

Review Paper

Analysis of the Influence of Psychological Factors on Consumer Behavior and the Decision-making Process

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ABSTRACT

The theory of consumer behavior and the decision-making process has evolved, in part, due to numerous empirical studies by practitioners trying to explain the rational and irrational determinants of human choice. The article aims to analyze the influence of psychological factors on consumer behavior and decision-making. The study employs methods of analysis and synthesis to summarize information and research results on the influence of psychological factors on consumer behavior and their decision-making processes. A systematic literature review and meta-analysis were used to summarize the theoretical and practical (empirical) scientific research findings from 1954-2019, which explain the psychological factors of consumer decision-making. The article proves the evolution of research on the vital role of psychological factors in consumer decision-making and their intuitive actions that shape behavior. Experimental studies confirm the irrationality and intuitiveness of persons' decisions when choosing due to the peculiarities of human perception and thinking. As a result, there is a shift from the theory of rational behavior to the theory of bounded rationality to explain consumer behavior. The authors have identified the evolution of theories to explain decision-making: utility maximization, consumer expectations to intuitive thinking, satisfaction, and the consumer's sense of value in decision-making. Decision-making's emotional and intuitive components are increasingly becoming the research subject for psychologists and behavioral economists. They have formed the theory of prospects, where the value function reflects the losses and gains of the decision-maker (DM).

HIGHLIGHTS

- The empirical studies show that customer behavior patterns are based on irrational judgments, perceptions, emotions, and beliefs, cognitive and psychophysical determinants of choice.

Keywords: Psychological determinants, cognitive determinants of choice, consumer behavior, decision-making, intuitive thinking

The theory of consumer behavior and decision-making has evolved, in part, through numerous empirical studies by researchers trying to explain the rational and irrational determinants of human choice (Tsaras *et al.* 2018). Such studies are essential, given the need for marketers, economists, psychologists, and other professionals to understand

people's motives, actions, perceptions, and thinking (Koliadenko *et al.* 2022; Levytska *et al.* 2020; Rahman

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et al. 2022; Bondarenko *et al.* 2022; Shytyk *et al.* 2020; Leonov, Ya., 2020). Despite some theoretical and practical knowledge about the customer decision-making process, many issues remain poorly understood. In particular, the psychological determinants of consumer behavior that explain their actions and behavior need to be systematized and generalized (Semenets-Orlova *et al.* 2022; Leonov, Ya., 2020). Therefore, the article aims to analyze the influence of psychological factors on consumer behavior and decision-making processes.

Consumer behavior and decision-making theory are based on the concepts of behavioral and quantitative sciences. Consumer behavior and decision-making theory have gradually evolved in the scientific literature. The neoclassical theory of bounded rationality (TBR) and behavioral theories are the main concepts that explain decision-making and consumer behavior.

The basic form of decision-making is seen as a counting process that gradually eliminates alternatives, thereby reducing uncertainty (Gottwald & Braun, 2019). Decision-making is defined as the making of a choice among a set of preferred options by a decision-maker (hereinafter referred to as the DM) (Edwards, 1954). The theory evolution has led to a departure from the deterministic view of the consumers and their rational decision-making by neoclassical economists (Simon, 1979) to the definition of behavior as a cumbersome random process by behaviorists (Kassarjian, 1982).

The classical theories of economic decision-making involve the realization of specific, verifiable predictions about the particular behavior of decision-making agents. Classical decision-making theory and neoclassical economics are based on the postulates of the subjective expected utility (SEU) theory, which explain the making of choices (Simon, 1990):

1. among a given, fixed set of alternatives;
2. with (subjectively) known probability assignments of outcomes for each of them;
3. in a way that maximizes the expected value of a given utility function (Savage, 1972).

These assumptions do not empirically and practically correspond to situations of real economic choice. Therefore, the classical theory of rationality was supplemented by new knowledge of mathematical

disciplines, statistical decision theory, and game theory, proposed by Von Neumann & Morgenstern (2007). The theory's evolution led to the emergence of behavioral concepts of decision-making that explained the psychological component of choice, mainly neoclassical theory and the Bounded Rationality Theory.

The main achievements of neoclassical decision theory include the following:

- ♦ Information is considered a type of economic activity with costs and results that can be included in the classical production function.
- ♦ The evolution of the economic theory of teams explains the decision-making mechanisms by groups of people.
- ♦ The introduction of the limitation and cost of information as part of the technological environment.

At the same time, the main disadvantage of the new neoclassical theory is the increased complexity of calculations, their accuracy, and the assumption of perfect maximization remains crucial.

In the face of uncertainty, according to neoclassical theory, the condition of choice rationality will not be met. It became the basis for the development of Herbert Simon's theory of bounded rationality, which implies choice optimality and the search for the best option for the consumer (see Gigerenzer, 2016). H. Simon proposed pleasure as an alternative to optimization/maximization of utility in the face of unpredictable consequences (see Gigerenzer, 2016). The theory of bounded rationality is a bridge between the concepts of neoclassicists and behaviorists, studying the systematic biases that separate people's beliefs and choices from optimal beliefs and choices according to rational decision-making models (see Gigerenzer, 2016). Whereas rational decision theory provides better behavior prediction, the theory of bounded rationality and the theory of irrational behavior consider uncertainty and incomplete information. The term "bounded rationality" is used to refer to rational choices that consider the cognitive limitations of the decision-maker. This includes both knowledge and computational constraints. Bounded rationality is a central concept of the behavioral approach to economics. It deeply explores the influence of real-world processes on decision-making (Simon, 1990).

The theory of bounded rationality (TBR) omits one or more SEU theory assumptions. Instead of assuming a fixed set of alternatives from which the decision-maker chooses, TBR postulates a process of generating options. In addition, instead of assuming known probability assignments for outcomes, TBR allows for the implementation of evaluation procedures for them or the search for a strategy to deal with uncertainty that does not require knowledge of probabilities. However, TBR assumes the principle of implementing a satisfactory strategy rather than considering the maximization of a utility function. The specific deviations from the SEU assumptions of full maximization introduced by behavioral economists are due to the availability of empirical knowledge about human thinking and choice processes. Significantly, there is information about the limits of human cognitive capabilities to search for alternatives and calculate their consequences under conditions of insecurity or uncertainty. It enables the comparison of choices among the provided options and the processes (problem-solving processes) that decision-makers use to find possible ways of acting (i.e., the actions that will resolve the problem) (Newell & Simon, 1972).

The representatives of behavioral economics (Kahneman, Tversky, Thaler) argue that consumers do not follow the utility maximization theory, combining neoclassical decision theory and irrational behavioral theories. Behavioral theories provide the development of completely different predictions. These predictions can be tested directly through observation, so either theory (or both) can be disproven in case of failure. Behavioral theories of rational choice under the bounded rationality theory are far from simple.

MATERIALS AND METHODS

The study uses methods of analysis and synthesis to summarize information and research results on the impact of psychological factors on consumer behavior and decision-making processes. A systematic literature review and meta-analysis allow combining the results of different decision-making theories and similar studies of personal behavior. Thus, these research methods have the potential to provide a sufficient number of research results and present generalized information

(Zazirnyi & Mashtaler, 2018) to conclude the role of psychological determinants in consumer behavior. The study summarizes the theoretical and practical (empirical) scientific research findings from 1954 to 2019 that explain the psychological factors of consumer decision-making. The paper considers the key postulates of the following theories:

- ◆ classical and neoclassical decision-making theory;
- ◆ bounded rationality theory;
- ◆ behavioral economics;
- ◆ consumer behavior theory;
- ◆ psychoanalytic theory, expected utility theory;
- ◆ Fishbein's attitude-behavior model;
- ◆ cognitive response theory (to explain consumer reaction, action, and decision-making);
- ◆ statistical decision theory (expectation maximization);
- ◆ utility theory;
- ◆ information processing theory.

The Prospect Theory by Kahneman D. and Tversky A. (1979; 2003; 2013) is considered the most famous example of a positive decision-making theory in the face of uncertainty. It explains consumer behavior from the perspective of intuitive thinking, the emotional component of decision-making, as well as gains and losses.

RESULTS AND DISCUSSION

The behavior of the buyer and consumer is based on theories and models related to actions, emotions, and personality reactions. Starting with the Hawthorne Experiment in 1924 (see Adair, 1984), scientists have studied the emotional component in decision-making mechanisms. The connection between improved working conditions and increased efficiency was studied in the first stage of the experiment conducted at General Electric. However, even after deteriorating working conditions, the dynamics of production efficiency remained positive. Psychologists concluded that psychological and social factors influenced labor productivity. This, in our opinion, was one of the first signals indicating the key role of emotional drivers in decision-making.

The next pivotal stage in the statistical investigation

of decision-making mechanisms was the experiments by Neil Rackham. With the support of multinational corporations IBM and Xerox, N. Rackham and 30 experts studied over 35,000 successful sales transactions of goods and services in 20 countries over 12 years. The research led to the following conclusions:

1. Practical (logical) arguments do not have an immediate impact on the buyer.
2. A change of perspective is more effectively achieved through self-reflection, as it requires an evolution of consciousness.
3. Negotiations will be more successful if posed with consequential and provocative questions to the buyer.
4. Questions are more persuasive than any other form of verbal behavior (Rackham, 1988).

The author of the fundamentally new approach to the decision-making process is Chris Voss (Voss & Raz, 2016). C. Voss introduced the concept of “tactical empathy.” According to him, empathetic influence and the transfer of responsibility to the counterpart contribute to increased engagement of the interlocutor and the ability to justify one’s position. It, including non-verbally, accelerates the normalization process, similar to the effect studied by N. Rekhem, who argued that decision-making is more effective without pressure, allowing for the free expression of opinions.

Overall, from the beginning to the middle of the XIX century, consumer behavior studies were built on “mid-range” approaches, which means their fragmentation and explanations of behavior in the context of different aspects. Until the 1980s, consumer behavior was studied in the context of two aspects:

1. focusing on the individual as a buyer, decision-maker, and user;
2. preference was given to the decision-making process and the assumption that consumer behavior is a rational problem-solving process (Sheth, 1979).

However, research on collective, group consumer behavior was limited, and market segments or social classes were considered as sets of individuals. As a research field, consumer behavior was part of marketing theory and practice (Sheth, 1979), as the

initial studies aimed to understand the buyer for the formation of specific marketing strategies by marketing managers.

Until the 1980s, publications focused on the rational deterministic behavior of consumers. Much attention was given to rational approaches in solving problems related to understanding consumer behavior instead of approaches that directly addressed the problem-solving process. Additionally, much emphasis was placed on individual consumers rather than the study of group behavior (Sheth, 1979). However, starting from the early 1980s, research emerged on the ‘cognitive consumer,’ who makes purchases not necessarily linked to decision-making. As a result, earlier views of the rational consumer were supplemented by new explanations that encompass product choice, brand loyalty, advertising influence, hierarchy of effects, and behavioral changes. Processes in the right hemisphere of the brain, situational components, and changes in behavior during decision-making explain behavior with low consumer involvement.

Consumer behavior theories that consider individuals as psychological entities gained popularity after World War II, particularly the works of J. Horstley Smith, S. Levy, Freud’s psychoanalytic theory, and his followers. Cognitive psychology influenced marketing and the development of behavior theories.

Specifically, the theory of expected utility, the attitude-behavior model by Fishbein, and the cognitive response theory explained consumer reactions, actions, and decision-making. Cognitive responses and thoughts arise during persuasive communication and act as crucial mediators of changes in a consumer’s attitude toward a product. Cognitive arguments serve as mediators between stimuli and attitudes, involving a broad set of cognitive variables, such as beliefs, purchase intentions, and attitude changes (Kassarjian, 1982), resulting from a consumer’s cognitive response under certain conditions. Consumer experience and feedback mechanisms are complex, and rational behavior theories explain only a small part of human variation in the marketplace.

During the 60-80 years of the XIX century, the achievements of behavioral theory played a particular role in the overall economic research

activity, while bounded rationality and behavioral theories continued to evolve. Concurrently, empirical studies were actively conducted in psychological laboratories aimed at testing hypotheses concerning human behavior in relatively simple choice situations, according to the theory of statistical decisions (expectation maximization). Firstly, the research conducted by Simon & Newell (1971) revealed the actual micro-processes of decision-making and problem-solving in humans rather than testing the theory (Simon & Newell, 1971). The study explained the organization of information processes underlying problem-solving. The main characteristics of sequential processing in the information processing system (IPS) are:

- ♦ a small capacity for short-term memory;
- ♦ an infinite long-term memory with rapid inferences;
- ♦ slow information retention as conditions for seeking a solution.

The theoretical conclusions of the research included the following propositions:

- (a) Several general human information processing system characteristics are invariant in solving tasks and problems.
- (b) These characteristics determine that the task environment is represented (in IPS) as a problem space, and problem-solving occurs within this problem space.
- (c) The structure of the task environment defines possible structures of the problem space.
- (d) The structure of the problem space determines possible programs that can be used for problem-solving.

Secondly, numerous empirical observations were conducted, mainly in the form of “thematic studies,” concerning real decision-making processes in organizational and business contexts. Thirdly, there were reformulations and extensions of the theory of the firm, which replaced classical maximization with behavioral postulates (Simon & Newell, 1971).

In recent years, the number of studies in the field of modeling consumer preferences from the perspective of a flexible and practical way of assessing consumer beliefs and studying trends based on big consumer data has been increasing. Modeling allows for

building models of uncertainty and incompleteness, automating consumer preferences under conditions of incomplete data (Zaffalon & Miranda, 2018).

The development of Bayesian statistics has led to the reevaluation of utility theory and human choice in the context of empirical research on subjective expected utility maximization (SEU). Early studies using straightforward choice situations revealed that decision-making might be based on subjective utility maximization. However, significant deviations from the behavior predicted by SEU theory were observed when decision conditions were altered and made more complex. Some of the most dramatic and convincing empirical refutations of the theory were presented by D. Kahneman and A. Tversky, who showed that under certain circumstances, decision-makers attached too little importance to prior knowledge and made choices almost entirely based on new evidence, while in other cases, new evidence had little impact on pre-existing beliefs (Kahneman & Tversky, 1973).

Similarly striking deviations from the behavior predicted by SEU theories were found by Howard Kunreuther and his colleagues in their studies of individual decisions regarding the purchase or rejection of flood insurance (Kunreuther *et al.* 1978). Based on these studies, it can be concluded that the forecasts of human behavior using SEU theory are ineffective in predicting actual behavior. The refutation of the theory is related to the essence of decisions, not just the process of making them. However, the point is not that people do not perform the calculations required to make a decision based on SEU - neoclassical thought never claimed that decision-makers do not perform calculations. The new studies prove that decision-makers do not perform computations based on neoclassical assumptions.

In the 1960s-1980s, numerous studies were conducted on decision-making processes and solving complex problems, which formed the fundamental assumptions of decision-makers psychology. Based on these studies, a new theory called information processing psychology emerged, typically expressed formally in programming languages (Simon, 1979). This theory involves forming an information processing structure and employs computer modeling as a central tool for expressing and testing it. Information processing

theories view problem-solving as a search for choices within a problem space.

Based on empirical rules or heuristics, selectivity tends to direct the search toward promising areas, so decisions are usually made after exploring only a small portion of the overall space. Specified criteria lead to the termination of the search upon finding a satisfactory problem solution. Thus, the decision-making theory becomes explicitly complex within the framework of bounded rationality theory. Empirical research supports the theory of the problem-solving process. For instance, the theory has been empirically tested in laboratory conditions with tasks involving expert-level human performance, medical diagnosis, investment in stock and bond portfolios, and chess games. In such tasks, general search mechanisms operate within the broader context of information stored in human long-term memory, but the overall organization of the process remains similar to that in more straightforward and specific tasks.

During the 1980s, there was a lack of research on consumer behavior, consumer satisfaction/dissatisfaction, well-being and consumption, choice models, consumer search behavior, and more. Among the two main research themes were:

1. Organizational behavior, with little attention to individual buyer behavior.
2. Decision-making processes, with little focus on non-decision-making processes.

At the beginning of the 2000s, research in the field of consumer decision-making and consumer behavior still remained limited. Some of the main prospects for future research include:

- ♦ Situational effects and their impact on the decision-making process significantly influence behavior.
- ♦ The influence of organizational roles on behavior (user, buyer, payer, decision-maker) and how these roles are linked to motivation, compensation, and rewards.
- ♦ The roles of the seller – consultant, facilitator, or trusted agent – and how these roles relate to motivation, compensation, and rewards.

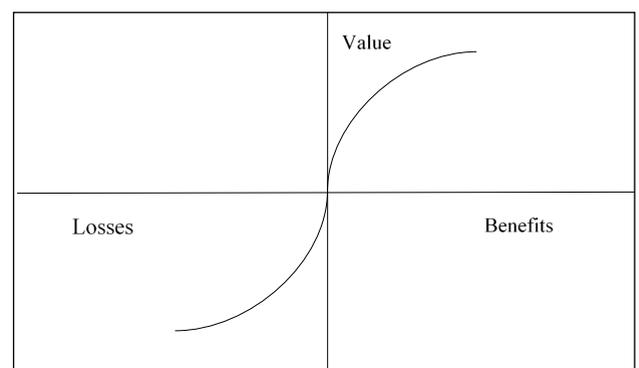
Between 1937 and 1996, Daniel Kahneman (a psychologist and Nobel laureate in economics) and Amos Tversky investigated the psychology of

intuitive beliefs and choice within the context of Simon’s concept of bounded rationality (Kahneman, 2003a). The empirical research conducted by these scholars contributed to the formation and development of consumer behavior models (Simon, 2000). The early study by Kahneman and Tversky on intuitive judgments and decision-making was examined in the context of two related concepts:

- ♦ The analysis of availability and ease of forming judgments.
- ♦ The distinction between intuition and conscious judgments (Kahneman, 2003b).

The rational agent model served as the basis for formulating hypotheses and conclusions regarding the psychology and economics of agent behavior. They developed a map of bounded rationality based on research on people’s biases, beliefs, and choices, which significantly deviated from optimal choices in rational decision-making models due to the presence of biases (Kahneman, 2003a). The research by Kahneman and Tversky was supported by behavioral economists such as Richard Thaler, Colin Camerer, and others (Mullainathan & Thaler, 2000; Thaler, 2000; Camerer & Kunreuther, 1989; Camerer, Loewenstein & Rabin, 2004).

Kahneman and Tversky’s prospect theory (1979) is the most well-known example of positive decision-making theory under conditions of uncertainty, encompassing a vast array of psychological aspects within an S-shaped “value function” (Fig. 1).



Source: Kahneman & Tversky (2013).

Fig. 1: Hypothetical value function of decision-makers during making decisions

Kahneman proposed a schematic utility function to measure changes in potential gains and losses for the consumer, where benefits and losses are measured horizontally, and consumer value changes

with decision-making vertically (Kahneman, 2003a). The utility function shows changes in material well-being on the horizontal axis, as people tend to adapt to their environment and react only to perceived changes. The vertical axis reflects the level of satisfaction resulting from changes in perception or consciousness evolution. The S-curve represents a decrease in marginal sensitivity to both gains and losses, which is a fundamental conclusion of the psychology of perception (psychophysics). The loss function is steeper than the gain function, a property called "loss aversion." Losses are perceived more acutely compared to gains. These three psychological concepts significantly explain consumer reactions to price changes and purchasing behavior (Thaler, 2000).

The research of Kahneman and Tversky was based on Simon H. A.'s assumption (1955, 1979) of studying decision-makers as subjects with bounded rationality based on the model of maximizing satisfaction rather than utility. Through a series of experiments related to behavioral models, Daniel Kahneman and Amos Tversky formulated fundamental thinking postulates (Kahneman, 2017): The empirical studies show that customer behavior patterns are based on irrational judgments, perceptions, emotions, and beliefs, cognitive and psychophysical determinants of choice. Kahneman and Tversky concluded that there are two types of thinking:

- ♦ System 1 (automatic, intuition-based thinking);
- ♦ System 2 (focused and controlled thinking).

System 1 creates impressions and feelings, which are the main sources for forming beliefs and conscious choices of System 2 (Kahneman, 2003a) (Fig. 2). When information is insufficient, the system functions as a mechanism for quick conclusions, intuitive thinking. Often, logically consistent stories are quite close to reality and form the basis for rational actions. However, contrary to "econs," these qualities are characteristic of "humans." Irrationality is interpreted as emotionality and impulsiveness. Based on this, people cannot be rational, but they cannot be considered irrational either (Nilova & Semenenko, 2014).

System 1 perception and intuitive actions generate impressions of perceived object attributes and thinking. These impressions are involuntary and

need not be explicitly verbalized. In contrast, judgments are always explicit and deliberate, whether openly expressed or not. Thus, System 2 is involved in all judgments, regardless of whether they arise from impressions or deliberate reasoning.

	Perception	Intuition (System 1)	Control (System 2)
Processes		Fast Parallel Automatic Associative Slow to learn Emotional Effortless	Slow Serial Controlled Flexible Neutral As per the rules Tense
Content	Current stimulation Related to stimuli Perception	Conceptual mapping Past, present, and future Can be defined by word forms	

Source: Kahneman (2003a).

Fig. 2: Three cognitive systems of human thinking

The term 'intuitive' is applied to judgments that directly reflect impressions. Intuitive judgments occupy a position - possibly evolutionarily driven - between automatic perceptual operations and deliberate reasoning. Unlike perception, System 1 actions are not limited to processing current stimulation. Like System 2, System 1 operations deal with stored concepts as well as perceptions and may emerge when interacting with the decision-maker.

Thus, the theory of bounded rationality and behavioral economics form the basis of consumer behavior theory, exploring the emotional component of decision-making and incorporating cognitive and psychophysical determinants of consumer choice (psychophysics of value, psychophysics of chance) (Kahneman & Tversky, 2013). Psychological principles govern problem perception in decision-making, leading to predictable preference shifts - various problem formulations by consumers provide a basis for preference inversion (Tversky & Kahneman, 1981).

The core idea of the irrationality model in consumer behavior theory lies in the consumer's high level of intuitive actions and the availability of information about the product at a given moment (Kahneman, 2003). Preference shifts and the variety of problem formulations influence intuitive actions, changing values and preferences.

CONCLUSION

The article proves the evolution of research on the influence of psychological factors on consumer behavior and decision-making. Since 1924, experimental studies have formed several essential conclusions about decisions' irrationality and a shift from the theory of rational behavior and consumers' limited choice to a particular set of alternatives to the theory of bounded rationality. In this theory, intuitive thinking, satisfaction, and value are key in consumers' decision-making under conditions of limited information and uncertainty. Empirical work shows that consumer behavior is based not only on a limited rational set of alternatives but also on irrational judgments, perceptions, emotions, beliefs, and cognitive and psychophysical determinants of choice, which lead to a high level of intuitive action. The availability of information about the product at a certain point in time also affects the choice.

For this reason, the emotional and intuitive component of decision-making is increasingly becoming a research area for psychologists and behavioral economists. They have formed a prospect theory, where the value function reflects the losses and gains of decision-makers. Both psychologists and behavioral economists emphasize the importance of psychologically intuitive beliefs in making choices in the context of the theory of bounded rationality. This theory is the basis for building consumer behavior models and considers the emotional component, cognitive and psychophysical values.

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