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Title: Determining the Factors Affecting Online Buying Behavior from the Perspective of Consumer Innovation: The Case of Electronic Goods Industry

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Determining the Factors Affecting Online Buying Behavior from the Perspective of Motivated Consumer Innovation: The Case of Electronic Goods Industry

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Abstract

Consumer online behavior is a complex and multifaceted phenomenon. It encompasses various aspects, including how individuals interact on digital platforms, websites, and online marketplaces. Social media platforms have emerged as key influencers, shaping consumer purchasing decisions and preferences. Functional, hedonic, socially conscious, altruistic, and cognitive innovations are crucial in today's consumer landscape. They enhance consumer experiences, foster loyalty, promote responsible consumption, and encourage prosocial behavior. Moreover, they promote informed decision-making and shape the future of consumerism. We have focused on Türkiye as it significantly contributes to GDP and employment generation. The study examined the impact of functional innovation on consumer online behavior.

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The impact of functional innovation on consumer's skeptical, indecisive, conscious, and investigative behavior. The impact of hedonic, social, altruistic, and cognitive innovations on consumer online buying behavior. Our results support all the proposed hypotheses. The findings aligned with the past studies.

Keywords: *Online purchase, consumer behavior, functional innovation, hedonic, socially conscious, altruism, and cognitive innovativeness.*

Introduction

Türkiye's electronic industry contributes significantly towards employment generation and GDP (Özgüner et al., 2023). It has 2000 manufacturing companies, which employ more than 30,000 people (Teker et al., 2024). Given its importance, many international firms have established manufacturing units in Türkiye (Gurcam, 2023), including Microsoft, Intel, and General Electric (Demiryol & Soyaltin-Colella, 2024). Türkiye's consumer electronics segment is important to its economy. According to an estimate, its size is about USD 4.4 billion (Şarlıoğlu et al., 2023). In addition, the telecommunications and computer sectors also contribute to the GDP (Çelebi, 2023). Some well-known electronics companies in Türkiye are "Arcelik" and "Vestel." They are the largest exporters of electronics goods to Europe and other countries (Gurbuz & Tuncer, 2023). Moreover, the wearable electronic segment in Türkiye is expected to grow rapidly due to innovation and increasing health awareness (Yıldız et al., 2023). Like other countries, the electronics industry in Türkiye faces challenges such as rising production costs due to increased material and labor costs (Özgüner et al., 2023). Despite these challenges, researchers believe that Türkiye's electronic industry will grow. Some factors that may contribute to its growth are its strategic location, innovative technologies, and a favorable business environment (Teker et al., 2024).

The popularity of e-commerce has revolutionized how consumers interact with businesses (Ho Nguyen et al., 2024). Businesses realize its importance and have invested their resources in e-commerce (Hanaysha, 2022). Wakahia and Owoche (2024) assert that businesses can develop targeted marketing strategies by focusing on online consumers (Steinfeld & Lev-On, 2024). From consumers' perspective, online buying behavior is vital in shaping their shopping experience (Wakahia & Owoche, 2024). Online buying allows consumers to shop freely and easily anywhere (Nodirovna & Sharifogli, 2024). Moreover, online buying allows consumers to compare prices and read online reviews before making decisions (Young et al., 2022). Furthermore, it empowers consumers to control their shopping experience (Ho Nguyen et al., 2024). While shopping online, consumers can avoid physical store crowds and lengthy checkout lines (Wakahia & Owoche, 2024). It also allows consumers to buy products from the global market if unavailable locally

(Nodirovna & Sharifogli, 2024). Besides other benefits, online buying allows consumers to track orders, receive real-time updates, and engage with the customer's support (Steinfeld & Lev-On, 2024). Compared to past studies, we have examined:

1. *How does functional innovation affect consumer online buying- behavior?*
2. *How does functional innovation affect skeptical, indecisive, conscious, and investigative consumers' online buying behavior?*
3. *How do hedonic, social, altruistic, and cognitive innovations affect consumer online buying behavior?*

Literature Review

Online Buying Behavior

The number of online or e-commerce firms has been increasing worldwide. As a result, online buying behavior has also increased profoundly (García-Salirrosas, 2022). Consumers purchase online through a computer-based interface that connects them with virtual shops. It lets consumers interact with the seller digitally (Ho Nguyen et al., 2024). High-end smartphones have made it convenient for consumers to do online shopping (García-Salirrosas, 2022). Moreover, easy access to the internet has also increased online shopping significantly. Consumers can browse the relevant vendors' websites and make purchases effortlessly. Young people, in particular, constitute the majority of online shoppers, as they have been accustomed to technology since birth (Wakahia & Owoche, 2024). Furthermore, the growth of social networking and online sales sites has also promoted consumer's online buying behavior (Arifin et al., 2022). Furthermore, The COVID-19 outbreak has also increased online purchases (Young et al., 2022).

Factors affecting online buying behavior include attitude toward online shopping (Hoo et al., 2024), special circumstances (Hidayat & Annas, 2024), knowledge about the store, and purchase intentions (Martínez-Navalón et al., 2023). In addition, the image and trust of online vendors also affect online purchasing. Researchers believe male and female perceptions of online shopping are different. Males prefer to shop online because it is convenient and saves time. On the other hand, females prefer shopping in physical shops because they want to see and touch the products before purchasing (Arifin et al., 2022).

Dimensions of Online Buying Behavior

Skeptical Consumer

Skeptical consumers approach purchasing decisions with a critical and questioning mindset (Cicciù & Carmona, 2024). They are cautious and hesitant to trust marketing claims, advertisements, and sales pitches (Shamsi & Abad, 2024). Such consumers analyze information carefully and evaluate the evidence before deciding (Jamil et al., 2024). Skeptical consumers are also wary of exaggerated or misleading advertising and sales tactics, seeking independent reviews, ratings, and recommendations to validate product claims (Arifin et al., 2022). Their need for verification is driven by a desire to make informed decisions (Londaridze, 2024). As a result, marketers must adopt strategies that address these concerns, such as transparency, social proof, and independent verification, to build trust and credibility with skeptical consumers (Cicciù & Carmona, 2024).

Indecisive Buying Behaviour

Indecisive buyers do not make timely decisions, often leading to confusion and mixed opportunities (Altinkan & Armağan, 2024). Such buyers struggle to consider different options and spend too much time analyzing them. As a result, they often make wrong decisions (Lolo & Nurdiansyah, 2023). Besides seeking excessive input for validation, indecisive consumers frequently change their minds and avoid making decisions (Sanyal et al., 2021). Moreover, such consumers have low confidence and decision-making power. Therefore, they significantly depend on others' advice to validate the decisions they are about to make (Appel et al., 2024). Furthermore, such consumers suffer from increased stress, anxiety, and decreased productivity. Researchers have recommended several remedies for indecisive consumers (Lolo, Nurdiansyah, 2023). This includes practicing self-reflection and self-awareness, developing decision-making skills, and building confidence (Altinkan & Armağan, 2024). Thus, we argue that by addressing these issues, such individuals can enhance their decision-making (Lolo & Nurdiansyah, 2023).

Conscious Buying Behaviour

Conscious buyers, while purchasing, focus on the products that have the least adverse effect on the environment (Duque-Oliva et al., 2024). They ensure that the values of companies align with their social values. Moreover, they purchase products whose packaging is environment-friendly. Furthermore, they like firms that focus on corporate social responsibilities (Siddiqui et al., 2023). They choose products with minimal waste and sustainable materials and avoid impulse purchases (Kumar et al., 2022). Conscious buyers also read labels to ensure the material and packaging are environmentally friendly (Duque-Oliva et al., 2024).

Investigative Behaviour

Investigative consumers exhibit distinct online behavior characterized by extensive research, analysis, and evaluation before purchasing (Nurjaman, 2024). These consumers engage in thorough online research, scrutinizing product features, prices, and reviews to ensure they make an informed decision (Anderson et al., 2022). They often visit multiple websites, compare products, and seek expert opinions to validate their choices (Kaynak et al., 2023). Investigative consumers also tend to be more discerning, evaluating options and considering factors beyond price, such as quality, durability, and customer support (Alhalalmeh et al., 2024).

Types of Innovation

Functional Innovation

Functional innovation is developing new or improved products, services, or processes that enhance functionality, performance, or user experience (Akter et al., 2023). It improves the functional aspects of a product, service, or process by using new technologies and materials (Miller et al., 2023). Researchers believe functional innovation improves performance and reduces cost significantly (Liu et al. (2024). Additionally, it helps firms differentiate themselves from competitors and establish a leadership position in their market (Khalf & Ali, 2024).

Akter et al. (2023) assert that smartphones and electric vehicles have stemmed from functional Innovation. Many companies have successfully implemented hedonic innovation and reaped significant rewards (Akter et al., 2023). Luxury car brands like Ferrari and Porsche have created a sense of exclusivity and prestige. As a result, they command high prices and inspire customer loyalty (Srivastava & Menon, 2022). Similarly, Disney and Universal have developed immersive entertainment experiences that provide hedonic pleasure and emotional connections, resulting in repeat business and positive word-of-mouth. Thus, we argue that by focusing on hedonic innovation, companies can create unique and memorable experiences that drive customer loyalty and advocacy (Hu et al., 2021).

Hedonic Innovation

Hedonic innovation refers to developing new products, services, or experiences that provide customers pleasure, enjoyment, or entertainment (Khalf & Ali, 2024). Helmi et al. (2023) assert that this type of innovation focuses on creating emotional connections with customers, often by tapping into their desires, passions, or interests. Hedonic innovation can manifest in various ways, such as sensory experiences, emotional connections, entertainment, luxury, and exclusivity (Akter et al., 2023). Khalf and Ali

(2024) assert that virtual reality experiences and gourmet food and beverages are examples of hedonic innovation.

Hedonic innovation has numerous benefits (Zhao et al., 2024). For example, it creates strong emotional connections with customers, leading to brand loyalty and advocacy. Moreover, hedonic innovation helps companies differentiate themselves from competitors and establish a unique market position (Akter et al., 2023). Furthermore, hedonic innovation can justify premium pricing, as customers are willing to pay more for products or services that provide unique emotional experiences (Helmi et al., 2023). Thus, we argue that hedonic innovation can enhance a company's brand reputation, as customers associate the brand with pleasure, enjoyment, or entertainment (Khalf & Ali, 2024).

Social Innovation

Social innovation refers to developing new solutions, products, services, or processes that address social problems, improve the quality of life, and promote social change (Alvarenga et al., 2024). Researchers believe that non-profit organizations, social enterprises, governments, and businesses can benefit from social innovation (Prihadyanti et al., 2024). It also addresses social issues, including poverty, inequality, education, healthcare, and environmental sustainability (Khalf & Ali, 2024). Moreover, researchers believe social innovation often involves collaboration and co-creation with stakeholders, beneficiaries, communities, and organizations (Morandeira-Arca et al., 2024). Khalf and Ali (2024) assert that microfinance programs, education technology platforms, sustainable agriculture initiatives, and accessible healthcare programs are a few examples of social innovation. Additionally, social innovation generates economic benefits, such as job creation, economic growth, and increased competitiveness (Khalf & Ali, 2024). Furthermore, social innovation promotes environmental sustainability by reducing waste and pollution (Morandeira-Arca et al., 2024).

Altusim Innovation

Altruism innovation refers to developing new products, services, or solutions that prioritize the well-being of others (Olumekor et al., 2023)- often without the expectation of financial gain or personal benefit (Wang et al., 2024). Ahmad et al. (2023) believe this type of innovation is driven by a genuine concern for the welfare of others and a desire to create a positive social impact in society (Cuong et al., 2023). Other characteristics of altruism innovation are selflessness, empathy, and collaboration with non-profit organizations, governments, and local communities (Olumekor et al., 2022). Balaskas et al. (2023). assert that low-cost medical devices and small-scale farmers are examples of altruistic innovation.

Olumekor et al. (2023) believe that altruism innovation has several benefits. For example, it improves the lives of individuals and communities. Moreover, Altruism innovation increases empathy and understanding of individuals in a society (Wang et al., 2024). Additionally, altruistic innovation provides a sense of personal fulfillment and purpose as individuals and organizations collaborate to create positive social change (Ahmad et al., 2023). Researchers also believe that firms that engage in altruistic innovation can enhance their reputation and build trust with stakeholders (Cuong et al., 2023).

Cognitive innovation

Cognitive innovation develops new ideas, products, services, or processes that enhance human cognition, learning, and problem-solving abilities (Ncube et al., 2023). Researchers believe this innovation focuses on improving how people think, learn, and interact with information (Balzano & Marzi, 2023). Moreover, cognitive innovation manifests in various forms, such as artificial intelligence and machine learning (Yang & Shao, 2024). By leveraging these approaches, cognitive innovation aims to improve cognitive performance, increase productivity, and enhance overall quality of life (Qin et al., 2024).

Extant literature suggests that the development of brain-computer interfaces, intelligent tutoring systems, and neuro-feedback training are a few examples of cognitive innovation (Elsner, 2024). Moreover, Sund (2024) asserts that these innovations have the potential to revolutionize the way we learn, work, and interact with each other (Marzi et al., 2023). Researchers believe cognitive innovation can lead to better decision-making, improved critical thinking, and enhanced creativity (Yang & Shao, 2024). Moreover, cognitive innovation will profoundly impact education, healthcare, and the workforce (Ncube et al., 2023).

Hypothesis Development

Functional Innovation and Online Buying Behavior

Researchers believe functional innovation positively and negatively affects consumers' online buying behavior (Akram & Lavuri, 2024). The positive effect of functional innovation is that it increases customer satisfaction, improves conversion rates, and enhances customer loyalty (Roszko-Wójtowicz et al., 2024). As a result, it creates a more engaging and satisfying online shopping experience, leading to increased customer loyalty and retention (Akram & Lavuri, 2024).

Contrarily, excessive functional innovation can lead to information overload, making it difficult for customers to navigate and make purchasing decisions (Jiang et al., 2022). Moreover, over-reliance on functional innovation makes online retailers vulnerable to technical issues, which may adversely affect customer online buying behavior (Miller et al., 2023). Finally, excessive functional innovation leads to a homogenization of online shopping experiences (Khalf & Ali, 2024). As a result, it becomes difficult for retailers to differentiate themselves. Thus, we argue that online retailers can maximize the benefits of functional innovation by focusing on their target audience (Akram & Lavuri, 2024).

H1: Functional innovation “positively affects consumer online buying behavior.”

Functional Innovation and Skeptical Buying Behavior

Functional innovation increases transparency and credibility, addressing skeptical consumers' concerns about authenticity and reliability (Kim & Cha, 2024). It provides clear and accurate information about products or services, which helps skeptical consumers make informed decisions (Kiymalıoğlu, 2023). Moreover, functional innovation enhances the online shopping experience, making it more engaging, interactive, and personalized (Kim & Cha, 2024). This increases skeptical consumers' confidence and trust in purchasing decisions (Londaridze, 2024). Moreover, functional innovation facilitates social proof, allowing skeptical consumers to see reviews, ratings, and recommendations from other customers (Kim & Cha, 2024). This builds trust and credibility, as skeptical consumers are more likely to trust the opinions of their peers (Kim & Cha, 2024). Furthermore, functional innovation can also give skeptical consumers a sense of control, allowing them to customize and personalize their online experiences (Kiymalıoğlu, 2023). This reduces concerns about risk and uncertainty, as skeptical consumers feel more in control of their purchasing decisions (Londaridze, 2024). Thus, we argue that functional innovation has the potential to transform skeptical consumers' online behavior, building trust, credibility, and confidence in the online shopping experience (Kim & Cha, 2024).

H1A: Functional innovation “positively affects skeptical consumer online buying behavior.”

Functional Innovation and Indecisive Consumer

Past studies have shown that functional innovation positively affects indecisive consumer online behavior (Vinoi et al., 2024). Camilleri et al. (2024) believe indecisive consumers need help making purchase decisions. However, functional innovation facilitates indecisive consumers' online purchasing decisions by providing tools and features that simplify decision-making (Altınkan & Armağan, 2024). Vinoi et al.

(2024) assert that functional innovation helps retailers provide personalized product recommendations, product comparisons, and customer reviews to help indecisive consumers make more informed decisions. Moreover, functional innovations such as virtual try-ons and 360-degree product views provide indecisive consumers with a more immersive and engaging shopping experience (Vinoi et al., 2024). As a result, they can evaluate products and make more confident purchasing decisions (Altınkan & Armağan, 2024).

Contrarily, functional innovation can also hinder indecisive consumers' online purchasing decisions if perceived as overwhelming or confusing (Vinoi et al., 2024). For example, too many product options, complex navigation, and excessive information exacerbate indecisiveness, negatively affecting online buying behavior (Camilleri et al., 2024). To target indecisive consumers effectively, online retailers should develop functional innovations that simplify decision-making and provide clear and concise information (Altınkan & Armağan, 2024).

H1B: Functional innovation “positively affects indecisive consumer online buying behavior.”

Functional Innovation on and Conscious Consumer

Many studies highlighted that functional innovation positively affects conscious consumers' online buying behavior (Nurjaman, 2024). Conscious consumers are concerned about social, environmental, and ethical issues, and functional innovation can either support or contradict their values (Sharma et al., 2022). Researchers believe functional innovation supports conscious consumers' values by providing tools and features that promote sustainability, transparency, and social responsibility (Siddiqui et al., 2023). For instance, online retailers can implement functional innovations such as carbon footprint calculators, sustainable packaging options, and fair trade certifications (Kumar et al., 2022). These features appeal to conscious consumers' values. Moreover, functional innovations, including product reviews, ratings, and recommendations from other conscious consumers, can help build trust and credibility, influencing purchasing decisions (Nurjaman, 2024).

On the contrary, functional innovation can contradict conscious consumers' values if it prioritizes convenience, speed, and low costs over sustainability and social responsibility (Nurjaman, 2024). For example, functional innovations that promote fast and cheap shipping at the expense of increased carbon emissions may adversely affect conscious consumer online buying behavior (Sharma et al., 2022). Moreover, functional innovations using manipulative tactics, such as dark patterns, to influence purchasing

decisions contradict conscious consumers' values (Sharma et al., 2022). As a result, it will negatively affect conscious consumers' online behavior (Siddiqui et al., 2023).

H1C: "Functional innovation positively affects consumer online buying behavior."

Functional Innovation and Investigative Consumer

Past studies have cited the substantial effect of functional innovation on investigative consumers' online behavior (Kaynak et al., 2023). Investigative consumers thoroughly research and evaluate products before purchasing (Akter et al., 2023). Some studies found that functional innovation can facilitate investigative consumers' research and evaluation by providing tools and features that offer detailed product information, comparisons, and analysis (Miller et al., 2023). For example, online vendors can implement functional innovations such as product configurators, virtual product demonstrations, and detailed product specifications (Liu. et al., 2023). These details cater to investigative consumers' desire for comprehensive information (Kaynak et al., 2023).

On the contrary, functional innovation obstructs investigative consumers' research and evaluation if perceived as overly complex, confusing, or misleading (Akter et al., 2023). For example, functional innovations that use complex navigation or manipulative tactics can frustrate investigative consumers (Miller et al., 2023). As a result, they may seek information elsewhere (Liu. et al., 2023). Furthermore, functional innovations focusing on style over substance can detract investigation consumer evaluation processes. Online retailers can target investigative consumers by developing functional innovations that provide comprehensive and accurate product information that caters to their desire for detailed research and evaluation (Kaynak et al., 2023).

H1D: "Functional innovation positively affects investigative consumer online buying behavior."

Hedonic Innovation and Consumer Online Buying Behavior

Many past studies document that hedonic innovation profoundly impacts consumer online buying behavior (Khalf & Ali, 2024). Hedonic innovation refers to developing new or improved products, services, or experiences that provide sensory pleasure, enjoyment, and emotional fulfillment (Zhao et al., 2024). Akter et al. (2023) assert that hedonic innovation can significantly influence online consumer behavior, increasing engagement, satisfaction, and loyalty (Khalf & Ali, 2022). Moreover, hedonic innovation can engage consumers with a brand by creating an emotional connection. As a result, it promotes online buying behavior (Zhao et al., 2024). Furthermore, Kaynak et al. (2023) assert that hedonic innovation provides a sensory experience that simulates the

physical shopping experience.

Additionally, hedonic innovation promotes personalized experiences catering to consumer preferences and interests (Khalf & Ali, 2024). Furthermore, hedonic innovation facilitates social interaction and community building. Zhao et al. (2024) believe hedonic innovation also provides novelty and surprise to keep consumers engaged and interested (Akter et al. (2023). On the contrary, complex, unclear, and inaccurate functional innovation adversely affects consumers' online buying behavior (Khalf & Ali, 2024). For instance, functional innovations that use complex technical language or manipulative tactics negatively affect consumers' online buying behavior (Zhao et al., 2024). Furthermore, functional innovations focusing on style over substance detract investigative consumers from their consumer research and evaluation processes (Kaynak et al., 2023). To effectively target investigative consumers, online retailers should develop functional innovations that provide comprehensive and accurate product information (Zhao et al., 2024).

H2: "Hedonic innovation positively affects consumer online buying behavior."

Social Innovation and Online Buying Behavior

Social innovation fosters a sense of community and social connection, enabling consumers to interact with each other in new and meaningful ways (Morandeira-Arca et al., 2024). As a result, it increases trust, loyalty, and advocacy among consumers (Prihadyanti et al., 2024). Researchers believe social innovation allows consumers to share their experiences, opinions, and feedback, influencing others' purchasing decisions (Khalf & Ali, 2024). This can create a ripple effect, where consumers are more likely to purchase products or services recommended by their peers (Prihadyanti et al., 2024). Moreover, social innovation enables brands to showcase their values, mission, and social responsibility initiatives, resonating with consumers who share similar values. This can increase brand loyalty and affinity (Morandeira-Arca et al., 2024). Furthermore, social innovation facilitates personalized and dynamic online experiences, allowing consumers to tailor their interactions and purchases to their preferences (Prihadyanti et al., 2024). This can increase satisfaction, engagement, and repeat business (Khalf & Ali, 2024). Furthermore, social innovation empowers consumers to participate in product development, providing feedback, suggestions, and ideas that can shape the creation of new products or services. This can increase consumer satisfaction, loyalty, and advocacy (Morandeira-Arca et al., 2024).

H3: "Social innovation positively affects consumer online buying behavior."

Altruism Innovation and Online Buying Behavior

Past studies found inconsistent results on the association between altruism innovation and online buying behavior (Sharma et al., 2022). Some studies document that altruism positively affects consumers' online buying behavior (Nurjaman, 2024). These studies argue that consumers are likelier to purchase from companies that prioritize altruism and social responsibility (Altınkan & Armağan, 2024). Moreover, researchers believe that innovation in altruism also enhances a company's reputation and brand image (Nurjaman, 2024). Consequently, it increases consumer trust and loyalty (Kumar et al., 2022). Moreover, researchers believe that altruism innovation creates an emotional connection between consumers and the brand, fostering a sense of shared values and purpose (Londaridze, 2024).

On the contrary, innovation in altruism negatively affects consumer online behavior (Sharma et al., 2022). For example, many firms use altruism innovation as a marketing tactic without prioritizing social responsibility or environmental sustainability (Altınkan & Armağan, 2024). Many researchers believe this tactic is greenwashing, which leads to skepticism and mistrust (Nurjaman, 2024). Furthermore, researchers assert that consumers may be skeptical of companies' altruistic claims, particularly if their practices are not transparent (Altınkan & Armağan, 2024).

H4: "Altruism innovation positively affects consumer online buying behavior."

Cognitive Innovation and Online Behavior

The effect of cognitive innovation on consumer online behavior is positive and negative (Wang et al., 2024). Cognitive innovation also promotes immersive online experiences (Cicciù & Carmona, 2024). Moreover, it improves decision-making, as consumers are presented with novel, relevant information that facilitates more informed choices (Londaridze, 2024). Researchers believe cognitive innovation promotes brand loyalty, as consumers connect emotionally with online brands that provide unique and memorable experiences (Arifin et al., 2022).

In contrast, cognitive innovation can also negatively affect consumer online buying behavior (Wang et al., 2024). Çakıroğlu (2022) asserts that novel and unfamiliar online experiences can also erode consumer trust, particularly if the innovation is perceived as intrusive or manipulative. Moreover, cognitive innovation increases consumers' anxiety, especially if their online experience is complex or difficult to navigate (Cicciù & Carmona, 2024). Thus, we argue that cognitive innovation's effect on consumer online behavior is a delicate balance between enhancing engagement and decision-making (Arifin et al., 2022).

H5: "Cognitive innovation positively affects consumer online buying behavior."

Material and Method

Research, Population, and Sample Selection

We have focused on Türkiye's electronic industry (Özgüner et al., 2023). It has 2000 manufacturing companies, which employ more than 30,000 people. Its contribution to GDP is 2% (Teker et al., 2024). Given its importance, many international firms have established manufacturing units in Türkiye (Gurcam, 2023), including Microsoft, Intel, and General Electric (Demiryol& Soyaltin-Colella, 2024). Türkiye has various segments, but consumer electronics is the largest, valued at USD 4.4 billion (Şarlıoğlu et al., 2023). Some well-known electronics companies in Türkiye are "Arcelik" and "Vestel." They are significant exporters of electronics goods to Europe and other countries (Gurbuz & Tuncer, 2023).

Researchers have suggested different techniques for calculating the minimum sample size (Ghauri et al., 2020). Some suggest using standard deviation, the desired margin of error, and the confidence level from the target population (Haslam et al., 2024). Others suggest using power analysis to calculate the minimum sample size (Bell et al., 2022). Another commonly used technique is the Raosoft calculator (Privitera, 2024). We have used the Raosoft calculator to calculate the sample size. The target population for this study is 30,000. Using this population, we found that a sample of 387 would be appropriate. However, we distributed 450 questionnaires and received 437 complete instruments.

Scales and Measures

Researchers suggest using a closed-ended questionnaire for large studies. Our study sample size was large, so we adopted a closed-ended questionnaire from past studies. The scale used in the questionnaire is based on a five-point Likert Scale (five = high agreement and one = low agreement). We translated the English version of the questionnaire into Turkish, as our target population is not well-versed in English.

Pilot Test

Large-scale research is time-consuming and expensive. Therefore, researchers suggest conducting a pilot test before the study (Edeh et al., 2023). Moreover, it helps identify inconsistencies and flaws in the research design. This allows researchers to revise and improve research design before investing time and resources in large-scale research projects (Ghauri et al., 2020). Given its importance, the study also conducted a pre-test. We found no ambiguities in the wording of the questionnaire, and reliability

values based on the pre-test were within the prescribed limit (Bell et al., 2022).

Statistical Analysis

The study used SPSS for statistical analysis. Initially, we fed the collected data into the Excel sheet, which we then imported into SPSS. Then, we cleaned it by removing missing values, outliers, and other errors. We then generated reliability, validity, and hypothesis results.

Findings of the Research

Respondent Profile

A demographic profile is important in research (Privitera, 2024). It provides a detailed understanding of the characteristics of the sample (Edeh et al., 2023). Bell et al. (2022) stress that demographic profiles help researchers identify the respondents' target audiences, trends, and patterns. Moreover, it allows marketers to identify target segments. Table 1 depicts the respondents' profiles.

Table 1 General Information about Participants

Gender	Percentage	Age	Percentage
Female	42.60%	18-21	3.40%
Male	57.40%	22-25	9.80%
Total	100.00%	26-29	11.80%
Marital status	Percentage	30-33	29.90%
Married	61.30%	34-37	30.40%
Single	38.70%	38-41	14.70%
Total	100.00%	Total	100.0%
Monthly Income	Percentage	Education	Percentage
8506 and below	19.10%	High school	6.90%
8507-9999	27.00%	Associate Degree	26.00%
10000-14999	12.30%	License	11.80%
15000-249999	19.60%	Degree	38.20%
25000 and above	22.00%	PhD and above	17.10
Total	100.00%	Total	100.00%
Jobs	Percentage	Tools Used	Percentage
Public sector	47.10%	Television	6.90%
Private sector	17.60%	Internet	90.00%
Employee	13.20%	Fax –Letter	1.00%
Housewife	22.10%	Others	2.10%
Total	100.00%	Total	100%

Convergent Validity

Internal consistency and convergent validity are crucial in research (Haslam et al., 2024). Internal consistency confirms that items within a scale measure a single concept (Privitera, 2024). Convergent validity ensures that a measure accurately captures the intended concept (Bell et al., 2022). Establishing both ensures accurate and reliable results, increasing confidence in research findings (Ghauri et al., 2020). Table 2 depicts the related results.

Table 2: Internal Consistency and Convergent Validity

Hypotheses	Cronbach's Alpha	Composite Reliability (rho_a)	Average Variance Extracted (AVE)
Altruism Consumer Innovativeness	0.701	0.706	0.632
Cognitive Consumer Innovativeness	0.803	.0816	0.832
Conscious	0.813	0.821	0.848
Functional Consumer Buying Behavior	0.823	0.828	0.669
Hedonic Consumer innovativeness	0.798	0.801	0.601
Indecisive	0.769	0.778	0.794
Purchase Behavior	0.811	0.815	0.624
Investigative Knowledge	0.823	0.828	0.557
Skeptical	0.845	0.865	0.68
Social Consumer Innovativeness	0.834	0.838	0.629

All the constructs' values exceed the threshold level of 0.700. The AVE values for all “constructs exceed the 0.500 threshold level.” These results suggest acceptable internal consistency and convergent validity” of the constructs (Haslam et al., 2024).

Discriminant Validity

Discriminant validity confirms that a latent variable is unique and measures a specific construct, not a different one (Privitera, 2024). The study used Fornell and Archer's (1981) criteria for discriminant validity (Haslam et al., 2024). Table 3 depicts the related results.

Table3: Discriminant Validity

Constructs	ALT	CG	CN	FN	HND	IND	BB	INV	SKB	SING
Altruism	0.795									
Cognitive	0.526	0.912								
Conscious	0.325	0.528	0.921							
Functional	0.074	0.197	0.444	0.818						
Hedonic	0.61	0.821	0.699	0.383	0.775					
Indecisive	0.118	0.335	0.519	0.501	0.491	0.891				
B. Behaviour	0.296	0.529	0.707	0.498	0.724	0.685	0.79			
Investigative	0.273	0.445	0.661	0.59	0.636	0.721	0.838	0.746		
Skeptical	0.317	0.288	0.286	0.355	0.354	0.355	0.372	0.395	0.825	
S. Innovativeness	0.327	0.56	0.592	0.396	0.759	0.408	0.558	0.525	0.253	0.793

We found that the square root of AVE for each construct exceeded Pearson Correlation values, indicating that each construct measures a unique concept.

Hypothesis Results

This study has examined the impact of functional, hedonic, social, and altruistic innovativeness on online buying behavior. We also examined the effect of functional innovation on the sub-dimensions of consumer buying behavior (i.e., skeptical, indecisive, and conscious, investigative). The results follow in Table 4.

Table 4: Hypotheses Results

Hypotheses	β	T. Value	P. Value	Result
Functional Innovation -> Online Buying Behavior (H1)	0.236	12.082	0.000	Accepted
Functional innovation -> Skeptical Behavior (H1A)	0.316	10.845	0.000	Accepted
Functional Innovation-> Indecisive Behavior (H1B)	0.322	12.448	0.000	Accepted
Functional. Innovation -> Conscious Behavior (H1C)	0.171	6.996	0.000	Accepted
Functional Behavior -> Investigative Behavior (H1D)	0.380	16.508	0.000	Accepted
Hedonic Innovation ->Online Buying Behavior (H2)	0.826	23.343	0.000	Accepted
Social. Innovation ->Online Buying Behavior (H3)	0.199	3.060	0.001	Accepted
Altruism Innovation ->Online Buying Behavior (H4)	0.193	8.212	0.000	Accepted
Hedonic Innovation -> Online Buying Behavior (H5)	0.127	3.540	0.001	Accepted

The results support all the hypotheses. The strongest effect is on Hypothesis 2 ($\beta=0.826$) and the lowest is in Hypothesis 5 ($\beta=0.127$).

Discussion and Conclusion

Discussion

The “study documents that functional innovation positively affects consumer online buying behavior (H1).” Researchers believe functional innovation positively and negatively affects consumers' online buying behavior (Akram & Lavuri, 2024). The positive effect of functional innovation is that it increases customer satisfaction, improves conversion rates, and enhances customer loyalty (Roszko-Wójtowicz et al., 2024). As a result, it creates a more engaging and satisfying online shopping experience, leading to increased customer loyalty and retention (Akram & Lavuri, 2024). Contrarily, excessive functional innovation can lead to information overload, making it difficult for customers to navigate and make purchasing decisions (Jiang et al., 2022). Moreover, over-reliance on functional innovation makes online retailers vulnerable to technical issues, which may adversely affect customer online behavior (Miller et al., 2023).

The study found that “functional innovation positively affects skeptical consumer online buying behavior” (H1A). Functional innovation increases transparency and credibility, addressing skeptical consumers' concerns about authenticity and reliability (Kim & Cha, 2024). It provides clear and accurate information about products or services, which helps skeptical consumers make informed decisions (Kiymalıoğlu, 2023). Moreover, functional innovation enhances consumer's online shopping experience, making it more engaging, interactive, and personalized (Kim & Cha, 2024). This increases skeptical consumer's confidence and trust in purchasing decisions (Londaridze, 2024). Moreover, functional innovation facilitates social proof, allowing skeptical consumers to see reviews, ratings, and recommendations from other customers (Kim & Cha, 2024). This builds trust and credibility, as skeptical consumers are more likely to trust the opinions of their peers (Kim & Cha, 2024). Furthermore, functional innovation can also give skeptical consumers a sense of control, allowing them to customize and personalize their online experiences (Kiymalıoğlu, 2023). This reduces concerns about risk and uncertainty, as skeptical consumers feel more in control of their purchasing decisions (Londaridze, 2024).

The study found that “functional innovation positively affects indecisive consumer online buying behavior (H1B).” Past studies have shown that functional innovation positively affects indecisive consumer online behavior (Vinoi et al., 2024). Camilleri et al. (2024) believe indecisive consumers need help making purchase decisions. Researchers believe functional innovation facilitates indecisive consumers' online purchasing decisions by providing tools and features that simplify decision-making (Altınkan & Armağan, 2024). Vinoi et al. (2024) assert that functional innovation helps retailers

provide personalized product recommendations, product comparisons, and customer reviews to help indecisive consumers make more informed decisions. Moreover, functional innovations such as virtual try-ons and 360-degree product views provide indecisive consumers with a more immersive and engaging shopping experience (Vinoi et al., 2024). As a result, they can evaluate products and make more confident purchasing decisions (Altınkan & Armağan, 2024).

The study found that “functional innovation positively affects conscious consumer online buying behavior (H1C). Many studies highlighted that functional innovation positively affects conscious consumers' online buying behavior (Nurjaman, 2024). Conscious consumers are concerned about social, environmental, and ethical issues, and functional innovation can either support or contradict their values (Sharma et al., 2022). Researchers believe functional innovation supports conscious consumers' values by providing tools and features that promote sustainability, transparency, and social responsibility (Siddiqui et al., 2023). For instance, online retailers can implement functional innovations such as carbon footprint calculators, sustainable packaging options, and fair trade certifications (Kumar et al., 2022). These features appeal to conscious consumers' values. Moreover, functional innovations, including product reviews, ratings, and recommendations from other conscious consumers, can help build trust and credibility, influencing purchasing decisions (Nurjaman, 2024).

We found that “functional innovation positively affects investigative consumer online buying behavior (H1D).” Past studies have cited the substantial effect of functional innovation on investigative consumers' online behavior (Kaynak et al., 2023). Investigative consumers thoroughly research and evaluate products before purchasing (Aker et al., 2023). Some studies found that functional innovation can facilitate investigative consumers' research and evaluation by providing tools and features that offer detailed product information, comparisons, and analysis (Miller et al., 2023). For example, online vendors can implement functional innovations such as product configurators, virtual product demonstrations, and detailed product specifications (Liu. et al., 2023). These details cater to investigative consumers' desire for comprehensive information (Kaynak et al., 2023). On the contrary, functional innovation obstructs investigative consumers' research and evaluation if perceived as overly complex, confusing, or misleading (Aker et al., 2023). For example, functional innovations that use complex navigation or manipulative tactics can frustrate investigative consumers (Miller et al., 2023). As a result, they may seek information elsewhere (Liu. et al., 2023).

We found hedonic innovation positively affects consumer online behavior (H2).” Hedonic innovativeness is an important precursor of online buying behavior (Khalf &

Ali, 2024). Many past studies document that hedonic innovation profoundly impacts consumer online buying behavior (Khalf & Ali, 2024). Hedonic innovation refers to developing new or improved products, services, or experiences that provide sensory pleasure, enjoyment, and emotional fulfillment (Zhao et al., 2024). Akter et al. (2023) assert that hedonic innovation can significantly influence online consumer behavior, increasing engagement, satisfaction, and loyalty (Khalf & Ali, 2022). Moreover, hedonic innovation can engage consumers with a brand by creating an emotional connection. As a result, it promotes online buying behavior (Zhao et al., 2024). Moreover, Kaynak et al. (2023) assert that hedonic innovation provides a sensory experience that simulates the physical shopping experience.

The study found that “social innovation positively affects consumer online buying behavior (H3).” Social innovation fosters a sense of community and social connection, enabling consumers to interact with each other and brands in new and meaningful ways (Morandeira-Arca et al., 2024). As a result, it increases trust, loyalty, and advocacy among consumers (Prihadyanti et al., 2024). Researchers believe social innovation allows consumers to share their experiences, opinions, and feedback, influencing others' purchasing decisions (Khalf & Ali, 2024). This can create a ripple effect, where consumers are more likely to purchase products or services recommended by their peers (Prihadyanti et al., 2024). Moreover, social innovation enables brands to showcase their values, mission, and social responsibility initiatives, resonating with consumers who share similar values. This can increase brand loyalty and affinity (Morandeira-Arca et al., 2024).

This study found that “altruism innovativeness positively affects consumer online buying behavior” (H4). Past studies found inconsistent results on the association between altruism innovation and online buying behavior (Sharma et al., 2022). Some studies document that altruism positively affects consumers' online buying behavior (Nurjaman, 2024). These studies argue that consumers are likelier to purchase from companies that prioritize altruism and social responsibility (Altınkan & Armağan, 2024). Moreover, researchers believe that innovation in altruism also enhances a company's reputation and brand image (Nurjaman, 2024). Consequently, it increases consumer trust and loyalty (Kumar et al., 2022). Moreover, researchers believe that altruism innovation creates an emotional connection between consumers and the brand, fostering a sense of shared values and purpose (Londaridze, 2024). On the contrary, innovation in altruism negatively affects consumer online behavior (Sharma et al., 2022).

We found that “cognitive innovation positively affects consumer online buying behavior among consumers (H5).” The effect of cognitive innovation on consumer

online behavior is positive and negative (Wang et al., 2024). Cognitive innovation also promotes consumer online immersive and interactive experiences (Cicciù & Carmona, 2024). Moreover, it improves decision-making, as consumers are presented with novel, relevant information that facilitates more informed choices (Londaridze, 2024). Researchers believe cognitive innovation promotes brand loyalty, as consumers connect emotionally with online brands that provide unique and memorable experiences (Arifin et al., 2022).

In contrast, studies document that cognitive innovation can also negatively affect consumer online buying behavior (Wang et al., 2024). Çakıroğlu (2022) asserts that novel and unfamiliar online experiences can also erode consumer trust, particularly if the innovation is perceived as intrusive or manipulative. Moreover, cognitive innovation increases consumers' anxiety, especially if their online experience is complex or difficult to navigate (Cicciù & Carmona, 2024).

Conclusion

Online buying behavior has surged significantly in the prevailing technological era, marking a notable shift in consumer habits. Consumers purchase online through a computer-based interface that connects with the virtual shops. It lets consumers interact with the seller digitally. It lets consumers interact with the seller digitally. Moreover, high-end smartphones like the iPhone have made shopping online convenient (García-Salirrosas, 2022). We have focused on Türkiye as it significantly contributes to GDP and employment generation. The study examined the impact of functional innovation on consumer online behavior. The impact of functional innovation on consumer's skeptical, indecisive, conscious, and investigative behavior. The impact of hedonic, social, altruistic, and cognitive innovations on consumer online buying behavior. Our results support all the proposed hypotheses. The findings aligned with the past studies.

Implications

Skeptical consumers avoid risk, are cautious decision-makers, and are concerned about transparency and data privacy. Firms dealing with such consumers must build trust through transparent communication and deliver the promised value proposition. Indecisive consumers need help with decision-making. Before making purchase decisions, they compare many options. Still, they often make wrong buying decisions. Firms that deal with such consumers must provide product information and reviews of other consumers who have previously used their goods and services. Moreover, firms can gain the confidence of indecisive consumers by providing them with social proof, including customer testimonials and influencer engagement.

Conscious consumers are more concerned about the environment than other consumers. Firms that deal with such consumers must adopt sustainable practices, transparent labeling, and ethical marketing. However, firms may also develop and collaborate with social and environmental organizations and market innovative sustainable products. These measures also contribute to attracting conscious consumers. Investigative consumers obtain in-depth information about goods and services before deciding. They also value a firm's reputation and compare the value propositions of multiple firms before buying. To engage such consumers, firms must provide authentic customer reviews and detailed product comparisons and display company values and mission statements on their web pages.

Limitations and Future Research

The study collected data from Türkiye's electronic industry. We recommend that others collect data from other industries. The study examined the impact of the five innovations —functional, hedonic, socially conscious, altruism, and cognitive— on online buying behaviors. We recommend that others use the same conceptual framework for the buying behavior of physical stores. The study did not use any moderators or mediators. We advise others to include mediators or moderators, such as perceived risks and demographic factors. Our research design was quantitative. Besides other advantages, it has certain limitations, such as respondents being unable to share their perceptions. Thus, we advise others to use mixed or qualitative research design.

Annexure: 1

Constructs and Items Used in the Questionnaire

Çevrimiçi Satın Alma Ölçeği

Çevrimiçi elektronik eşya değerlendirmeleri, farklı özelliklerin tutarsız puan (yıldız) derecelendirmelerini içerir

Çevrimiçi elektronik eşya değerlendirmeleri, elektronik eşya özellikleri hakkında yorumlar ile puan (yıldız) değerlendirmeleri arasında çelişki oluşturmaktadır.

Çevrimiçi elektronik eşya değerlendirmeleri, aynı elektronik eşya özelliği hakkında karmaşık (farklı) puan (yıldız) değerlendirmeleri içermektedir.

Çevrimiçi elektronik eşya yorumları bilgilendirme, elektronik eşya özellikleri hakkında tutarsızlığa neden olmaktadır.

Çevrimiçi elektronik eşya yorumlarında tüketicilerin karmaşık ve farklı deneyimleri, elektronik eşya özellikleri hakkında çelişkili görüşler sunar.

Çevrimiçi elektronik eşya yorumları, elektronik eşya özellikleri ile ilgili çok fazla farklı görüş sunmaktadır.

Çevrimiçi elektronik eşya değerlendirmelerine yönelik çelişkili tepkilere rastlıyorum.

Çevrimiçi elektronik eşya değerlendirmelerini incelediğimde verilen tepkilerden dolayı kendimi çelişki içerisinde hissediyorum.

Çevrimiçi değerlendirmeleri inceledikten sonra, çevrimiçi incelemelere yönelik düşünce ve duygularımda gerginlik hissediyorum.

Çevrimiçi elektronik eşya değerlendirmelerini bilgi olarak kullanmak konusunda kararsız hissediyorum.

Çevrimiçi değerlendirmeleri inceledikten sonra elektronik eşya hizmetini satın alma olasılığım oldukça yüksektir.

Olumlu ve olumsuz çevrimiçi değerlendirmeleri ve yorumları inceledikten sonra elektronik eşya hizmeti satın alma isteğim artmaktadır.

Çevrimiçi değerlendirmelerine karşı kendimi kararsız hissediyorum.

Çevrimiçi elektronik eşya değerlendirmelerini incelemek, satın almadan önce daha iyi veya doğru karar vermemi sağlar.

Çevrimiçi elektronik eşya değerlendirmelerini incelemek satın alma konusundaki ilgimi arttırmaktadır.

Çevrimiçi elektronik eşya değerlendirmelerinden emin olmak için, sık sık başkalarının ne kullandığını gözlemlerim.

Deneyimim olsa bile sık sık elektronik eşya hizmetleri hakkında sorular sorarak bilgi almaya çalışırım.

Bir elektronik eşya markasından elde edilebilecek en iyi alternatifi seçmeye yardımcı olması için 5 insanlara danışırım.

Elektronik eşya alışverişi yapmadan önce bu eşya hakkında, arkadaşlarımdan, meslektaşlarımdan veya ailemden sık sık bilgi toplarım.

Güdülenmiş Tüketici Yenilikçiliği Ölçeği

Yeni ürünleri satın almaya istekliyim.

Yakınlarıma ve arkadaşlarıma aldığım yeni ürünleri tavsiye ederim.

Gelecekte de yeni ürünleri almayı düşünüyorum.

Başkalarını etkileyecek yenilikleri satın almayı severim.

Kendimi başkalarından ayıracak yeni bir ürüne sahip olmayı isterim.

Arkadaşlarımla sahip olmadıkları yeni ürünleri alarak onların önünde olmayı isterim.

Başkaları tarafından görülebilen ve saygınlığımı artıracak yenilikleri kesinlikle satın alırım.

Zaman tasarrufu sağlayacak yeni bir ürün piyasaya çıkarsa, hemen satın alırım.

Daha fazla konfor sağlayan yeni bir ürünü satın almak konusunda tereddüt etmem.

Daha fazla fonksiyonelliğe sahip yeni bir ürünü satın alma konusunda tereddüt etmem.

Daha kullanışlı yeni bir ürün bulursam onu satın almayı tercih ederim.

Yenilikleri kullanmak bana haz verir.

Yeni ürünler almak kendimi iyi hissettirir.

Çoğunlukla sorunumu çözmeye yardım eden yenilikleri satın alırım.

Bilgilerimi geliştirecek yenilikleri bulur ve bu yenilikleri hemen satın alırım.

Beni mantıksal olarak düşünmeye sevk eden yeni ürünleri sıklıkla satın alırım.

Zihnimi çalıştıran yeni ürünleri satın alan bir insanımdır.

Sıklıkla yeni ürünleri ve markalar hakkında bilgi araştırırım.

Yeni markaları tanıtan dergileri ve sayfalarını severim.

Sürekli yeni ürünleri deneme arayışı içerisindeyim.

Yeni ürünler ve markalar hakkında bilgilerin verildiği yerlere gitmeyi severim.

Alışverişe çıktığımda yeni ürün ve markaları kontrol etmeye fazla zaman ayırmam.

Yeni bir ürünü satın almakla ilgilendiğimde o hizmeti kullanmış olan arkadaş ve tanıdıklarımın bana o hizmeti denemem gerektiğine ilişkin önerilerine güvenmem.

Yeni bir ürün satın alıp almama kararını verirken deneyimli arkadaş ve akrabalarımın tavsiyelerine güvenmem.

Yeni ürünleri satın alıp almama kararını vermeden önce tecrübeli arkadaşlarımla bilgilerine güvenmem.

Yeni ürünleri satın alma kararını o ürünleri denemiş olan arkadaşlarımla fikirlerine bağlı olmadan veririm.

Yeni bir markayı satın almadan önce, markayla ilgili deneyimi olan bir arkadaşımı danışmayı tercih ederim.

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