food products, these roles are distributed among different family members, and understanding this dynamic is vital for designing marketing strategies (Schiffman & Wisenblit, 2019). The family, as the most important unit of consumption decision-making, plays a central role in shaping behavioral patterns. Research shows that the family decision-making process is influenced by factors such as the power structure, gender roles, the family life-cycle and the type of product (Kotler et al., 2022). In the cultural context of the Middle East, and especially Iraq, where the extended family structure and collective decision-making are salient features, understanding these dynamics is doubly important. For example, the decision to buy food products in Iraqi households is often the outcome of a complex interaction between the head of the household (the financial decider), the spouse (the main influencer on the choice of type and brand of food) and the children (initiators of the need and influencers on the choice of particular products) (Al-Janabi & Al-Ani, 2020).

The Blackwell, Engel and Miniard (EKB) model

One of the most comprehensive and widely used models of consumer behaviour is the Blackwell, Engel and Miniard model, first presented in 1968 and continuously revised in the following decades (Blackwell et al., 2019). This model depicts the consumer decision-making process as a multi-stage information flow comprising five main stages: reception of the stimulus, information search, pre-purchase evaluation of alternatives, purchase and consumption, and post-purchase outcomes. Its distinctive feature is the emphasis on the role of "information processing" in the consumer's brain. According to the model, input information from the environment (including advertising, price, packaging and social recommendations) is first processed in short-term memory, then compared with information stored in long-term memory (past experiences, attitudes and prior knowledge), and finally leads to the purchase decision. The model also treats individual variables (motivation, personality, attitudes and lifestyle) and environmental influences (culture, family and social class) as moderators of the decision-making process (Hawkins et al., 2020).

The Howard–Sheth model

The Howard–Sheth model (Howard & Sheth, 1969) is one of the first attempts to explain the purchase decision-making process as a system

of learning and problem-solving. It identifies three levels of purchase behavior: "extensive problem-solving" (when the consumer faces a new product or category and needs extensive information search), "limited problem-solving" (when the consumer is familiar with the product category but not the brands) and "routine purchase behavior" (when the consumer is familiar with both the category and the brands and makes the purchase in a habitual, low-effort manner). The model's importance in the food industry lies in the fact that many food purchases occur at the "routine" level, where habits, mental associations and automatic reactions (System 1 in Kahneman's model) play a decisive role and neuromarketing can offer deep insights into these automatic processes (Solomon, 2020).

The Nicosia models

The Nicosia model (Nicosia, 1966), one of the first systemic models of consumer behaviour, depicts the purchase process as a communicative cycle between seller and buyer. It comprises four main fields: the first concerns the firm's messages and the consumer's characteristics; the second is devoted to searching for and evaluating alternatives; the third to the act of purchase; and the fourth to feedback and post-purchase experiences. The model's distinctive feature is its emphasis on the dynamic, feedback-driven nature of the purchase process, whereby post-purchase experiences change the consumer's attitudes and beliefs and influence future purchase decisions (Blackwell et al., 2019).

The Stimulus–Organism–Response (S–O–R) model

Among all consumer-behavior models, the S–O–R model, which is rooted in environmental psychology and was developed by Mehrabian and Russell (Mehrabian & Russell, 1974), has found the widest use in neuromarketing research. According to it, environmental stimuli (S), including marketing elements (price, packaging, advertising, store layout), lead through the organism's internal processing (O), comprising cognitive and affective processes, to behavioral responses (R) such as purchase, loyalty or avoidance. The model's importance in neuromarketing lies in its treatment of the "organism" the consumer's internal processes as a black box that neuroscientific tools (such as EEG, fMRI and eye-tracking) are able to open. By extending this model, Jai and colleagues (Jai et al., 2021) have offered a seven-part framework describing how humans interact with marketing stimuli at various levels of automatic processing, affective–cognitive processing, implicit learning, awareness, unexpected events, internal attitudinal responses and observable external responses.

The transition from cognitive to neuro-behavioral models

Although the classical models above provide valuable frameworks, they share one limitation: reliance on the assumption of "conscious information processing". In other words, they rest mainly on the assumption that the consumer actively and consciously processes, evaluates and compares information. But, as Kahneman (Kahneman, 2011) and Zaltman (Zaltman, 2003) have clearly shown, a large part of decision-making processes occurs at the unconscious level without the intervention of analytical thought. This limitation is especially pronounced in the food industry, where purchases are often made at high speed, on the basis of habit and under the influence of sensory stimuli (color, smell, the visual texture of packaging) (Harris et al., 2009). In response to this gap, a new generation of neuroscientifically oriented consumer-behaviour models is taking shape. Drawing on the findings of cognitive neuroscience, these models seek to open the "black box" of the consumer's internal processing with biological and physiological data. For example, using fMRI, the research of Knutson and colleagues (Knutson et al., 2007) has shown that the process of price evaluation in the brain is not a logical computation but a neural competition between reward regions (the nucleus accumbens) and pain-processing regions

(the anterior insula). These findings complement and enrich traditional models of price evaluation (such as Monroe's) with direct biological evidence.

Summary and the place of the models in the present study

The review of the above models shows that none of the existing patterns can, on its own, fully explain the complexities of consumer behavior, especially in unique cultural contexts such as the Iraqi market. The classical models (EKB, Howard–Sheth, Nicosia and S–O–R) offer powerful conceptual frameworks but lack the tools to gauge unconscious processes directly. The novel neuroscientific models, for their part, provide deep insight into the brain mechanisms of decision-making but have not yet been formulated as a comprehensive, integrated model for operational establishment in firms. The present study stands exactly at this intersection: drawing on the grounded-theory approach and interviews with multidisciplinary experts, it seeks to design an indigenous, comprehensive model that draws on the theoretical richness of the classical models and the analytical depth of the neuroscientific approaches while being compatible with the cultural, religious and economic features of Iraq's food-industry market.

Theories of Consumer Behavior

The theory of Holbrook and Hirschman

Marketing researchers have recognized the differing effects of product types on consumer behavior and developed various ways of classifying products. Holbrook and Hirschman proposed two different types of product consumption. Utilitarian products have tangible features; in choosing and deciding on such products, consumers aim to maximize utility and performance, their judgement rests on goal-oriented cognitive activities, they seek to accomplish a necessary task, they attend to the immediate consequences of consumption, and the goal of consumption is to increase utility. Hedonic products have subjective, intangible features and create a pleasurable reaction for the consumer; hedonic consumption pursues entertainment, fun, fantasy, sensory arousal and pleasure. The values a consumer may seek in a purchase can therefore be divided into utilitarian and hedonic types (Habibi-Moghaddam et al., 2021).

The theory of Sproles and Kendall

In their model, Sproles and Kendall (1986) defined eight mental characteristics, or decision-making styles, of the consumer. Perfectionism denotes a tendency towards high-quality goods and a need to make the best choice rather than buying the first available product. Brand consciousness describes the need and desire to buy well-known, expensive brands or those that advertise more, in the belief that these brands have better quality and that their high price is justified by superior quality. Fashion consciousness denotes an orientation towards attractive, new and changing styles and the purchase of exciting, widely approved items. Recreational (hedonic) orientation denotes purchases made for entertainment and enjoyment. Price consciousness denotes sensitivity to price, awareness of the best value, and buying at the lowest possible price. Impulsiveness denotes unplanned purchases made carelessly. Confusion from over-choice arises for many consumers from the abundance of brands and scattered information. Habitual/brand-loyal orientation describes consumers who have a favourite brand and stick to it or always buy from one store (Mirzania & Ahmadi, 2023).

Neuromarketing

Neuromarketing is an emerging disciplinary field in marketing that has borrowed tools and methodologies from areas such as neuroscience and psychology. The term "neuromarketing" was introduced by various authors in 2002, but the beginnings of research in this area can be traced to the 1990s. The name Gerald Zaltman is associated with one of the first experiments

in neuromarketing. In the late 1990s, Gemma Calvert (United Kingdom) and Gerald Zaltman (United States) founded consumer-neuroscience companies. The marketing professor Gerald Zaltman patented the Zaltman Metaphor Elicitation Technique (ZMET) in the 1990s. ZMET explored the human unconscious with specially selected sets of images that trigger a positive emotional reaction and activate hidden images metaphors that stimulate purchase; graphic collages were built on the identified images as the basis of commercial advertising. ZMET quickly became popular among hundreds of large companies, including Coca-Cola, General Motors, Nestlé and Procter & Gamble. In 1999, Zaltman began using functional magnetic resonance imaging (fMRI) to demonstrate the correlation between the consumer's brain activity and marketing stimuli (Cárdenas, 2019). The term neuromarketing was first published in 2002 in the master's thesis of Philippe Morel, at that time a student at the École Nationale Supérieure d'Architecture de Paris-Belleville. In the same year, the term was published in an article by BrightHouse, an Atlanta-based marketing company, and by the Dutch marketing professor Ale Smidts. BrightHouse supported neurophysiological research on the functioning of the nervous system in marketing and built a business unit that used MRI scans for market-research purposes; the company quickly drew criticism over a conflict of interest with Emory University, which had helped create the unit. The Pepsi Challenge, a blind taste test of Coca-Cola and Pepsi conducted in 2004, drew attention to neuromarketing. In 2006, Dr Carl Marci (United States) founded Inner-scope Research, focused on neuromarketing research; it was later acquired by Nielsen and renamed Nielsen Consumer Neuroscience. The Consumer Research Exploratory Fund of Unilever had also published white papers on the potential applications of neuromarketing (Dooley, 2018).

Measurement Tools in Neuromarketing and Their Use in Gauging Price Stimuli

Neuromarketing tools encompass a wide range of biometric and imaging technologies that, by moving beyond the inherent limitations of self-report, monitor the consumer's unconscious and physiological reactions objectively. These tools can be divided, by the type of data extracted, into three broad classes: neurophysiological tools (direct measurement of brain activity), physiological tools (measurement of bodily responses such as heart rate and perspiration) and behavioral–attentional tools (such as eye-tracking). Their common aim is to convert biological responses into quantitative, analyzable data so as to minimize the gap between "stated attitude" and "actual purchase behavior" (Karmarkar & Plassmann, 2019). Among the neurophysiological tools, functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) hold a special place in academic research. By offering high spatial precision, fMRI allows direct observation of the activity of deep brain regions for example, the activation of the nucleus accumbens (linked to reward anticipation and pleasure) as against the activation of the anterior insula (linked to the pain of paying). EEG, by contrast, records with millisecond temporal precision the instantaneous changes in the brain's electrical waves at the moment of exposure to a marketing stimulus. The synergy of these two tools provides a framework consistent with Kahneman's (Kahneman, 2011) "two-system" theory of information processing, in which System 1 (fast, intuitive and emotional) and System 2 (slow, analytical and logical) are simultaneously engaged in evaluating a product's value (Venkatraman et al., 2015). Alongside brain imaging, physiological and attentional tools also offer complementary and valuable insights. Eye-tracking technology allows researchers to map the consumer's pattern of visual attention precisely for example, determining whether, on the store shelf, the gaze is first drawn to the brand or to the price label printed on the food packaging. Galvanic skin response (GSR), by measuring imperceptible changes in the skin's electrical resistance caused

by perspiration, gauges the individual's level of emotional arousal in response to stimuli. Although GSR does not identify the positive or negative direction of the emotion, in combination with EEG or facial coding it provides a complete picture of the consumer's emotional engagement (Morin, 2011). The combined use of these tools in the food industry, especially in the sensitive area of pricing, has brought about a fundamental transformation. Neuroscientific research shows that the brain's response to price is not a single, static process but is strongly moderated by the consumer's demographic and psychological features. For example, neural differences in the processing of risk and reward among different age or gender groups can lead to entirely different responses to identical pricing strategies. In markets with particular cultural and economic complexities, such as Iraq, understanding these neuro-behavioral differences allows firms to optimize their pricing strategies and packaging design according to how the target groups' brains actually process "value", rather than relying on traditional, ineffective segmentation (Plassmann et al., 2015).

How Neuromarketing Works

Most large institutions carry out market surveys before producing a good, so as to create the good their customers prefer; they ask people what they would like the next product to be and what features it should have, and then, taking account of the results and the marketing surveys, create a new good. Often, however, that new good supposedly built exactly to customers' tastes and wishes fails: the very people who took part in the survey never buy the product in question. Marketers concluded that the answers of most of those who take part in market studies differ from, and are sometimes wholly inconsistent with, their purchase behavior; hence one cannot always succeed by this method (Rahnavard & Ghorbani-Ghahfarrokhi, 2023). One of the basic interests of neuromarketing is knowing whether the customer is under stress and whether a product, message or advertisement has decreased or increased the customer's state of uncertainty while recognizing that stress is only the outcome of the customer's feeling. Newer techniques go further: by measuring differences for example, the lack of certainty produced by a package, a poster, an instruction manual or a sales technique, and by measuring the flow of information and the informational gaps produced by the design of a shelf or a store they seek to capture reactions that self-report cannot reach (Asgari et al., 2021).

Methodology

In terms of purpose the present study is applied and is designed to provide an operational framework for addressing the challenges of Iraq's food industry (including currency fluctuations, inflation, competition with imported brands and consumers' price sensitivity). In nature and strategy, the study is wholly qualitative, because the phenomenon under study (the establishment of neuromarketing in pricing) is emergent, complex and dependent on the cultural–economic context of Iraq. The qualitative approach makes it possible to discover hidden dimensions and complex interactions through deep engagement with experts. The chosen strategy is grounded theory with the systematic approach of Strauss and Corbin, selected for its orderly structure, well-defined analytical tools and paradigm model (comprising causal conditions, core phenomenon, contextual and intervening conditions, strategies and consequences) for developing a coherent theoretical model (Strauss & Corbin, 1998). The statistical population comprised three groups of experts: specialists in neuromarketing and cognitive neuroscience; senior marketing and pricing managers in Iraq's food industry; and university faculty in the field of consumer behavior. Sampling was purposive, with criteria of at least 10 years' experience, publication of scholarly articles or documented practical experience, and familiarity with the Iraqi market, and continued until theoretical saturation (18 interviews). The snowball technique was also used to reach further

experts. The main data-collection tool was the in-depth, semi-structured interview, with a protocol based on the paradigm model. Interviews lasted between 45 and 90 minutes and were audio-recorded; documentary sources were also used for triangulation. Data analysis proceeded in three stages open coding (extracting initial concepts), axial coding (organizing categories around the core phenomenon with the paradigm model) and selective coding (integration and identification of the core category) with the aid of MAXQDA 2024 software (Charmaz, 2014). To ensure the quality of the research, the four criteria of Guba and Lincoln were used: credibility, through member checking, prolonged engagement and peer debriefing; transferability, through thick description of the research context; dependability, through full documentation of the process and an audit trail; and confirmability, through reflexive memos and source triangulation. Ethical considerations informed consent, anonymity and confidentiality, the right to review, and non-harm to participants were also fully observed.

FINDINGS AND DISCUSSION

Open coding

Open coding is the first step in data analysis, in which the interview text is examined line by line, sentence by sentence and even word by word to extract the initial concepts. (Tab. 1)

Table 1: Distribution of open codes across the three main groups

No.	Main group	No. of codes	Percentage	Examples of codes
1	Economic factors	124	37.9%	Sensitivity to currency fluctuation; effect of inflation on price perception; competition with imported brands; sensitivity to discounts; comparison of price with income
2	Cultural factors	113	34.6%	Sensitivity to halal status; culture's effect on pricing; importance of the family in decision-making; role of religion in brand choice; effect of local traditions
3	Psychological factors	90	27.5%	Sensitivity to quality; the price–pleasure effect; effect of packaging colour on price perception; trust in the brand; emotional loyalty
Total	All open codes	327	100%	—

As Table 1 shows, economic factors, with 124 codes (37.9%), account for the largest number of codes, indicating that in the Iraqi market economic factors such as currency fluctuations and inflation have the greatest effect on consumers' price perception. Cultural factors, with 113 codes (34.6%), rank second, reflecting the importance of Iraq's cultural–religious context in shaping consumer behavior. Psychological factors, with 90 codes (27.5%), rank third, showing that cognitive and affective processes also play an important part in consumers' decision-making. In axial coding, these 327 open codes were organized into 37 subcategories and finally into 6 main categories (in line with the paradigm model of Strauss and Corbin).

Axial coding

After the extraction of 327 open codes, the research entered the second stage of analysis, axial coding. This stage, one of the most sensitive and complex in the systematic approach of Strauss and Corbin (1998), reconstructs the data fragmented in open coding and establishes semantic, causal and contextual relations among the categories, moving the researcher from the level of description (open codes) to the level of explanation (categories and relations) (Charmaz, 2014). The 37 identified subcategories cover a wide range of concepts, from economic and cultural factors to operational strategies and organizational consequences, and were classified into the six main components of the paradigm model. (Tab. 2)

Table 2: Distribution of the subcategories across the six components of the paradigm model

Paradigm component	No. of subcategories	Subcategories
Causal conditions	8	1. Inefficiency of traditional pricing methods; 2. Complexity of Iraqi consumer behavior; 3. Growing competition with imported brands; 4. Sensitivity to currency fluctuation; 5. Effect of inflation on price perception; 6. Firms' financial-resource constraints; 7. Rapid changes in consumer preferences; 8. Stakeholder pressure to improve performance
Core phenomenon	1	1. Localized establishment of neuromarketing in the pricing of Iraq's food industry
Contextual conditions	7	1. Sensitivity to halal status; 2. Effect of culture on pricing; 3. Importance of the family in decision-making; 4. Tribal structure of society; 5. Religious values; 6. Local traditions; 7. Chronic economic volatility
Intervening conditions	5	1. Infrastructural limitations; 2. Organizational resistance; 3. Legal limitations; 4. Low awareness of neuromarketing; 5. High cost of neuro-technologies
Strategies	10	1. Use of neuromarketing techniques; 2. Design of attractive packaging; 3. Changing pricing strategies; 4. Consumer education; 5. Optimizing distribution channels; 6. Use of new technologies; 7. Use of neuro techniques in advertising; 8. Optimizing the shopping experience; 9. New-product development; 10. New-market development
Consequences	6	1. Increased market share; 2. Improved quality perception; 3. Increased consumer satisfaction; 4. Increased profitability; 5. Improved competitiveness; 6. Brand strengthening
Total	37	—

As Table 2 shows, the largest number of subcategories falls under "strategies" (10), reflecting the importance of designing operational measures for establishing neuromarketing in the Iraqi market. Next come "causal conditions" (8) and "contextual conditions" (7), reflecting the complexity of the economic and cultural context of the Iraqi market, followed by "consequences" (6) and "intervening conditions" (5). The "core phenomenon" has a single category, reflecting the model's focus on one central concept.

Selective coding

Selective coding is the final, integrative and most abstract step in grounded-theory theorizing. (Tab. 3)

Table 3: Key quotations and the researcher's analysis for the main categories

Main category	Direct key quotation from experts	Researcher's analysis of the quotation
Causal conditions	"In the Iraqi market, dinar fluctuations and chronic inflation have the greatest effect on consumers' price perception, and traditional methods no longer answer." (E3)	Confirms that economic instability is the main (causal) driver of the need to change the pricing paradigm.
Core phenomenon	"Neuromarketing can act as an indigenous, scientific solution for overcoming the pricing challenges of the complex Iraqi market." (E1)	Indicates the emergence of neuromarketing as the central core of the response to the identified needs.

Contextual conditions	"Iraqi culture, the importance of halal status and the central role of the family in decision-making create a context with which every pricing strategy must be aligned." (E15)	Emphasizes that solutions cannot be imported and must be rooted in Iraq's cultural–religious context.
Intervening conditions	"Unpredictable economic fluctuations and the resistance of some traditional managers to new technologies are the main obstacles to implementing these plans." (E11)	Identifies inhibiting obstacles that can weaken the intensity of the causal conditions' effect on the core phenomenon.
Strategies	"The targeted use of techniques such as eye-tracking to optimize the position of the price on the packaging can effectively influence the consumer's unconscious behavior." (E7)	Provides concrete operational solutions for managing the core phenomenon and overcoming obstacles.
Consequences	"Correct establishment of this model not only raises market share and profitability but also transforms the perception of quality and the consumer's emotional loyalty to the brand." (E5)	Depicts positive, tangible outputs at the individual (consumer) and organizational (firm) levels following the strategies.

Identification and explanation of the core phenomenon

Table 4: Conceptual and analytical explanation of the study's core phenomenon

Component	Conceptual and analytical explanation	Objective evidence (selected quotations)	Frequency in data
Nature and definition	The process of localizing and applying neuroscience tools (such as eye-tracking and brain-wave analysis) to understand the Iraqi consumer's unconscious reactions to price stimuli and to design optimal pricing strategies on that basis.	"Neuromarketing is no longer a luxury; in the Iraqi market it is the only scientific way to understand why a customer, despite inflation, still chooses a particular brand at a higher price." (E1)	Very high (in 16 of 18 interviews)
Constituent dimensions	1. Neuro-cognitive dimension: gauging the brain's reaction to the price label and packaging color. 2. Cultural-local dimension: aligning the price strategy with halal values, family-centeredness and Iraqi traditions. 3. Economic-perceptual dimension: managing the perception of inflation and dinar fluctuation in the customer's mind.	"Price in Iraq is not just a number; it is an emotional signal. If the packaging conveys a sense of 'halal and high quality', the customer's brain feels the pain of paying a higher price less." (E15)	High
Function in the model	This phenomenon acts as the "connecting link": causal conditions (such as import competition) create the need for it, contextual conditions (such as Iraqi culture) determine its form, and strategies are the tools of its implementation.	"All these inflationary and cultural challenges ultimately bring us to the point where we must redesign pricing on the basis of the 'Iraqi customer's brain', not old formulas." (E7)	Medium to high
Justification as the core	1. Data richness: this concept recurred throughout open and axial coding. 2. Explanatory power: it was the only concept able to explain the complex interaction of economic, cultural and psychological factors in the data.	"If we want to succeed in Iraq, our pricing model must be 'Iraqi' and based on the 'real reaction of the brain', not a copy of Western models." (E11)	—

As Table 4 makes clear, the core phenomenon "the localized establishment of neuromarketing in pricing" is not a merely abstract concept but a multidimensional construct rooted in field realities. The word "localized" is key here, because the data clearly showed that imported neuromarketing models, without taking account of Iraq's specific mediating variables (such as intense sensitivity to halal status, the family decision-making structure and chronic currency instability), are doomed to fail.

Drawing the final paradigm model

The selective coding and integration of the categories in the preceding stages ultimately lead to the drawing of the "final paradigm model", the visual embodiment and final theorizing of the research, in which the causal, contextual and consequential relations among the six main components are depicted systematically, dynamically and in an integrated way. On the approach of Strauss and Corbin (1998), the paradigm model is not merely a graphic diagram but a coherent narrative of how a phenomenon forms, is managed and produces consequences within a particular context (Strauss & Corbin, 1998). In the present study, the model shows how the pressures arising from the inefficiency of traditional methods and economic instabilities (causal conditions) create the necessity of a transition to a new paradigm, "the localized establishment of neuromarketing in pricing" (the core phenomenon). This phenomenon takes shape within the context of Iraq's unique cultural and religious features (contextual conditions), is moderated by infrastructural and organizational obstacles (intervening conditions), is managed through multi-layered technical and cultural strategies, and finally leads to desirable organizational and behavioral consequences. (Fig. 1)

Figure 1. Paradigm model: localised establishment of neuromarketing in the pricing of Iraq's food industry

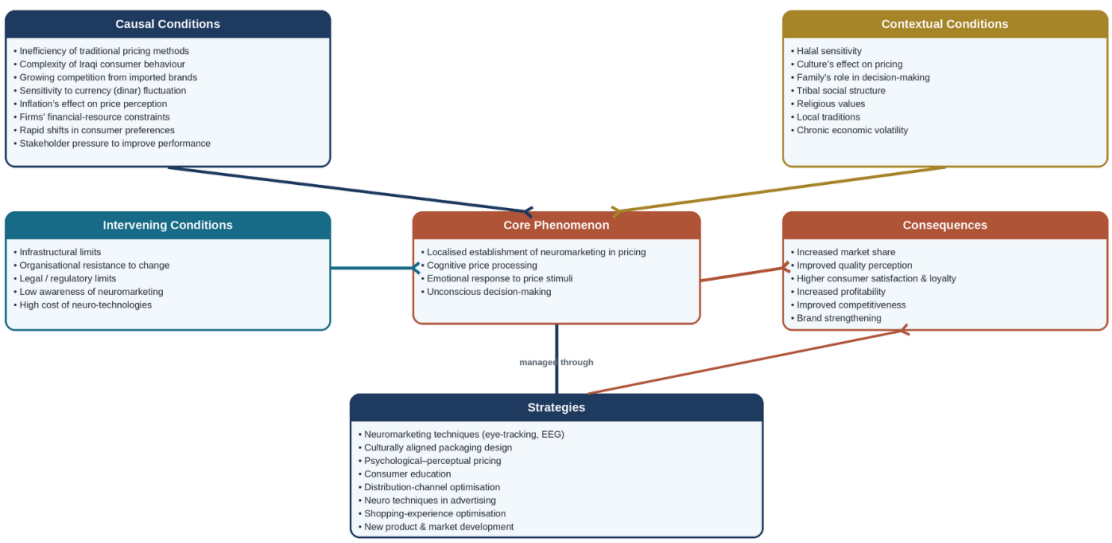

Figure 1: Final paradigm model of the localized establishment of neuromarketing in the pricing of Iraq's food industry (Source: Authors)

As Figure 1 shows, this phenomenon does not occur in a vacuum. The contextual conditions (such as intense sensitivity to halal status, the central role of the family in collective decision-making, and the tribal structure of society) create a context that fundamentally determines

the form and content of this establishment; in other words, neuromarketing in Iraq cannot be a copy of Western models but must be aligned with these contextual components. At the same time, the intervening conditions (such as infrastructural and technological limitations, organizational resistance to change, and the high costs of implementation) act as moderating variables that can reduce the intensity and speed of the causal conditions' effect on the core phenomenon, or beset its path with challenges. To overcome these obstacles and manage the core phenomenon effectively within the said context, firms must adopt multidimensional strategies. These range from the use of neuro techniques (such as eye-tracking to optimize the position of the price) and packaging design consistent with cultural symbols, to shifting pricing strategies towards psychological approaches and the use of artificial intelligence. The successful, integrated execution of these strategies ultimately produces desirable consequences at various levels, including increased market share, improved perception of quality and brand equity, greater consumer satisfaction and durable loyalty, and, finally, enhanced competitiveness and profitability of the firm in the complex Iraqi market.

Identification of the core category and the research storyline

Table 5: Hierarchy of the core category, main categories and subcategories of the research

Core category	Paradigm components	Examples of subcategories
The indigenous model for establishing neuromarketing in the pricing of Iraq's food industry	1. Causal conditions	Sensitivity to currency fluctuation; effect of inflation on price perception; growing competition with imported brands; inefficiency of traditional pricing methods
	2. Core phenomenon	Localized establishment of neuromarketing in pricing (as the central core and catalyst of change)
	3. Contextual conditions	Intense sensitivity to halal status; central role of the family in collective decision-making; effect of the tribal structure and religious values
	4. Intervening conditions	Infrastructural and technological limitations; managers' organizational resistance to change; high cost of implementation; shortage of expertise
	5. Strategies	Use of neuro techniques (eye-tracking, EEG); packaging design consistent with cultural symbols; psychological–perceptual pricing; optimizing the shopping experience
	6. Consequences	Increased market share; improved perception of quality and brand equity; greater consumer satisfaction and durable loyalty; enhanced competitiveness

As Table 5 shows, the core category, like a conceptual umbrella, covers all six dimensions of the paradigm model. This hierarchy shows how all the categories are organically linked around a single axis and proves that the extracted theory is integrated and free of logical discontinuity.

The final research models

To clarify the dimensions of this model and highlight the theoretical contribution of the research, the main components of the final model, together with their conceptual explanation in the Iraqi context and the unique innovations of each part, are presented analytically in Table 6. (Tab. 6)

Table 6: Explanation of the components of the final model and its innovative distinctions

Model component	Conceptual explanation in the research context	Distinction and innovation relative to the classical literature
Causal conditions	Structural pressures from the inefficiency of traditional methods, sharp dinar fluctuations, chronic inflation and the influx of imported brands at competitive prices.	From linear to context-bound causality: emphasizing that in Iraq economic factors are not merely controlled variables but the main, unavoidable drivers of a paradigm change.
Core phenomenon	The indigenous, targeted establishment of neuromarketing as a mechanism for decoding the consumer's unconscious reactions to price and packaging.	Localization instead of import: moving beyond mere copying of Western models and emphasizing the "localization" of neural processes to suit the Iraqi ecosystem.
Contextual conditions	A deeply cultural and religious context including high sensitivity to halal standards, the decisive role of the family in collective decision-making, and tribal loyalties.	Integration of cultural–religious variables into the neural model: bringing concepts such as "halal status" and "tribal structure" in as contextual variables affecting the neural processing of price, which classical models ignore.
Intervening conditions	Implementation obstacles including a shortage of advanced technology infrastructure, traditional managers' resistance to change, and high initial implementation costs.	Realistic identification of indigenous obstacles: the model identifies obstacles not as dead ends but as real moderating variables in a developing economy.
Strategies	A basket of integrated measures including the use of neuro tools (such as eye-tracking), packaging design consistent with cultural symbols, and psychological–perceptual pricing.	Provision of multi-layered operational solutions: strategies that simultaneously cover the technological (neural) and the cultural (indigenous packaging) dimensions.
Consequences	Attainment of durable results including increased market share, improved quality perception, strengthened emotional loyalty and enhanced competitiveness against foreign rivals.	Emphasis on durability and emotional loyalty: going beyond short-term sales outcomes and emphasising the creation of "emotional loyalty" and "brand equity" in the long term.

As Table 6 and the preceding analyses make clear, the final model extracted in this study has several fundamental distinctions and innovations relative to the classical marketing literature and even to earlier neuromarketing studies, chief among them the integration of neural, cultural and economic dimensions within a single, context-bound, indigenous framework for an emerging market.

CONCLUSION AND RESULTS

The present study set out to design and explain an indigenous model for establishing neuromarketing in the pricing of Iraq's food industry, with emphasis on the behavioral patterns of Iraqi consumers. Using the systematic grounded-theory approach and in-depth interviews with 18 experts, a paradigm model with six components and 37 subcategories was extracted, at the heart of which stands the core phenomenon of "the localized establishment of neuromarketing in pricing", composed of the dimensions of cognitive price processing, emotional response to price stimuli, and unconscious decision-making. The findings show that pricing in Iraq's food industry requires a transition from the classical, rationality-centered approach to a dual, rational–emotional approach that places the consumer's neurological processing at the center of pricing decisions. The causal conditions the inefficiency

of traditional methods, currency fluctuations, chronic inflation and competition with imported brands create the necessity for this transition; the contextual conditions intense sensitivity to halal status, the central role of the family, the tribal structure and religious values determine its form, so that neuromarketing in Iraq cannot be a mere copy of Western models but must be localized; and the intervening conditions infrastructural limitations, organizational resistance and the high cost of neuro-technologies moderate its establishment. Managed through multi-layered technical and cultural strategies (from eye-tracking to culturally aligned packaging and psychological–perceptual pricing), the model yields consequences such as increased market share, improved quality perception, durable emotional loyalty and enhanced competitiveness. Theoretically, the study extends the neuromarketing literature into the context of emerging economies and enriches theories of price processing by integrating neural, cultural–religious and economic variables within a single, context-bound framework. In practical terms, it offers managers and policymakers in Iraq's food industry an evidence-based, operational framework: adopting neuro tools such as eye-tracking and EEG to understand consumers' unconscious responses to price and packaging; aligning pricing and packaging with halal values and the family decision-making structure; and building the infrastructure and expertise needed to lower the barriers to adoption. Given the qualitative nature of the study, future research could validate the extracted model quantitatively (for example, through structural-equation modelling or fuzzy-Delphi consensus), compare Iraqi consumers' neural responses with those of neighboring markets, and examine the moderating role of demographic variables in the neural processing of price. Therefor:

•Total Quality Management: From Choice to Strategic Necessity: Total quality management in the Iraqi food industry is not a luxury choice, but a strategic necessity for survival and competitiveness against imported products from Turkey, Iran and the Arab Gulf countries. This finding is fully consistent with the ISO 9001 standard and the ninth goal of the United Nations Sustainable Development Goals (Industry, Innovation and Infrastructure).

•Leadership Commitment: The Cornerstone of Transformation: Leadership commitment is the most important prerequisite for the sustainability of organizational change. Without the visible support of senior managers, quality tools will not remain sustainable. In the cultural context of Iraq, which is a centralized and hierarchical organizational structure, the role of leadership is dual, and this finding is consistent with the fifth clause of ISO 9001 and the first criterion of the Malcolm Baldrige National Quality Award 2023.

•Organizational Culture: Catalyst for Transformation: Organizational culture plays a mediating and accelerating role. Without a simultaneous transformation of culture, total quality management leads to superficial changes. In Iraq, organizational culture is influenced by tribal, religious, and social values, and ignoring it leads to resistance and failure. This finding is consistent with the EFQM 2020 Excellence Model.

•Comprehensive and integrated approach and localization of models: A single-dimensional focus on quality (for example, only controlling the final product) without considering the participation of employees, suppliers, and customer needs is ineffective. Also, localization of global models according to the geopolitical, cultural, and economic realities of Iraq is the key to success. These results are consistent with the principle of the "systems approach" of ISO 9001 and the concept of "organizational fabric".

•Supply chain resilience and synergy of quality and technology: Supplier relationship management has become a vital tool for ensuring production continuity beyond cost optimization. Also, the implementation of total quality management should be done simultaneously with investments in information technology (4th generation quality). This finding is consistent with

the ISO 28000 standard and the World Economic Forum's 4th generation industry framework.

•The Path to Excellence: A Multidimensional and Context-Driven Path: Success in the Iraqi food industry requires the synergy of seven key factors (strategic imperative, leadership commitment, organizational culture, systemic approach, localization, supply chain resilience, and digital transformation). Neglecting any of these factors puts the quality transformation process at risk.

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