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**Application of the theory of planned behavior (TPB) to the  
analysis of the factors affecting the intention to accept  
circular economy models of Vietnam consumers**

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## **APPLICATION OF THE THEORY OF PLANNED BEHAVIOR (TPB) TO THE ANALYSIS OF THE FACTORS AFFECTING THE INTENTION TO ACCEPT CIRCULAR ECONOMIC MODELS OF VIETNAM CONSUMERS**

### **Summary:**

The study applies the theory of planned behavior (TPB) in the analysis to understand the acceptance of Vietnamese consumers for circular economic models. The research team conducted a survey of consumers in the Hanoi area to represent Vietnamese consumers. With 327 valid and standard questionnaires obtained, it is found that the scales are meaningful and the independent factors have a positive impact on the dependent variable. Thus, it can be seen that the consumer's intention can be affected by the factors Attitude, Subjective Norm, Perceived behavioral control. From there, businesses can adjust their activities when our country follows the trend of the circular economy

**Keywords:** *circular economy, circular economic models, intention to accept*

### **1. Introduction**

Circular economy is gradually becoming a new trend that is oriented by the state in the future of the country's economy. Because the natural state of our country has been damaged by the current economy, there are still many outstanding problems and lack of plans in the deployment, exploitation and use of natural materials.

For example, based on statistical reports made prior to the 45s of the last century, forest cover accounted for 43.8%; meanwhile, as of 2021, it is only about 28% and is at an alarming level. Additionally, the environmental pollution has also become serious and shows no signs of decline. This is considered as an extremely challenging issue for the country's rapid and sustainable development in the long term. More specifically, Vietnam is considered to be the country whose economy is most affected by climate change. According to VnExpress (2019), the German environmental consulting organization - Germanwatch (2018) announced the global climate risk

index, Vietnam ranked sixth in the list of affected countries and territories. hardest hit by extreme weather events during that period, with a climate risk index (CRI) at 29.83.

On the other hand, Vietnamese enterprises are heavily dependent on the import of international raw materials. Typical examples are as follows: According to the Mekong ASEAN (2022) website, recorded during the first 4 months of 2022, Vietnam has invested 10 billion USD to import raw materials for the domestic textile and footwear industry. in which China accounted for 50% of the export value of the first raw materials to Vietnam. China is an important market for Vietnam's import and export businesses. According to statistics in 2021, China is Vietnam's leading import market with a turnover of 109.9 billion USD. In particular, this is also an important source of raw materials for Vietnamese production, especially electronic components, machinery parts, fabrics and chemicals. Moreover, in the recent period of the Covid-19 pandemic, it has also revealed clearly the limitations of enterprises in depending on foreign markets to import raw materials. Many textile and garment enterprises are like "sitting on the fire" because raw material suppliers cannot deliver, affecting 20-30% of the industry's production capacity. The United Nations Industrial Development Organization UNIDO (2020) defines CE as a new way to create value, and ultimately prosperity. It works by extending product life through design and service improvements, and diverting waste from the end of the supply chain back to the beginning of the supply chain. The reality is to use resources more efficiently by using them over and over again, not just once.

## **2. Literature review**

### **2.1. Circular Economy (CE)**

To date, CE includes ten popular models (10Rs) including: Recover, Recycle, Repurpose, Remanufacture, Refurbish, Repair , Reuse, Reduce, Rethink, and Refuse (Ong, 2022).

According to research by Mrad and Frólén Ribeiro (2022), basically, 10Rs mainly focus on existing materials and strive for one of two endeavors, "increasing" or "decreasing". In addition, Ong (2022) argues that the 3Rs including Reject, Rethink and Reduce are models related to business model design of businesses or brands. In this study, the authors only focus on learning about consumer-related models, so the models that are focused on exploiting are: Reuse, Repair, Refurbish, Remanufacturer. and Re-Purpose.

### **2.2. Circular economy models**

#### ***Reuse***

According to the Ellen MacArthur Foundation (2019), in terms of reuse, there are four different types: (1) Refill at home: For example, brick-and-mortar retail stores offer standard sized containers ( non-compact) for home care, personal care and beverage products; (2) Refill on the Go: for example, take-away coffee service, where consumers will use their personal pitchers to buy coffee instead of disposable cups; (3) Return from Home: packaging received from home by a pickup service and (4) Return on the Go: the consumer returns the packaging to a store or return point.

### ***Repair***

In fact, the number of repair shops is increasing more and more, at the same time, large enterprises are also introducing repair services into their service chains. Some luxury brands such as Givenchy and Celine have customer service and often offer 2-year repair warranties. Others, such as Chanel, will only provide one year of repair service under very strict conditions (Picci, 2020).

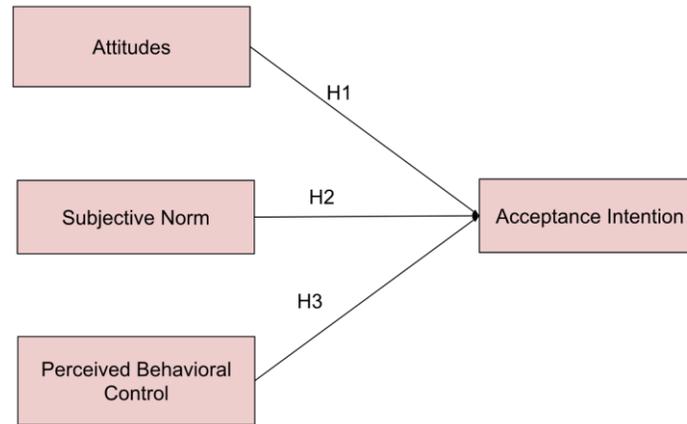
### ***Refurbish***

This is different from the manufacturing process, producing old objects into a completely new product, with high aesthetics and unique applications compared to old products. Instead, refurbishing brings back the original value with which the product was created.

### ***Remanufactured***

Remanufacturing is an important component of the circular economy, which harnesses environmental, economic and social benefits by extending the life cycle of near-term and end-of-life items. use. Remanufacturing is being done successfully in developed countries like USA, UK and Germany for different products (Singhal, Tripathy and Jena, 2020).

So, based on the theory of TPB (Theory of Planned Behavior) of Ajzen (1991), the authors propose the following model and hypothesis:



**Figure 1: Research model**

*H1: Consumer attitude (TD) has a positive effect on their intention to accept (YD)*

*H2: Consumer subjective norm (CCQ) has a positive effect on their intention to accept (YD)*

*H3: Consumers' perceived behavioral control (KS) has a positive effect on their intention to accept (YD)*

### 3. Objects and methods

About the research object: Research problem: Factors affecting the intention to accept the circular economy model of Vietnamese consumers. The research object is all young consumers in Hanoi between the ages of 18 and 35.

About the research method:

The authors combine qualitative and quantitative research methods before entering into the official research. During the formal research, the team distributed the survey questionnaires in both online and online forms. The survey obtained 327 satisfactory votes (N= 327; met the sample size requirement of Hair, 2014). The questionnaire was designed using a Likert scale with 5 levels (“Strongly disagree”, “Disagree”, “Neutral”, “Agree”, “Strongly agree”). Next, the information in the survey is entered into the technical processing system with the support of SPSS and AMOS software to test the model and hypothesis.

### 4. Result

#### Check the reliability of the scale

The scales are preliminarily evaluated through the Cronbach Alpha reliability coefficient test and the calculation of the total variable correlation coefficient. In which, the coefficient  $\alpha$  of Cronbach Alpha is a statistical test of the degree of close correlation between observed variables

in the same factor. The coefficient  $\alpha$  between 0.8 and close to 1 is a very good scale, from 0.7 to close to 0.8 is a good scale to use, and the standard for choosing the scale is when the  $\alpha$  coefficient is from 0.6 or more. . With the total correlation coefficient, the variables with the total correlation coefficient of Corrected Item - Total Correlation  $\geq 0.3$ , then that variable is considered suitable and retained in the model.

**Table 1. Cronbach's Alpha reliability synthesis**

	The scale	Number of observed variables	Cronbach's Alpha reliability coefficient
1	Subjective Norms	5	0.914
2	Perceived behavioral control	5	0.895
3	Attitude	5	0.763
4	Intent	5	0.710

After analyzing the linear structural model, we get the following test results:

**Table 2. SEM structural model analysis results**

Relationship			Estimate	S.E	C.R	P
YD0	<----	KS0	0,427	0,061	6,973	***
YD0	<----	CCQ0	0,286	0,036	7,847	***
YD0	<----	TD0	0,416	0,055	7,513	***

With P=\*\*\*, hypothesis H5, H6, H7 is statistically significant. Thus, the effect of attitude, subjective norm and perceived behavioral control on intention to accept is recognized in the results table, or H5, H6, H7 is accepted. Specifically:

- Consumer attitudes have a positive effect on the intention to accept circular economy.(0.768)
- Consumer subjective norm has a positive impact on intention to adopt circular economy.(0.736)
- Perceived behavioral control of consumers has an impact on intention to adopt circular economy.(0.674)

From the above test results, the accepted hypotheses will be the premise for the work to make comments, conclusions, and strategic directions and solutions.

## **5. Conclusion and solutions**

In this study, the main focus is on analyzing the factors that positively affect the consumer's intention to accept based on the available theoretical framework, but it is important in the current development context. , especially for businesses:

### **Prevention of pollution**

The first step for most businesses is to move from pollution control to pollution prevention. Pollution control means treating waste after it is generated. Meanwhile, pollution prevention focuses on reducing or eliminating waste before it is generated. As a way of total quality management, pollution prevention strategies are implemented through continuous improvement to reduce waste as well as reduce energy consumption.

### **Product lifecycle management**

Product lifecycle management focuses on reducing not only pollution caused by production, but also all environmental impacts associated with the entire life cycle of a product. As companies complete the first step of pollution prevention and move closer to zero emissions, reducing material use and generating waste requires essential changes in the manufacturing process. and product design.

Foresight businesses should start planning investments and developing innovative technologies. The reality is that existing technologies in many industries are not environmentally sustainable. For example, the chemical industry, despite making significant strides in the past decade in pollution prevention and product management, is still constrained by its reliance on chlorine chemicals (many organochlorine is persistently toxic or causes bioaccumulation.

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