

Setting the Theoretical Foundations of Artificial Intelligence in Marketing: A Systematic Literature Review

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Abstract

This study aims to analyze the existing theories used in artificial intelligence literature in marketing. This study critically investigates the theoretical foundations of artificial intelligence research using a review of 30 artificial intelligence-related marketing articles published during the 1973–2021 period. Analyses were carried out by content analysis and coding method. The analysis reveals that these analyzed researches do not rely on a dominant theoretical perspective, most of them are theoretically varied. Of these theory-based studies, the most used are the speech act theory, technology acceptance model, resource-based theory, and identity theory. In addition, this study suggests several other theories not previously used in the literature; asymmetric information theory, cognitive dissonance theory, the common ingroup identity model, and spearman's two-factor theory.

Keywords: Artificial intelligence, marketing, review, theoretical paradigms.

Pazarlamada Yapay Zekânın Teorik Temellerinin Oluşturulması: Sistemik Bir Literatür Taraması

Öz

Bu çalışma, pazarlamada yapay zekâ literatüründe kullanılan mevcut teorileri incelemeyi amaçlamaktadır. Bu kapsamda, 1973-2021 döneminde yayınlanan yapay zekâ ile ilgili pazarlama alanındaki 30 makalenin analizi ile yapay zekâ araştırmasının teorik temelleri eleştirel bir şekilde araştırılmıştır. Analizler; içerik analizi ve kodlama yöntemiyle gerçekleştirilmiştir. Analiz edilen makaleler kapsamında, bu araştırmaların baskın bir teorik perspektife dayanmadığı, çoğunun teorik olarak çeşitlilik gösterdiği ortaya konulmuştur. Değerlendirilen araştırmalara dayanarak kuram temelli çalışmalardan en çok kullanılanları söz edimi kuramı, teknoloji kabul modeli, kaynak temelli kuram ve özdeşlik kuramıdır. Ek olarak, bu çalışma literatürde daha önce kullanılmayan başka teoriler de önermektedir; bu teoriler, asimetrik bilgi teorisi, bilişsel uyumsuzluk teorisi, ortak grup içi kimlik modeli ve spearman'ın iki faktörlü teorisidir.

Anahtar Kelimeler: Yapay zekâ, pazarlama, inceleme, teorik paradigmlar.

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1. Introduction

Artificial intelligence is like a constellation. It can work in integration with many technologies to enable machines to perceive with human-like intelligence levels, act with this perception, learn something new, and infer from the information stack. The ability of artificial intelligence and the increase in its application area cause the marketing sector to change like other sectors. Artificial intelligence promises the power to shape many industries with tasks of computer-aided applications or a robot often associated with smart assets at a cheaper cost (Russell and Norvig, 2010). In previous studies, it has been suggested that artificial intelligence should be a versatile concept in the context of computer-human interaction (van Esch, Black, and Ferolie, 2019). There are also studies referring to the importance of interaction with humans for the successful adoption of technologies (Agarwal and Venkatesh, 2002). Also, there are studies in the literature that draw attention to the value of artificial intelligence to business applications (Dwivedi, Rana, Jeyaraj, Clement, and Williams, 2019 and Kumar, Rajan, Venkatesan, and Lecinski, 2019). Thus, it gains importance to understand artificial intelligence literature. A general framework in this field is presented in a review study in which previous studies in the field of artificial intelligence are examined based on insights. Natural language processing, machine learning, and statistical algorithms are discussed and their changes and developments over time are examined (Mustak, Salminen, Plé and Wirtz, 2021).

Moreover, studies in the literature are insufficient in terms of the usage of theories on the artificial intelligence literature from a review perspective in the marketing field. Also, there is not an adequate review study in terms of general scope, and no current study focuses on academic journal selection, keyword usage, and theories. This study aims to bring strong theoretical findings by filling this gap in the literature. It will be made based on artificial intelligence, considering the explicit usage of theories for the formalized studies. Moreover, the research will reveal the varying theories and their potential usage within the artificial intelligence landscape.

2. Literature Review

2.1. Artificial Intelligence

People are incapable or limited in making complex decisions; Therefore, artificial intelligence is used in the interpretation and processing of data produced by machines and humans (Hurwitz, Kaufman, and Bowles, 2015). Artificial intelligence has become popular in the last decade, it combines data and solution systems to make easier people's life in different areas, including businesses and systems where it is needed. Moreover, artificial intelligence is the branch of engineering science that focuses on human intellect. By practicing the use of different technologies to solve the issues and challenges of businesses to create value for them with the usage of data. AI has widespread use in marketing varying from virtual shopping assistants that give personalized product recommendations on e-commerce websites to chatbots that contributes to superior customer service (Baycur, Delen, and Kayışkan, 2022). Artificial intelligence-based data can be in five different formats: analytical, functional, interactive, textual, and visual. First, analytical AI stands for identifying and interpreting data patterns. Analytical AI encompasses the system that uses data insights, patterns, and relationships when making a data-driven decision. Second, functional AI is the system that performs analytical actions and analyzes patterns and dependencies. For example, a functional AI model is used in robotics applications. Third, interactive AI provides efficient and interactive automation in daily life such as chatbots and intelligent personal assistants. Virtual influencers that are AI-based content creators on social media can be another example of interactive AI (Baycur and Karaca, 2022). Fourth, textual AI covers business text recognition, natural language processing, content creation, conversion of text to speech, and speech to text. Text AI can be used to answer frequently asked questions in

consumer communication. Finally, visual AI is capable of recognizing, classifying, and delimiting items, transforming images and videos into insights (Sokolov, 2019; Sarker, 2022; Saura, Soriano, and Marques, 2021; and Lopez and Casillas, 2013).

In addition, a brief review of literature on artificial intelligence shows that theoretical, empirical, and practical dimensions of AI are used with different AI techniques. These AI techniques can be summarized in ten categories which are; “ (1) machine learning; (2) deep learning and neural networks ; (3) data mining, knowledge discovery, and advanced analytics; (4) rule-based modeling and decision-making; (5) fuzzy logic-based approach; (6) knowledge representation, uncertainty reasoning, and expert system modeling; (7) case-based reasoning; (8) text mining and natural language processing; (9) visual analytics, computer vision and pattern recognition; (10) hybridization, searching and optimization” (Sarker, 2019; Sarker, 2021; Sarker, 2022; Zadeh, 2008; Tiwari, Srivastava and Gera, 2020; Lopez and Casillas, 2013). However, these techniques may differ regarding usage areas and application processes. Also, techniques gain some other specialties due to technological development. All these techniques belong to five main categorizations of artificial intelligence which are emphasized above as analytical, functional, interactive, textual, and visual.

3. Methodology

3.1. Research Questions

This study aims to be employed to address the following research questions:

Which theories are used in artificial intelligence literature in marketing?

How are there theories used to explain the relationship between variables in artificial intelligence literature in marketing?

What is the frequency of usage of these theories?

What problems can be identified and addressed in the literature?

What future research directions can be developed?

3.2. Selection of studies

This review covers artificial intelligence-related empirical articles published in the top ten marketing journals based on CABS Academic Journal Guide 2021 ranking within the business to consumer context. We searched articles from Scopus database. Keywords were following; “*Artificial Intelligence, AI, machine learning, robot, automation, big data, neural network, text mining, data mining, natural language processing, soft computing, fuzzy logic, biometrics, geotagging, wearable, IOT, internet of things, algorithm, algorithmic error, information technology, data marketing, data-driven marketing, chatbot, deep learning, semantic analysis*”.

The top ten contributing journals were *Journal of Consumer Psychology, Journal of Consumer Research, Journal of Marketing, Journal of Marketing Research, Journal of the Academy of Marketing Science, Marketing Science, International Journal of Research in Marketing, Journal of Retailing and European Journal of Marketing. Industrial Marketing Management* have been excluded from the study due to business to business-based approach rather than a consumer.

3.3. Selection Criteria

The articles included in the review study were selected based on 2 main criteria. Articles eligible for inclusion were those that (1) written in an article format (other formats were excluded) and (2) indicate an explicit usage of theory in the development of study hypotheses. After excluding studies

do not have explicitly state the usage of a theory and studies that lack hypotheses are excluded from the analyses. After evaluating according to the determined criteria, only 30 articles published between 2005-2021 were examined within the scope of the analysis.

3.4. Data Analysis

For article analysis, the coding system was used as stated below. Considering that the articles are in a formalized structure (established with a hypothesis), notes were taken about how the theory was used in the study. Also, articles were reviewed through their hypothesis's development sections and the way they use hypotheses to explain relationships between variables was noted in an excel file.

Table 1. Database Search Details of The Study

	Search Terms
Field Tag: Title, abstract, keyword	TI= ("Artificial Intelligence" OR "AI" OR "machine learning" OR "robot" OR "automation" OR "big data" OR "neuro network" OR "text mining" OR "data mining" OR "natural language processing" OR "soft computing" OR "fuzzy logic" OR "biometrics" OR "geotagging" OR "wearable" OR "IOT" OR "internet of things" OR "algorithm" OR "algorithmic error" OR "information technology" OR "data marketing" OR "data-driven marketing" OR "chatbot" OR "deep learning" OR "semantic analysis")
Boolean:	AND
Field tag: Source title	"Journal of Consumer Psychology" OR, "Journal of Consumer Research" OR "Journal of Marketing" OR "Journal of Marketing Research" OR "Journal of the Academy of Marketing Science" OR "Marketing Science" OR "International Journal of Research in Marketing" OR "Journal of Retailing" OR "European Journal of Marketing"

The table above summarizes the exact search criteria and keywords provided in the research. The initial literature search resulted in 358 articles published in the between 1973-2021.

Within the scope of the analysis, a total of 30 articles were examined, which consisted of hypothesis structure and the use of theory was clearly stated.

Table 2. Distribution of Articles by Journal

Source Title	Total	2000s	2010s	2020s
Journal of Consumer Psychology	2	-	-	2
Journal of Consumer Research	3	-	3	-
Journal of Marketing	9	1	3	5
Journal of Marketing Research	2	-	2	-
Journal of the Academy of Marketing Science	10	3	6	1
Marketing Science	1	-	1	-
International Journal of Research in Marketing	2	-	-	2
Journal of Retailing	-	-	-	-
European Journal of Marketing	1	-	-	1

The distribution of these studies by years and journals is given in the Table 2 above. Until 2010, while the number of relevant articles suitable for the search criteria in the field of artificial intelligence was quite low, it increased in 2010; in 2020, it can be interpreted that it attracted great attention.

4. Data Analysis and Findings

In this section, the theories that have been used before and the key features of these theories are given. At the same time, new usage area suggestions are made for the most used four theories among the existing theories that have been used before. A distinction is made between the most used and rarely preferred theories for the analyzed theories in the studies. In this context, existing problems and deficiencies were identified and suggestions were made for their solution. Finally, the definitions and characteristics of five different theories that have not been used before in current studies are given and suggestions for future studies are made.

Table 3. Most Frequently Used Theories in Artificial Intelligence in The Literature Reviewed

Theory	Main characteristics	Example usage
Speech Act Theory	Speech act theory suggests that words are not only used to present information but can even be used to perform actions (Austin, 1962). From this point of view, it is thought that a syntax serves a function beyond words in communication (Kaburise, 2011).	*Speech act theory has been used within the scope of the impact of the message intentions of brands (ie assertive, expressive or directive) on consumer sharing (Ordenes, Grewal, Ludwig, Ruyter, Mahr, and Wetzels, 2019). * To reveal of detailed analysis of implicit and explicit language used by consumers to express emotions in text (Ordenes, Ludwig, Ruyter, Grewal, and Wetzels, 2017).
Technology acceptance model	According to the Technology Acceptance Model (TAM), there are two important variables that affect the individual's intention to use new technology: perceived ease of use and perceived usefulness (Davis, 1989).	Within the scope of theory; for sales force automation, perceived ease of use and perceived usefulness and the provision of training and support on SFA have been the subject of research. Hypothesis; H1: The SFA adoption is higher the higher is a) perceived usefulness of the SFA tool, b) perceived ease of use of the SFA tool, and c) perceived extent of training and support (Homburg, Wieseke and Kuehnl, 2010). * To explain the intention to use SFA technology before deployment and use of the technology after deployment (Schwar, Sundaram, Johns, and Chin, 2007).
Resource-based theory	The resource-advantage theory argues that the value of a resource provides firms with higher profits in terms of providing customer value so that a firm's performance outcomes improve. Firms may become more advantageous than one another in terms of resources (Hunt, 2000).	*To explain the effect of IT-based resources on shareholder value (Kashmiri, Nicol, and Hsu, 2007) * To explain the firm's IT infrastructure and market-oriented IT competency information source, explain its impact on the flow of market information (Davis and Golicic, 2010). * To understand the relationship between technology, information technology, market-linking, and marketing capabilities as the four capabilities and performance, and the moderating role of M-S strategic type (Song, Benedetto and Nason, 2007).

Table 3.(Devamı)

Identity theory	Social identity theory is a social psychological theory of self-concept, group membership, group behavior, and intergroup relations (Schwartz, Luyckx and Vignoles, 2011). According to the theory, it is aimed that individuals try to improve their self-esteem based on their personal and social identities, thereby improving their self-image (Tajfel and Turner, 1979).	* To understand salesperson perceptions associated with technology rejection for salesforce technology implementation (Speier and Vankatesh, 2002). * Investigating whether algorithms can increase perceived emotional human similarity and the effects of consumer use of algorithms (Gbel, Guld and Klapper, 2019) .
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The definition of the ten most used theories and the usage example of the studied study are given above. According to the information given above, the theories are based on technology, resources, and social interaction. They are also theories that researchers in the marketing and social sciences are quite familiar with.

Table 4. What Other Associations Could Be Explained with Most Frequently Used Theories

Theory	Potential usage
Speech Act Theory	Evaluation of loyalty and commitment to the company/product in the context of artificial intelligence in terms of intention and expectation based on this theory.
Transaction cost economics	Measuring the efficiency and preference of artificial intelligence applications in terms of price advantage, time advantage and resource advantage.
Technology acceptance model	Evaluation of the difficulties of using artificial intelligence based on the vulnerable consumer.
Resource-based theory	Evaluating the technological opportunities and facilities as a resource of the person or institution for their preference by firms and consumer side.
Identity theory	For AI-based applications social media applications and their usage frequency.
Attribution theory	The next artificial intelligence-based of previous negative experiences; For example, measuring the customer's loyalty and satisfaction level regarding chatbot usage.

In the table above, suggestions for new usage areas have been made for existing theories. Since the Speech act theory is related to a situation based on communication and expectations, it can be studied on the loyalty of the consumer/company for a new product/service such as artificial intelligence. Secondly, studies can be conducted on the preference of services received within the scope of classical-based transaction cost economy theory in terms of efficiency and effectiveness by associating them with factors such as time and price. A vulnerable consumer can be considered as a new population for the technology acceptance model. The complexity of technology and new applications can make many consumers feel helpless in various times and situations. Testing this approach in terms of defining and resolving this conflict will make a significant contribution to the literature. As the four of them, Within the scope of the resource-based theory, technology facility and opportunity can be studied in terms of companies and consumers. For example, while a good webchat service offered by the company is its

strength, the good service received by the consumer is also its gain. On the other hand, if the consumer is conscious and has technical knowledge and equipment, the probability of thinking positively about his artificial intelligence-based experience may increase. Fifthly, identity theory emerges. Identity refers to a slightly more psychological and social situation. Therefore, in today's social media world, research can be conducted on applications integrated with social platforms and the consumer's process by using this theory. For example, it can be studied that influencers get more likes, sell products, come to the fore more and become popular, and the consumer's preference for influencers. The features of artificial intelligence such as estimating, suggesting, offering something special to people in all these processes can be considered as variables. Sixth and finally; a potential usage suggestion has been made for attribution theory. Some people think that when they use services such as chatbots, there is a human being in front of them. Therefore, he may likewise expect a warm, friendly, or quick response. Sometimes he asks mixed questions and expects specific answers. In this context, it is possible to get support from the attribution theory in terms of making sense of consumer satisfaction and loyalty.

5. Discussion and Future Directions

As this analysis reveals, although the artificial intelligence field has experienced in terms of the scope of studies during the past 5 years, there is a need for studies containing a variety of theories and working on the same theory on a different sample to reach theoretical maturity. In this context, the headings evaluated as problem identification and potential solution in the light of current studies examined in this study are discussed below.

-Fragmentation: There is no established and dominant theory in the field of artificial intelligence yet. There is no adequate explanation in this area. Thus, a theory was not formed, in each study the situation and/or events were looked at from different angles. In order to overcome this situation, studies can be diversified with different dimensions and variables by concentrating on some comprehensive and effective theories.

-Variables and used theories differ: Frequently used theories are relatively common and it is misleading to consider them widely used. Focusing on the variables that play a key role in the theories used for studies in the field of artificial intelligence, which is associated with a rich field, is important in terms of generalizing the studies.

-Limited Variable and Scope of Study: There are limited uses in studies and theories in terms of country, unit of analysis, time dimension and sample. Different studies according to new and different segments will contribute to obtaining different findings.

The small number of journals included in the evaluation is the main limitation of this study. Examination of the studies within the scope of the use of theory reduces this risk. Future studies can examine more studies by keeping the scope of the journal wider.

Table 5. Least Frequently Used Theories

Theory	Main characteristics	Example usage
Consequentialism Theory	<p>Consequentialism is the theory that the moral quality of an action can be judged by the consequences of actions. According to this approach, alternative actions should be evaluated by the decision maker according to their results and the option that gives the best result should be evaluated. (Driver, 2012).</p>	<p>It has been tested that consumer may find the premise of decision making with algorithms using maximization morally questionable when they think that trade-off is morally relevant.</p>
Schema Congruity Theory	<p>The schema congruity theory argues that a specific information stored in the consumer's brain about a product forms a match with the information obtained from a product reviewed. According to this match, a consumer will obtain consistent judgment by activating different schemas stored in his brain when searching for information about different types of products (i.e., experience product) (Mandler and Parker, 1976; Meyers-Levy and Tybout, 1989 and Wansink and Ray, 1996).</p>	<p>The hypotheses are based on the approach that new products often fail to meet expectations. Accordingly, the theory proposes that excessive incompatibility with a product will cause anxiety in response. In the study, it is suggested that consumers use "fluid compensation" to resolve or mitigate this mismatch. It has been suggested that compensation makes the consumer more positive towards incompatible products.</p>
Meaning Maintenance Model	<p>According to the Meaning Maintenance Model(MMM), there is a basic need for meaning that will organize people's perceptions of the world and make sense of mental representations of expected relationships. Also, the theory suggests that people respond similarly to feelings of uncertainty and salient situations such as death. In this way, a sense of meaning is created from many psychological motivations (Heine, Proulx and Vohs, 2006).</p>	<p>According to this model, it is argued that the consumer is encouraged to compensate for the resulting anxiety. In this study, it is suggested that consumers can cope with this anxiety based on established beliefs.</p>
Social Presence Theory	<p>The basis of social presence theory is based on the use of telecommunication. With computer-mediated communication (CMC) and online technology, its adoption has expanded. First, social presence is conceptualized as the quality of a communication medium that can determine the way people interact and communicate (Short, Williams, & Christie, 1976). The theory focuses on whether people reflect themselves to the environment and whether others perceive them (Lowenthal, 2009). In this context, social presence is shaped by a wide range of different perspectives. The proximity and immediacy of individuals in relation to the degree to which individuals perceive their particular roles in a relationship is defined as social presence (Belderrain, 2006). Another definition is the sustaining of successful and meaningful learning experiences as a critical literacy (Whiteside, 2017).</p>	<p>Based on the theory, the effect of device-delivered haptic feedback on the ability of the consumer to increase their response to certain communication tools has been investigated. The suitability of haptic channels to increase social presence has been suggested. It is expected that the performance will also be affected by the increase in the sense of social presence.</p>

Table 5.(Devamı)

Theory of mind perception	Theory of Mind is the cognitive science that studies how we attribute mental states to other people and how we use these states to explain and predict other people's actions. The mind perception perspective generalizes the principles of action description to understand the minds and actions of other people (Epley and Waytz 2009 and Wegner, 2002).	Based on the theory, it has been suggested that consumers following a brand-damaging crisis react less negatively if the error is caused by an algorithm (a human).
Eating Self-Efficacy	In the definition of self-efficacy, the exercise of control, based on the belief that one can produce effects with one's actions (efficacy), is presented as an important tool of human action (Bandura, 1997). Self-efficacy, we as self-value judgment; It is a judgment of self-esteem and personal ability (Bandura and Locke, 2003).	To test affect of a solution to accompany human-machine stimuli in the field to fight obesity and educate consumers on how the human body functions.
Functionalist theory of emotion	Emotions play a role in relationships as a means of communication. The functionalist approach emphasizes the role of the environment and the functions that emotions serve (eg, self-understanding and situational appraisals).	It was tested that individuals interacting with a chatbot service in an angry emotional state would react negatively to chatbot anthropomorphism, while individuals in a non-angry emotional state would not.
Self-regulated learning theory	Self-regulation is multi-component, iterative, self-directed processes that target cognition, emotions, actions, and characteristics of the environment for one's own purposes (Cascallar, Boekaerts, & Costigan, 2006). It is about the need to develop learning strategies that individuals can use throughout their lives.	The authors hypothesized that when channel partners write reviews about a learning module they participate in, beyond providing ratings, they will better reflect on the relevance of their learning experience and be more involved in learning activities.
Escape theory	The escape theory is defined as people's tendency to engage in behaviors to avoid an unpleasant psychological reaction. Escape theory describes behaviors that enable a person to escape negative self-perceptions (Blackburn, & Johnston, & Blampied & Popp & Kallen, 2006).	Authors, the effects of HSRs on compensatory food consumption may be mitigated when the food is perceived as more healthful; They hypothesized that that is, healthy food attenuates consumers' use of increased caloric intake as a coping mechanism.
Common ground & theory	According to the common ground theory, "mutual knowledge, mutual beliefs and mutual assumptions" are effective for successful communication between people. While the theory argues that a common intention and action develops with face-to-face communication with a communication-based approach, it also argues that a new common ground is formed in this way (Clark & Brannan, 1991; Allan, 2012).	It has been tested whether enabling the transition from provider dominance in the pre-recommendation stage to customer dominance in the post-recommendation stage increases loyalty to the recommendation, as it increases the perceived common denominator of customers.
Inhibition theory of power	According to the inhibition theory of power, there are two main situations that reveal inhibition-related tendencies. The first is increased rewards and increased power associated with freedom; activating tendencies related to approach. On the other hand, the increased threat of punishment and social restraint is driven by reduced power (Keltner et al., 2003).	

Table 5.(Devamı)

Cognitive Theory	According to cognitive theory, emotions and behaviors are determined by thoughts. Information processing is the description of this mental process. Cognitive theory also points to individual differences by emphasizing creativity and thinking (Restle, 1982).	To investigate for idea generation according to which generating ideas involves retrieving knowledge from long-term memory.
Achievement Goal Theory	According to achievement goal theory, individuals may fluctuate in their engagement towards task or ego goals during their achievement-related tasks. This can be more or less task and ego related at any point during task engagement (Duda, 2004).	The role of opposing achievement goal orientations was tested in our framework to determine whether competition or collaboration is superior in achieving the personal growth goal.
Emotions as Social Information Theory (EASI)	According to EASI theory, social influence arises when emotional expressions trigger emotional responses and/or inferential processes in observers, depending on the observer's information processing and the perceived relevance of the emotional expression. The interpersonal effects of emotionality are explained in this way (Van Kleef, 2009, 2010).	A smiling emoji in a customer service message was tested to increase perceptions of relationship strength.
Transaction cost economics theory	Transaction cost theory proposes the optimum organizational structure as a structure that ensures economic efficiency by minimizing change costs. According to the theory, costs are incurred for monitoring, controlling and managing each type of transaction (Williamson 1979, 1986).	The assertion that TCE determines the level of specificity or detail in these IT contracts is tested by deadlock, transaction complexity, and measurement uncertainty concerns.
Attribution theory	Attribution theory proposes to examine how people interpret both their own behavior and the behavior of others in a psychosocial context. He argues that our attributions about the causes of a person's behavior influence our emotional responses to that behavior (Weiner 1985, 1986).	*The theory posits that that natural-looking calls retain their value while adding attractiveness, while testing the consumer's concern that if there is an obvious effort it will reduce the attractiveness of others.

It is seen that the theories are generally based on psychology and communication. Other new theories about cognitive processes and people's motivations can also be used by researchers. In the table 6 below, new theory suggestions that can be used to contribute to the literature are presented.

Table 6. Potential New Theories

Theory	Main Characteristics
Asymmetric Information Theory	Asymmetric information theory suggests that sellers can skew the price of goods sold by having more information than buyers. According to the theory, there is a lack of information that prevents the buyer from understanding the price difference between low quality and high-quality product (Auronen, 2003).
Cognitive Dissonance Theory	Cognitive dissonance refers to a situation involving conflicting attitudes, beliefs, or behaviors. This cognitive dissonance creates a state of mental discomfort that leads to a change in one of the attitudes, beliefs, and behaviors as psychological stress (Festinger, 1957).
The Common Ingroup Identity Model	The model argues that encouraging members of different groups to perceive themselves as belonging to the same, more inclusive entity produces more positive outcomes in terms of their beliefs, feelings, and behaviors toward one another.
Spearman's Two-Factor Theory	It is suggested that intelligence has two components: general intelligence ("g") and special ability ("s"). Spearman hypothesizes that the "s" component is specific to a particular aspect of intelligence to explain performance differences across different tasks.

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