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PURCHASE BEHAVIOR IN MAKING DECISION IN SMALL AND MEDIUM-SIZED ENTERPRISES IN SERVICE SECTOR FOR INNOVATIVE SOLAR POWER AIRCONDITIONING SYSTEM

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Abstract

This article aims to explore consumer behavior in purchasing decisions of solar air conditioning innovations of small and medium enterprises (SMEs) in the service sector. From the study of the concept related theory, it can be concluded that consumer behavior in purchasing decisions of solar air conditioning innovations of small and medium enterprises in the service sector consisted of Government Policies, Product feature Innovations, Consumer Innovation, Consumers Perceived Value.

KEYWORDS: Consumer Behavior, Solar Air Conditioning Innovation, SMEs, Service Sector.

INTRODUCTION

Since Thailand is in a hot and humid climate, it is necessary to use air conditioning to control the temperature and humidity appropriately to make the residents comfortable. In Thailand, there are 22.70 million units of household air conditioners (National Statistical Office, 2017) and the quantity is continuously increasing due to the weather with higher temperature every year. Air conditioners account for about 60% of the building's total electricity consumption (Ministry of Energy, 2022) causing the electricity consumption due to the use of air conditioners to increase steadily.

The government has announced a 20-year national strategy covering the years 2018-2037, which covers efficient energy resource

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management, research and development of technology and innovation, energy management and conservation including investing in high-efficiency equipment modifications, promoting the use of technologies and innovations to apply to achieve energy conservation (Office of Energy Policy and Planning , 2020).

As the government's policy focuses on the production of electricity from renewable energy and the conversion of high-efficiency equipment make in the present. Various business sectors have invested in electricity generation from renewable energy such as solar energy, wind energy that is more widespread, for example, air conditioner manufacturers have developed air conditioners to have higher efficiency, for example, using inverter technology in air conditioners resulting in inverter air conditioners which can save up to 30% of energy and the development of inverter air conditioners to be able to use solar energy as an energy source for air conditioners. It can save up to 75% energy compared to conventional air conditioners. The manufacturers in Thailand have successfully developed the innovation of solar air conditioners and registered in the Thai innovation account (Bureau of the Budget, 2020).

An innovative solar air conditioner suitable for use during working hours. It is very cost effective and ideal for the business sector that uses air conditioning during the day and energy costs in the office such as lighting, cooling, heating of the service sector, the cost is higher than other business sectors.

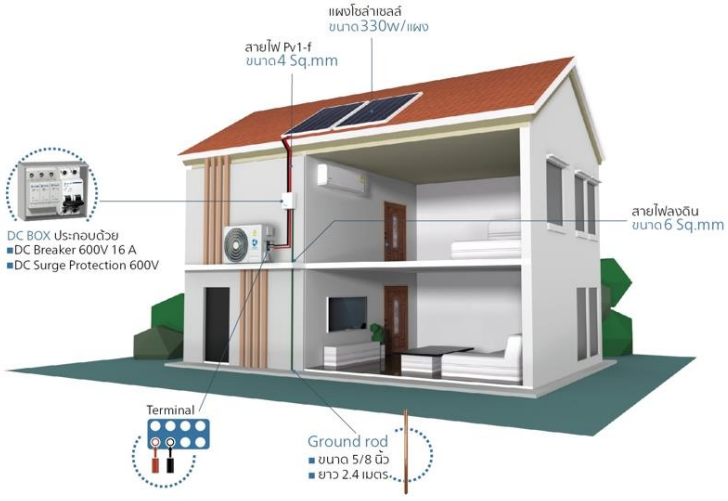
Innovation of solar air conditioners

At present, consumers have demands for air conditioning products that are different from those in the past that consumers prefer conventional air conditioning systems that respond to the basics of air conditioning, namely fast cooling, quietness and durability. Consumers now required more about the features of the air conditioner, such as inverter technology that helps the air conditioner to be efficient in saving more energy than conventional systems (Ministry of Energy, 2022). The inverter air conditioner is an air conditioner that can control the speed of the motor used to drive the compressor in order to keep the refrigerant circulation rate suitable for the cooling load when speed of motor and compressor to be controlled. Therefore, it can be adjusted to suit the cooling load that is available at that time without the need to stop the compressor operation periodically. But will rely on reducing the speed of the compressor when the cooling load is reduced by the compressor continues to work continuously. Therefore, it can control the temperature of the evaporator coil and the temperature control area relatively stable and better than conventional air conditioners. Therefore, it saves more energy than conventional systems (Apornrat, 2014). At present, air conditioners have been developed to save more electricity consumption than

inverter air conditioners. Air conditioners that apply solar energy result in greater savings in electricity consumption.

Innovation of solar air conditioners is an efficient air conditioner. The best energy today starting from the design that has used all electrical equipment in the air conditioner. It's a high performance model and has a special electrical design to support the use of solar energy together with electricity As shown in Figure 1: a solar air conditioning system.

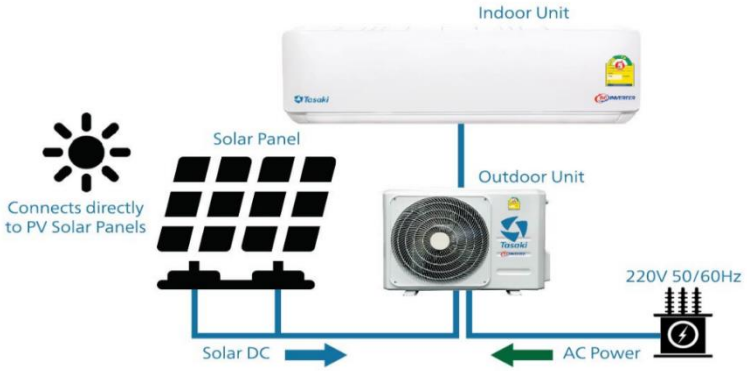
Figure 1: Solar air conditioning system



Source: Thai Tasaki Engineering Co., Ltd. (2022)

The innovation of solar air conditioner has important components divided into 3 parts as shown in Figure 2. Equipment in the solar air conditioning system

Figure 2. Equipment in the solar air conditioning system



Source: Thai Tasaki Engineering Co., Ltd. (2022)

1) Solar panel is an electronic invention made from semiconductors such as Silicon, Gallium Arsenide, Indium Phosphide, Cadmium Telluride and Copper Indium Diselenide. When the solar panel receives sunlight, it will turn into an electrical carrier which will be separated into positive and negative electric charges. to cause voltage at the positive and negative poles of the solar cell When the electrodes of the solar cell are connected to direct current devices Electricity will flow into those devices so they can work. (Ministry of Energy , 2022)

2) Condensing Unit (Outdoor unit) is a device installed outside the room. Components and functions of the Condensing Unit is to help cool the refrigerant because when the air conditioner in the room is cooling the temperature of the refrigerant will be raised. Condensing Unit has important components as follows: 1) Compressor is responsible for creating different pressures in the refrigerant pipe system of the refrigeration system. so that the refrigerant in the system can circulate. 2) Condenser is a device connected to the compressor in the form of a pipe and grille fins to transfer heat from the refrigerant that absorbs heat in the room to the outside air. 3) Throttling Device to reduce the pressure and temperature of the refrigerant. Command the air conditioner to work using solar energy or electrical energy (Deethanat, 2020).

3) Indoor Unit is a device installed in the room. Components and functions of the cold air dryer are to cause the air conditioner refrigerant or refrigerant to boil inside the pipe and cools the fluid passing through the outside of the pipe with the following important equipment: 1) Cooling Coil is a grille installed at the front of the machine. There will be refrigerant circulating inside to exchange heat in the room. 2) Filter air Installed at the wind return for filtering dust from the air in the room 3) Motor Fan Coil delivers cool air from the evaporator coil. The size of the fan motor depends on the cooling size of the air conditioner. The fan blades are squirrel cage type or Veroco style (Deethanat, 2020)

Working principle of innovative solar air conditioner designed to allow the air conditioner to receive electrical energy in conjunction with solar energy. There will be a control device (Smart controller) as a controller to order the air conditioner to work mainly using solar energy. In the event that the solar energy is insufficient, the smart controller will automatically provide additional electricity from the electricity system to allow the innovative solar air conditioner to work continuously at all times.

Comparison of innovative solar air conditioners and other air conditioning systems

At present, air conditioners are widely used in 1) Conventional air conditioner with fixed speed compressor 2) Inverter air conditioner

with the use of variable speed compressors that adjust the duty cycle depending on the heat load conditions , and 3) solar air conditioners that uses a variable speed compressor that adjust the duty cycle depending on the heat load conditions together with the use of solar cells

Comparison of innovative solar air conditioners and other air conditioner systems as shown in Table 1.

Table 1: Comparison of air conditioning systems

Comparison Types	Conventional air conditioner	Inverter air conditioner	Innovative solar air conditioners
Energy Used	Electric power	Electric power	Electric and Solar power
Energy saving	lowest SEER > 12.85-14.00 (Standard No. 5 SEER > 12.85)	medium SEER > 15.00-20.00 (Standard No. 5 SEER > 15.00)	best SEER > 27.00-36.00 (Combination of solar and electric power)
Comparison Types	Conventional air conditioner	Inverter air conditioner	Innovative solar air conditioners
Greenhouse gas emission	4.94 tonCO2e/year	2.86 tonCO2e/year	0.74 tonCO2e/year
Power Surge	Compressor is cut/continued when the room temperature is as set causing the surge current to be 3 times higher than normal	Compressor works continuously by decreasing/increasing according to heat load	Compressor works continuously by decreasing/increasing according to heat load
Control system	Separate control of individual air conditioners	Central control system to control the use of the entire building.	Central control system from the center to control the use of the entire building by phone.

Source: Bitwise Co., Ltd. (2022)

Concepts and theories related to government policy

Government Policy is considered to be a guideline for the operation of the government sector whereby the government takes the lead in setting policies to provide resources to the citizens for maximum benefit.

Anderson, D. T. (1994) and Mayuree Anuman-Rajadhon (2006) defined that Government Policy means practice guidelines stating that has one or more objectives and is accompanied by the actor or practice which may be performed by a single person or a group of persons to solve related problems. An important element is that it must have a purpose as a practice with an action that can be either positive or negative.

There are three components of Government Policy (Jizi Li,Yuping Zhou,Dengke Yu and Chunling Liu ,2020) as follow:

1) Production Policy: to support for the manufacturing sector, including provisions for infrastructure investment; financial assistance, Human resource training and technical subsidies

2) Purchase Policy: To increase market demand from both consumers and retailers in the form of government procurement, reduction or exemption of taxes and fees for consumers

3) Usage Policy: To create privileged situations that promote use, such as provisions for privileged usage rules. as shown in Table 2.

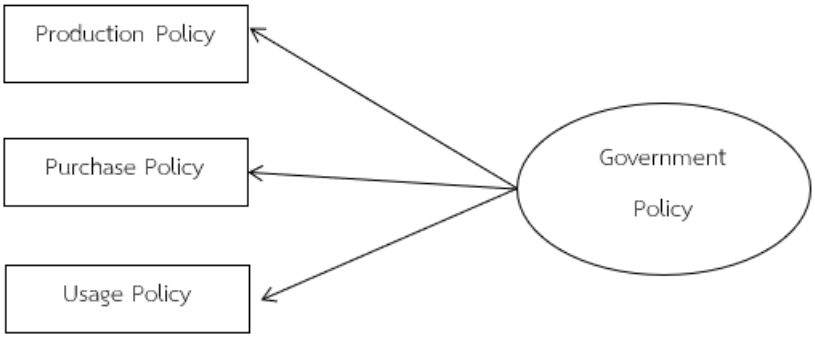
Table 2: Synthesis of concepts related to government policy components

Scholar / Researcher	Component			
	Production	Purchase	Usage	Data
Svetlana Revinova and Konstantin Gomonov(2023)	✓	✓		✓
Suyang Zhou , Jinyi Chen , Zhi Wu and Yue Qiu.(2021)		✓	✓	
Mokhele Edmond Moeletsi (2021)	✓	✓	✓	
Jizi Li,Yuping Zhou,Dengke Yu and Chunling Liu (2020)	✓	✓	✓	
Yueling Xu , Wenyu Zhang , Haijun Bao , Shuai Zhang and Ying Xiang (2019)		✓	✓	
Lixian Qian , Jose M. Grisolía and Didier Soopramanien(2019)		✓	✓	
Shanyong Wang, Jun Li and Dingtao Zhao(2017)		✓	✓	✓

Wenbo Li , Ruyin Long and Hong Chen (2016)		✓	✓	
Kristin Ystmark Bjerkan , Tom E. Nørbech and Marianne Elvsaas Nordtømme(2016)		✓	✓	
John Edward Burns,Jin-Su Kang(2012)	✓	✓	✓	
Frequency	4	10	9	2

From Table 2, from the conceptual study of all 10 academicians and researchers who have studied about innovative products such as electric cars and solar power generation systems. It was found that the components of Government Policy that were widely studied by scholars and should be used in the study in the context of small and medium-sized community enterprises, consisting of 3 components: production policy; Purchase Policy and Usage Policy as shown in Figure 3.

Figure 3: Government Policy components



From Figure 3, it can be concluded that there are 3 components from Government Policy as follow.

1) Production Policy is a policy to use in terms of tax support or research and development of various equipment for manufacturers of innovative solar air conditioners.

2) Purchase Policy is a policy to support the purchase, such as sponsoring money or tax measures, to encourage consumers to buy innovative solar air conditioners.

3) Usage Policy is a policy to be used to benefit consumers while using, for example, supporting the purchase of electricity from solar energy, to provide innovative solar air conditioners are widely used.

Concepts and theories about innovative product features

Product innovation is a commercial product that has been improved or is new to the market. Product innovation requires continuous

product invention and development to offer value to customers which requires important components which are development of product properties and characteristics. In designing, consideration must be given to the benefits that customers will receive. Product innovation can be divided into 2 types: Tangible product or Goods and Intangible product or Service (Phakdee Lao, 2011)

Therefore, innovative product attributes influence consumers' purchasing decisions. Therefore, it is important to understand the characteristics of innovative products that consumers want so that the company can produce innovative products and plan marketing effectively.

Mean-end chains theory is a theory that deals with the cognitive hierarchy and consumer knowledge of the product (Young and Feigin, 1975; Gutman, 1982), which leads to consumer purchasing decisions. The author of this model, Gutman (1982), supports and assumes that value is the predominant factor in consumer purchasing patterns. It said that the consideration of goods and services is based on the response of value, in which all activities have consequences that follow, and finally, there is a correlation between Consequence and Attribute (Gengler, Mulvey and Oglethope, 1999; Leao and Mello, 2001, 2002, 2003). This relationship is hierarchical that is a group of relationships called Mean-end chains. Mean-end chains (Olson and Reynolds, 2001) generally have 4 steps:

1) Attribute is to describe the properties of the product, which can be divided into 2 types as follows (Reynold and Olson, 2001; Reynold and Olson, 1983; Gutman, 1982)

Abstract attributes are intangible, abstract attributes of a product, such as taste. Concrete attributes are physical attributes of a product that can be can be tangible, visually visible, such as color, size.

2) Functional consequence is the physical or experiences that occur immediately and can be tangible of consumers.

3) Psychosocial consequence is an emotional, or social aspect and has an abstract nature resulting from functional consequences that can lead to even higher levels when the more results of individual consumption increases. It affects the mood or about the increased mood as well at a higher level in terms of perceived attributes and outcomes from consumption, this was associated with the value or Personal value or Personal goals by responding to the satisfaction of consumers' outcomes from consumption in Psychosocial aspects, consequences and emotional experiences of consuming goods as a result of psychological and social rewards or punishments.

4) Value is the relationship between Consumption Consequence and Personal values system. Personal value is what represents that person and it is a part of living that can define, control and improve the

relationship between individuals, organizations and institutions to society highly related, such as Happiness, Fun, Enjoyment (Moris, MacCathey and O'Relly, 2004) that consumers can choose to buy (Reynold and Gutman, 1988).

The composition of innovative product characteristics consists of 3 components (Mohammad Alipour, Rodney A. Stewart and Oz Sahin ,2021) as follow:

1) Instrumental Attributes refers to appearance, functionality or benefit

arising from work by new technology (Voss et al. , 2003)

2) Performance attributes refers to the main function of a product that can perform its intended function.

3) Technical Attributes refers to improved product properties as a result of the use of new technology (Axsen and Kurani (2012).

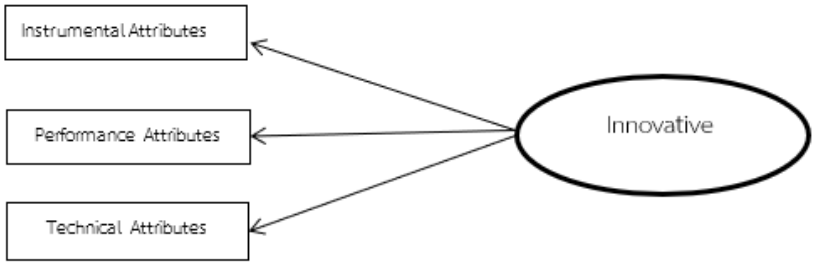
From the study of the components and characteristics of innovative products from academics and researchers, there have been studies on innovative product attributes such as Rusitha Wijekoon's research on factors influencing purchase intention of green products (Rusitha Wijekoon and Mohamad Fazli Sabri, 2021). There is a positive and significant correlation with the intention to purchase the product, consistent with Ernst Noppers's study of product characteristics influencing the adoption of electric vehicles and smart energy systems in the Netherlands (Ernst Noppers, Kees; Keizer, Marko Milovanovic and Linda Steg, 2019). People were more likely to accept innovative products as they favorably assessed the characteristics of these innovative products, according to Yueying Wang's research, the Impact of New Energy Vehicle Product Characteristics on Consumer Purchase Intent for the Sustainable Development Goals (Yueying Wang and Ying Tian, 2023) examined consumer acceptance of electric vehicles based on product attribute perception. Survey questionnaires and structural equation models (SEM) were used to collect and analyze the data, it was found that (1) both functional and symbolic properties of electric vehicles have a significant positive effect on consumer purchase intentions; (2) both functional and symbolic properties of electric vehicles positively impact consumers' purchase intent through their perceived value; Product and positive purchase intent from the research To meet the needs of consumers in daily driving and showing their own image. New energy vehicle enterprises need to focus on product improvement both functionally and symbolically through various marketing strategies. There are also many studies abroad as shown in Table 3.

Table 3: Concept synthesis of innovative product feature elements

Scholar/ Researcher	Components			
	Instrumental Attributes	Performance Attributes	Technical Attributes	Environmental Attributes
Yueying Wang &Ying Tian (2023)	✓	✓		
Rusitha Wijekoon and Mohamad Fazli Sabri (2021)	✓	✓	✓	✓
Mohammad Alipour, Rodney A. Stewart and Oz Sahin (2021)	✓	✓	✓	
Meilinda Fitriani Nur Maghfiroh , Andante Hadi Pandyaswargo and Hiroshi Onoda (2021)	✓		✓	
ErnstNoppers ,KeesKeizer ,MarkoMilovanovic ,LindaSteg (2019)	✓	✓		✓
Özlem Simsekoglu & Alim Nayum (2019)	✓			✓
Fanchao Liao, Eric Molin and Bert van Wee (2016)	✓	✓	✓	
Frequency	7	5	4	3

From Table 3, it was found that from the conceptual study of 7 academicians and researchers who have studied about innovative products such as electric cars or environmentally friendly products, it was found that the characteristics of innovative products that are widely studied by scholars and is likely to be used in the study. In the context of small and medium enterprises, it consists of 3 components: Instrumental Attributes, Performance Attributes, and and Technical Characteristics as shown in Figure 4

Figure 4: Components of innovative product features



From Figure 4, it can be concluded that components of innovative product attributes have 3 components as follows.

1. Instrumental Attributes refer to appearance, functionality or benefits arising from work by new technology

2. Performance attributes refer to the main functions of the product that can perform the specified functions.

3. Technical Attributes means the features of the product that have been improved as a result of the use of new technology

Concepts and theories about consumer innovation.

Lu, Yao, and Yu, (2005) stated that consumer innovation was observed and tested to determine its influence on acceptance of innovation. There is evidence indicating that the innovation of Consumers is a key factor in innovation adoption. Slade et al., (2015) stated that consumer innovation is a direct predictor of new product adoption.

The components of consumer innovation consist of four components (Mona Seyed Esfahani , Nina Reynolds, 2021):

1. Hedonic Innovativeness refers to emotional values which can be explained to the extent that new products that can create the right feelings and emotions for customers such as beauty, happiness, fun, excitement (Smith and Colgate, 2007).

2. Social Innovativeness refers to the need to relate to other people and includes concepts such as status and support to meet these needs. The presence and actions of another person are required (Vandecasteele and Geunes, 2010).

3. Functional Innovativeness refers to an individual's drive to find products that solve problems related to consumption (Voss et al , 2003).

4. Cognitive Innovativeness: Cognitive and stimulating needs can also influence motivation and behavior. Cognitively demanding consumers enjoy engaging in mentally demanding activities such as reading and/or deep processing of information (Vandecasteele and Geunes, 2010)

From the study of consumer innovation components from academics and researchers There has been a study about the innovation of consumers. For example, a study by Mona Seyed Esfahani examined the impact of consumer innovation on acceptance of new products (Mona Seyed Esfahani and Nina Reynolds, 2021). Consumer innovation directly affects the adoption of new product. and has a positive influence on purchase intent. This is consistent with the research done by Min-Kyu Kwak, Senior Consumer Motivation and Perceived Value of Restaurants Served by Robots in Korea (Min-Kyu Kwak,JeungSun Lee and Sang-Soo Cha, 2021) influences positive attitudes and is encouraged by consumer innovation, in line with Lixu Li's research. The impact of consumer innovation on sustainable product purchase intent (Lixu Li, Zhiqiang Wang, Yian Li and Anni Liao , 2021). Consumers' emotional and social innovations drive sustainable purchase intentions for products such as electric cars as shown in Table 4.

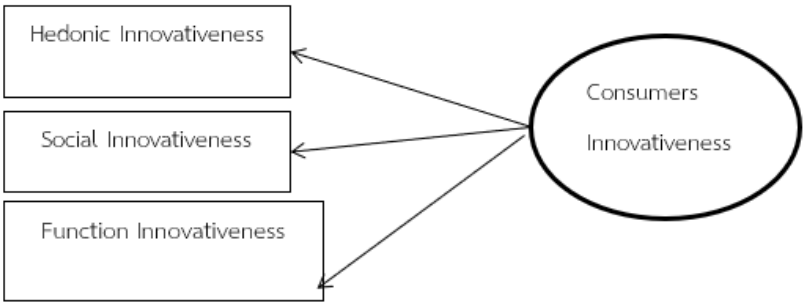
Table 4: Conceptual synthesis of consumer innovation components

Scholar/Researcher	Components			
	Hedonic Innovativeness	Social Innovativeness	Functional Innovativeness	Cognitive Innovativeness
Asish Oammen Mathew et al(2021)	✓	✓	✓	✓
Min-Kyu Kwak,JeungSun Lee,Sang-Soo Cha(2021)	✓	✓	✓	✓
Lixu Li,Zhiqiang Wang,Yian Li and Anni Liao (2021)	✓	✓		
Mona Seyed Esfahani , Nina Reynolds (2021)	✓	✓	✓	✓
JinkyungJennyKim et al (2021)	✓	✓	✓	
Jinsoo Hwang,Seulgi Park,Insin Kim(2020)	✓	✓	✓	✓
Jinsoo Hwang,Hyunn Kim ,Woohyoung Kim (2019)	✓	✓	✓	✓
Frequency	**7**	**7**	**6**	**5**

From Table 4, it was found that from the conceptual study of 7 academicians and researchers who have studied about innovative products such as electric cars and robots, it was found that the elements of consumer innovation that have been widely studied by scholars and should be used in the study in the context of small and medium enterprises, consisting of 3 components: Hedonic

Innovativeness, Social Innovativeness, and Function Innovativeness, as shown in Figure 5.

Figure 5: Components of Consumers Innovativeness



From Figure 5, it can be concluded that components of consumer innovation have 3 components as follows:

1. Hedonic Innovativeness means emotional value which can be explained to the extent that new products that can create the right feelings and emotions for customers such as beauty, happiness, fun, excitement.

2. Social Innovativeness refers to the need to relate to other people and includes concepts such as status and support to meet these needs. The presence and actions of another person are required.

3. Functional Innovativeness means an individual's drive to find products that solve problems related to consumption.

The composition of consumer perceived value consists of 4 components from the research of Jizi Li, Yuping Zhou, Dengke Yu and Chunling Liu (2020) who conducted the study, Consumer Purchase Intentions of New Energy Vehicles and a study by Somi Yu and Jieun Lee (2018) that conducted the study, The impact of consumer perceived values on purchase intentions for upcycled products can be summarized as follows

1. Financial Benefit is a monetary benefit that the customer receives. from using the product or services that are cost-effective and suitable for money, including savings Hui and Malliga (2014)

2. Emotional Value is the benefit gained from the feelings, emotions, created by products and services (Sweeney & Soutar, 2001).

3. Functional Value is the scope that represents the benefits of the product, including the nature of the desired function, reliability, quality and performance of that product or service that creates awareness of the target consumer group (Smith and Colgate, 2007).

4. Environment value is the level of customer perception of environmental needs. sustainable expectations and the

environmental impact of the products used (Somi Yu and Jieun Lee, 2018).

From the study of the value components perceived by consumers from academics and researchers, there have been studies on consumer perceived value, such as the research by Elena Higueras-Castillo, office Consumer perceived value and customer acceptance of electric and hybrid vehicles (Elena Higueras-Castillo , Sebastian Molinillo , J. Andres Coca-Stefaniak and Francisco Liébana-Cabanillas ,2019) found that the factor environmental problems, product prices, car acceleration and light engine noise affecting consumer attitudes. This has a positive effect on the purchase intent of electric vehicles, which is in line with Somi Yu's study of the impact of consumer perceived value on purchase intent of upcycled products (Somi Yu and Jieun. Lee, 2018) found that three values, such as environment, emotion, and aesthetics, had a significant positive effect on product attitude and purchase intent. Moderate effects of the buying experience were found only in the path between environmental values and the utility and attitude towards the product. The findings have implications for academics, practitioners and policy makers to design strategies that encourage people to buy recycled products. It can conclude that organizations Strategies should be designed to maximize the emotional and aesthetic value of upcycled products using rich and engaging content such as storytelling based on the background of each product. This is in line with Liu Han's study of electric vehicle intentions: driven by functional and non-functional values (Liu Han, Shanyong Wang, Dingtao hao and Jun Li , 2017). The results showed that the perceived value of electric vehicles is classified into functional values (monetary, performance and ease of use) and non-functional values (emotional and social values) tried to explore whether the intention of consumers to bring How is electric vehicle adoption affected by these two groups. The results indicate that perceived functional value directly and indirectly influences consumer intentions to adopt electric vehicles. While perceived non-operational values indirectly affect intention to use electric vehicles, which only mediated attitudes. These findings can provide a suitable guideline for formulating market strategies and offer a reference point for policymakers to enhance their operational capability. There are also many studies abroad as shown in Table 5.

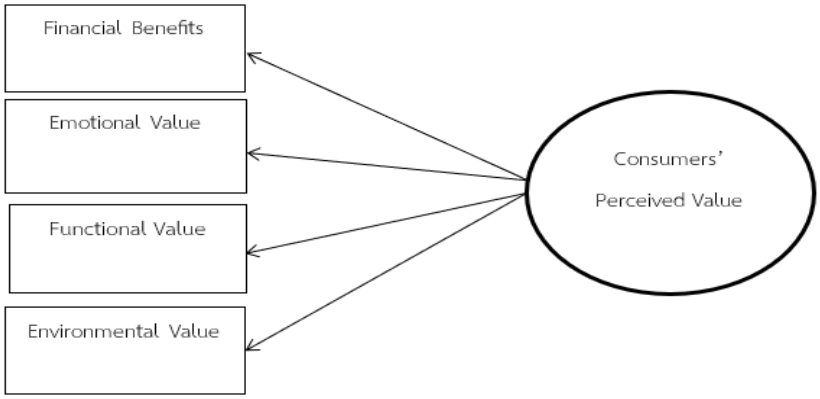
Table 5: Synthesis of the concept of value perceived by consumers.

Scholar / Researcher	Components			
	Financial Benefits	Emotional Value	Functional Value	Environmental Value
Somi Yu and Jieun Lee (2018)		✓	✓	✓

Liu Han, Shanyong Wang, Dingtao hao and Jun Li (2017)	✓	✓	✓	
Hatim Loudiyi, Youssef Chetioui and Hind Lebdaoui (2022)	✓	✓	✓	
Fangyu Zhanga ,Siwei Suna , Chenlin Liub and Victor Changc (2020)	✓	✓	✓	
Elena Higueras-Castillo , Sebastian Molinillo , J. Andres Coca-Stefaniak and Francisco Liébana-Cabanillas ,2019	✓		✓	✓
Yueying Wang and Ying Tian (2023)	✓	✓	✓	
Ting Chi , Jessica Ganak, Lauren Summers, Olabisi Adesanya, Lindsay McCoy, Hang Liu and Yining Tai (2021)	✓	✓	✓	✓
Frequency	6	6	7	3

From Table 5, it was found that the value components perceived by consumers according to the concepts of 7 academicians and researchers who studied about environmentally friendly innovative products such as electric trains and upcycled products. There will be a value component that consumers perceive differently, which can be seen Most academics and researchers will focus on the study of 4 components of consumer perceived value: Financial benefits; Emotional value Functional value and Environmental value as shown in Figure 6.

Figure 6: Components of Consumers' Perceived Value



From Figure 6, it can be concluded that There are 4 aspects of value that consumers perceive as follows:

1. Financial Benefit is a monetary benefit that the customer receives from using the product or a service that has a price that is worth and suitable for money, including saving.

2. Emotional Value is the benefit received from the feelings, emotions that the products and services create.

3. Functional Value is the scope that represents the benefits of the product, including the nature of the desired function, reliability, quality and performance of that product or service that creates awareness of the target consumer group.

4. Environment value is the level of customer perception of environmental needs. sustainable expectations and environmental impacts from the products used.

Concepts and Theories of Purchase Intension

Purchase intent is the consumer's willingness to purchase a product or service. Product selection, the final purchase decision depends on the purchase intention of consumers (Athapaththu & Kulathunga, 2018) that are likely to make a purchase is the perception of consumers towards their buying behavior in terms of consumer readiness or to assess satisfaction with products and services In order to make a decision to buy products (Taveephon Pananiramai, 2014)

Purchase intent components consisted of three components, Li J, Zhou Y, Yu D and Liu C. (2020):

1) Plan to buy means that consumers plan to purchase a product or service in the future. Which has set objectives and strategies to get the best value for the purchase.

2) Expect to buy means that consumers expect to buy a product or service after studying the features or benefits

3) Purchase intention means that the consumers have an interest in the product and intend to purchase the product or service.

From the study of purchase intent components from academics and researchers There was a study on purchase intent, for example, research by Nik Salehah Nik Abdul Aziz examined factors influencing Malaysian consumers' intention to purchase solar panels (Nik Salehah Nik Abdul Aziz, Nabsiah Abdul Wahid, Methaq Ahmed Sallam and Shaizatulaqma Kamarul Ariffin, 2017). found that from the variable specific perception of cost and maintenance, product knowledge and experience, social influence and product benefits. It has a direct impact on consumers' purchase intentions. This is in line with Pretty Bhalla Chao's research on consumer perception and purchase intent of electric cars in India (Pretty Bhalla, Inass Salamah Ali and Afroze Nazneen, 2018). Environmental concerns and consumer trust in the

technology are key factors for perception of electric vehicle purchases, and the next important factor is cost, infrastructure and social acceptance. Therefore, to promote the sale of electric cars, government must play a leading role in setting environmental policies, infrastructure and subsidize the cost of vehicles or lowering bank interest rates. This is in line with research by Patrick Hartmann who conducted a study, Consumer Attitudes and Purchase Intent towards Green Energy Brands: The Role of Psychological Benefits and Environmental Concerns (Patrick Hartmann and Vanessa Apaolaza-Ibáñez , 2012). This study found that benefits and experiences increase consumer attitudes, consumers towards green energy brands and increase purchase intent. There are also many studies abroad as shown in Table 6.

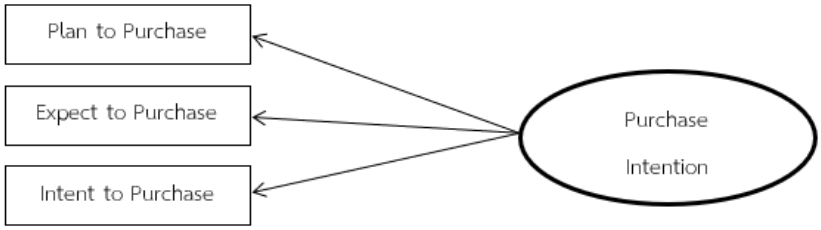
Table 6: Concepts Systhesis on Intent to purchase

Scholar / Researcher	Components		
	Plan to Purchase	Expect to Purchase	Intent to Purchase
Yueying Wang and Ying Tian (2023)	✓	✓	
Tawalhathai Suphasomboon and Sujitra Vassanadumrongdee (2022)	✓	✓	✓
Hatim Loudiyi, Youssef Chetioui and Hind Lebdaoui (2022)	✓		✓
Li Z, Shu S, Shao J, Booth E and Morrison AM. (2021)	✓	✓	✓
Tri Cuong DAM1 (2020)	✓	✓	✓
Li J, Zhou Y, Yu D and Liu C. (2020)	✓	✓	✓
Ali S, Poulova P, Akbar A, Javed HMU and Danish M. (2020)	✓	✓	✓
Lifang Peng, Weiguo Zhang, Xiaorong Wang and Shuyi Liang (2019)	✓	✓	✓
Pretty Bhalla, Inass Salamah Ali and Afroze Nazneen (2018)	✓	✓	✓
Nik Salehah Nik Abdul Aziz, Nabsiah Abdul Wahid, Methaq Ahmed Sallam and Shaizatulaqma Kamarul Ariffin (2017)	✓	✓	✓
Patrick Hartmann and Vanessa Apaolaza-Ibáñez (2012)	✓	✓	✓
Frequency	11	10	10

From Table 6, from the conceptual study of 11 academicians and researchers who have studied about innovative products that are environmentally friendly, such as electric cars and solar power generation systems. It was found that the purchase intention component studied by academics widely and should be used in the

study in the context of Small and medium enterprises consist of 3 components: plan to purchase, expect to purchase, and intent to purchase as shown in Figure 7.

Figure 7: Components of Purchase Intention



From Figure 7, it can be concluded that there are three components of innovation management:

1) Plan to purchase means that consumers plan to purchase a product or service in the future , which has set objectives and strategies to get the best value for the purchase.

2) Expect to purchase means that consumers expect to buy a product or service. After studying the features or benefits

3) Intent to purchase means that the consumers have an interest in the product and intend to purchase the product or service.

Consumer Behavior in Purchasing Decision-making for Solar Air Conditioning Innovations of Small and Medium Enterprises in the Service Sector

From the study of the concept related theory, it can be concluded that consumer behavior in purchasing decisions of solar air conditioning innovations of small and medium enterprises in the service sector consisted of government policies, innovative product features, consumer innovation, value perceived by consumers as shown in Table 7.

Table 7: Relationship between Variables and Related Researches

Variables	Relationship	References
Government Policy (GP)	GP → PV	Yao-Kuei Lee, Tsai-Lung Liu , Fang-Tsen Chung and Hsiao-Hui Ho (2015) Jizi Li ,Yuping Zhou, Dengke Yu and Chunling Liu(2020) Hatim Loudiyi, Youssef Chetioui and Hind Lebdaoui (2022)
	GP → PI	Yueling Xu,Wenyu Zhang, Haijun Bao, Shuai Zhang and Ying Xiang (2019) Hsiang Te Liu and Ruey-Chyn Tsaur (2020) Yuqing Lin,Jingjing Wu and Yongqing Xiong (2021) Muhammad Rizwan Ali, Muhammad Shafiq and Murad Andejany (2021) Zulfiqar Ali Lashari , Joonho Ko and Junseok Jang (2021) Phasiri Manutworakit and Kasem Choocharukul (2022)

Variables	Relationship	References
Product features Innovation (PA)	PA → PV	Yueying Wang and Ying Tian (2023) Meehee Choa, Mark A. Bonnb, Soyeon Moona and Howook (Sean) Changc (2020) Eunju Ko, Michel Cao Tuan Phan, Min-Young Lee and Kyung Hoon Kim (2011) Mariani Sekarwati (2013)
Consumers Innovativeness (CI)	CI → PV	Ajax Persaud and Sandra R. Schillo (2016) Jon-Chao Hong , Pei-Hsin Lin and Pei-Chi Hsieh (2017) Salem A. Al – Jundi , Ahmed Shuhaiber and Reshmi Augustine (2019) Fangyu Zhanga, Siwei Suna ,Chenlin Liub and Victor Changc (2020) Reyvina Reyvina, Hetty Karunia Tunjungsari (2022)
	CI → PI	Hur, W., Yoo, J. and Chung, T. (2012) Persaud, A. and Schillo, S.R. (2017 Salem A. Al – Jundi , Ahmed Shuhaiber and Reshmi Augustine (2019) Mas Azira Mohamed and Yu Ghee Wee (2020) Sayed Kifayat Shah, Zhongjun Tang, Beata Gavurova, Judit Oláh and Ángel Acevedo-Duque(2022)
Consumers Perceived Value (PV)	PV → PI	Won-Moo Hur, Jeong-Ju Yoo and Te-Lin Chung (2011) Herman Fassou Haba, Zubair Hassan and Omkar Dastane (2017) Fangyu Zhanga, Siwei Suna ,Chenlin Liub , Victor Changc (2020) Jizi Li ,Yuping Zhou, Dengke Yu and Chunling Liu(2020) Pu Liu, Mengqi Li, Dong Dai and Lingyun Guo (2021) Yueying Wang and Ying Tian (2023)

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