Article

Factors for Implementation of Circular Economy in Firms in COVID-19 Pandemic Times: The Case of Peru

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Abstract: The circular economy can contribute to the eco-efficient use of resources. Firms can obtain relevant benefits if they implement a circular economy. In Peru, the circular economy would create benefits, but it is not fully clear what factors explain the acceptance of firms of implementing a circular economy. Following the theory of planned behavior, the current research assesses the influence of attitudes, subjective norms, perceived behavioral norms, intentions, and pressures on behaviors towards the circular economy. A total of 71 medium-size firms based in Peru participated in an online survey. Six questions were focused on general information, and forty-seven questions evaluated the circular economy behavior of firms. A partial least square structural equation modeling technical analysis was used. It was found that attitudes (0.144), subjective norms (0.133), and perceived behavioral control (0.578) had a positive influence on intentions; also, perceived behavioral control (0.461) had a positive influence on behaviors towards the circular economy. Finally, pressures had a positive influence (0.162) on behaviors towards the circular economy. The model explained 64.3% of the behaviors towards the circular economy. The outcomes of the bootstrapping test were used to evaluate if the path coefficients are significant. This study showed that attitudes, subjective norms, perceived behavioral norms, intentions, and pressures explained circular economy behaviors. This information can help firms develop strategies to move forward a circular economy and provide governments information about the current situation of circular economy implementation to generate new norms and strategies for more implementation of circular economy measures in enterprises. The novelty is based on using the PLS-SEM technique.

Keywords: circular economy; sustainability; circularity; attitudes; subjective norms; perceived behavioral control; intentions; pressures; behaviors towards a circular economy; Peru; COVID-19

1. Introduction

Sustainability is an urgent need for humanity and companies to grow and, in other cases, to survive. Many firms have incorporated sustainable initiatives amongst employees [1,2]. Efforts in circular economy in multinationals firms have also been reported [3,4]; however, the activities of firms have changed due to the Coronavirus (COVID-19) pandemic, an infectious illness at the global level. Approximately 204,000,000 cases and 4.3 million deaths have been reported globally as of 12 August 2021 [5]. In order to ensure the health of the population, governments offer many health services, such as pharmacovigilance [6], hypertension care [7], cytotoxic drugs, [8], pharmaceutical care [9], adverse drug reaction reports [10], media communication to patients [11], prescription supervision [12], drug information campaigns [13], control of epidemics [14], and community pharmacist care [15].

Nonetheless, the COVID-19 pandemic has had negative influences at the individual level in physicians, nurses, pharmacists, and other health professionals. These influences have led to some intending to leave jobs [16], a need for organizational support [17], conspiracy theory as a predictor of mental health [18], self-medication risks [19,20], fake news [21], prices [22,23], risks in children of Kawasaki-like syndrome [24], telemedicine needs [25], and technostress [26]. More specifically, other impacts have been observed related to the UN Sustainable Development Goals (SDGs) such as SDGs and youth employment [27], entrepreneurship [28,29], hospitality [30,31], regulation of the circular economy [32], international business [33], expectations of students regarding the SDGs [34], and education [35].

Regarding environmental issues, plastic was initially thought to be advantageous, but when its use became widespread, it became evident that it generated significant environmental pollution [36–39]. Annual plastic production (in millions of metric tons) in 2020 was 367 which means 0.3% less than 2019 [40]. Plastic is used in packaging (39.6%), building and construction (20.4%), and automotive products (9.6%) [41]. The top five companies that produce single-use plastic waste are ExxonMobil, Dow, Sinopec, Indorama Ventures, and Saudi Aramco [42]. The top five banks financing single-use plastic waste are Barclays, HSBC, Bank of America, Citigroup, and JPMorgan Chase [42]. The top five countries generating single-use plastic waste, ranked by per capita consumption, are Australia, United States, South Korea, United Kingdom, and Japan.

Addressing this issue is not a question of eliminating this enormous amount of plastic because this would imply a waste of resources. For this reason, to attend to the efficient management of plastic to avoid pollution and at the same time avoid the loss of resources, the concept of the circular economy can be helpful. A circular economy for plastics implies that the value of plastics in the economy must be maintained without release into the natural environment [43]. Although plastics recycling is widely promoted, it has been reported that only 8.7% of plastic waste is recycled [44]. Technical solutions along with organizational planning are needed to increase plastic recycling rates.

The circularity definition became relevant with the advent of the sustainable development goals and green manufacturing, and it has fostered many research initiatives [45]; the growth in attention to the circular economy has been recognized by various types of companies, including plastics [46] and waste [47] management, hospitals, ports [48,49], automobiles [50,51], Internet of Things [52], textiles [53], and supply chains [54] in the manufacturing industry.

In short, to develop effective policies, a better understanding of human behavior related to plastic recycling is needed. The literature contains some data from different countries detailing advances in the implementation of a circular economy [53], but there is no evidence from Peru, which is the gap this article addresses. In practical terms, we describe Peru's steps in this preliminary stage of implementation of the circular economy. Additionally, no studies have been done using multivariable analysis to evaluate the acceptance of implementing a circular economy in firms in developing countries. This approach is taken here.

The paper is structured as follows: Section 2 presents literature review, including different concepts about green entrepreneurship and its factors. The methodology, with a description of the instrument, sample and data process, is provided in Section 3. Section 4 gives the results and outcomes according to the questionnaire applied, and Section 5 discusses the findings. Conclusions with theoretical, practical, and societal implications and recommendations, including potential future research, are provided in Section 6.

The current study aims to assess the influence of attitudes, subjective norms, perceived behavioral norms, intentions, and pressures on behaviors towards the circular economy in a total of 71 medium-size firms based in Peru.

2. Literature Review

The circular economy has been identified as a relevant component in the literature, with reports of firms' awareness and behavior of developing a circular economy

in China [55], with drivers and approaches having been detected in companies [56]; awareness of eco-innovations were also detected [57], and barriers for circular economy in SMEs [58]. Another issue evaluated was the development of CE business models in firms and the role of circular economy capabilities [59,60] and digital technologies [61]. The critical material for supply needs to follow the circular economy focus, so it described some strategies for implementing the circular economy [62]. The steps to change from a linear to a circular economy were described in SMEs [63]. Even a recent publication describes a literature review around Industry 4.0, showing advances and this process [64]

It has been described as implementing the circular economy concept by converting cassava pulp and wastewater to biogas for sustainable production in the starch industry [65]. Other's efforts include the building and construction sector, highlighting evidence of the development and use of alternative construction materials and the advancement of circular business models and smart cities and their relations with the CE [66]. Other reports showed urban mining in buildings in Singapore, demonstrating the feasibility of reuse-driven urban mining and subsequent significant prospects for embodied carbon savings [67], evaluated advances in the technological control of greenhouse gas emissions from wastewater [68], and a description of membrane technology for the recovery of water, nutrients from a secondary effluent [69], and examined macrophytes as wastewater treatment agents [70].

The Ministry of Micro, Small, and Medium Enterprises (MSME) in India was evaluated and it was found that environmental commitment and green economic incentives were considered additional predictors in the theory of the planned behavior (TPB) model to investigate CE readiness. The findings show that the impact of attitude, social pressure, environmental commitment, and green economic incentives on CE readiness is positive [71]; also, the barriers experienced by small and medium-sized enterprises (SMEs) were identified when implementing circular economy business models. The barriers reported were lack of capital, government support, lack of information, lack of technical and technological know-how, and company environmental culture [72]. The impact of three circular economy models in Europe was explored on the European plastic packaging value chain, covering circular economy strategies as cross-sectoral valorization of plastic wastes, recycling efficiency of wastes, and new bio-based biodegradable plastic products [73]. Finally, a self-assessment readiness tool was established called MATChE (MAking the Transition to a Circular Economy) [74].

Regarding customers, it was found that subjective norm, willingness to sacrifice for the environment, perceived economic benefit, and anticipated positive emotion affect residents' willingness to be involved in the circular economy [75]. Then, an experimental study was conducted to assess the perception of remanufactured products in a panel of consumers. The results showed that green consumers and consumers who consider remanufactured products green typically found remanufactured products to be significantly more attractive. Additionally, brand equity manipulation proved less important to consumers than specific remanufactured product quality perceptions [76]. It was, too, confirmed that the level of environmental consciousness, individual values, post-use perceptions, nature of the purchase, and socio-cultural norms are the significant drivers of consumer purchase intentions of remanufactured products. Personal factors include personal attitudes and beliefs, individual personality, and environmental consciousness, while contextual factors include societal norms, price, promotion/advertisement, service quality, and brand image [77]. Additionally, it was reported the expectations and interests of university students about sustainable development goals [34], intellectual property related to sustainability [33], hospitality and sustainable development goals [31], and regulation of plastics [32]. Finally, it evaluated consumers' willingness to pay (WTP) for refurbished products and found it to be low. Additionally, they found that strategies for a higher WTP are needed to grow consumer markets for refurbished products [78].

2.1. Scientific Theory

Theory of Planned Behavior

The current study considers the theory of planned behavior (TPB) as a theoretical foundation to calculate the effect of variables on behavior regarding the circular economy. TPB is one of the most influential theories used to understand human behavior. It was proposed that TPB explains the variables that describe people's intentions; also, it includes intentions as a strong predictor of behavior [79].

Some previous studies have employed TPB to predict human intention related to environmental issues and explicitly recycling behavior [80–86]. However, previous studies considered samples from consumers or students to predict individual-level outcomes but rarely considered a sample from organizations to predict organizational-level outcomes. A novelty of the current study is its measurement of the behavior regarding a circular economy in companies. The current study focuses on firms because they create a very important proportion of plastic waste that is often not adequately collected. After all, most firms are not involved in the circular economy at present. Finally, carrying out circular economy activities is complex because they involve attitudes, perceptions, and individual values. In this way, the measure must focus on latent variables like TPB which describes knowing the intentions and behaviors of decision-makers in companies.

3. Approach

3.1. Development of Hypotheses

3.1.1. The Behavior of the Circular Economy

Various studies have reported behavior regarding the circular economy at different levels [75,87,88]. The current study evaluates actions that firms are taking related to the circular economy, such as using eco-friendly packaging, segregating plastics from other wastes, transferring generated plastic waste to a waste management company, selling generated plastic waste to other organizations, reusing generated plastic waste within the organization and reducing the generation of plastic waste.

3.1.2. Attitude

Attitude was defined as the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question [89]. There is evidence of relations between attitude and behavior intention [90]. In the current study, we examine attitudes regarding the extent to which decision-makers, whether positive or negative, value plastics recycling.

Hypothesis 1. *Attitude has a positive influence on the behavior intention of circular economy.*

3.1.3. Subjective Norm

Subjective norm is the perceived social pressure to perform or not to perform the behavior [89]. There is evidence of a relationship between subjective norm and behavior intention [91]. In the current study, we investigate subjective norms as societal norms of plastic recycling.

Hypothesis 2. *Subjective norm has a positive influence on the intention of circular economy.*

3.1.4. Perceived Behavioral Control

It is defined as the perceived ease or difficulty of performing the behavior [89]. Some research supports the relationship between perceived behavioral control and behavioral intention [90]. The current study considers perceived behavioral control as the perceived power of decision-makers to recycle plastics.

Hypothesis 3. *Perceived behavioral control has a positive influence on the intention of circular economy.*

Additionally, TPB [89] shows that perceived behavioral control influences behavior. In this way, for the current study, we establish this relation for the net hypothesis.

Hypothesis 4. *Perceived behavioral control has a positive influence on the behavior of circular economy.*

3.1.5. The intention of Circular Economy

The intention is the individual's state that creates decisions, attention, and interest to carry out a specific action [92,93]. Some factors influence the intention to act and, finally, directly affect the behavior, showing how a person plans to carry out the linked behavior as indicated by the TPB [89]. The intention to perform a behavior occurs before the behavior as such. The current study considers the intention of the behavior of circular economy [93].

Hypothesis 5. *The intention of circular economy has a positive influence on the behavior of circular economy.*

3.1.6. Pressure

External and internal situations usually create pressure to do an action. Regulations and requests from the market can pressure companies to implement a circular economy in their process. The current study evaluates the pressures on firms to implement a circular economy. They include international trade regulations, regional regulations on plastic recycling, local regulations on plastic recycling, the threat of future environmental regulations, green strategies of competitors, and environmental awareness of customers

Hypothesis 6. *Pressure has a positive influence on the behavior of circular economy.*

3.2. Research Model

Figure 1 shows the research model detailing the relationship between the study variables. The research model considers attitude, subjective norm, perceived behavioral control, intention regarding the circular economy, and behavior regarding the circular economy. In Figure 1, the circles represent each variable of the study.
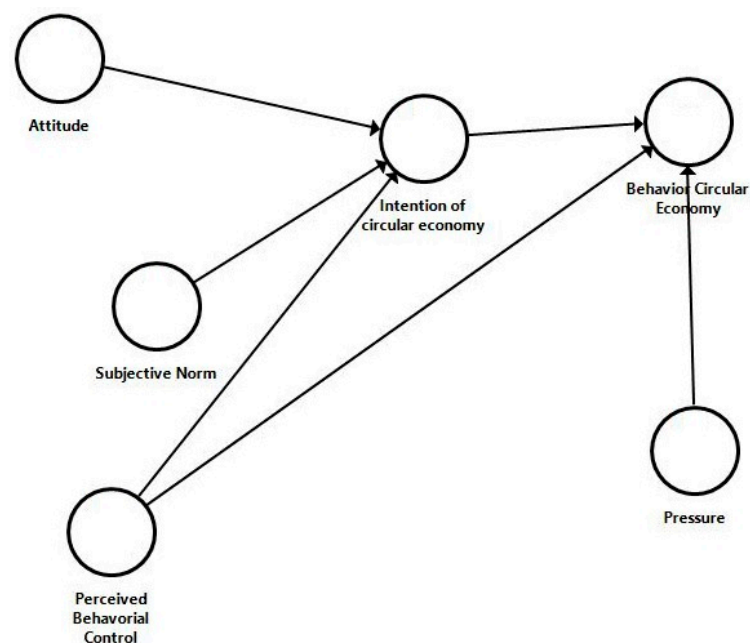

Figure 1. Research model.

4. Methodology

The current study is observational, non-experimental, prospective with an inferential design. The objective is to describe the influence of factors that can explain the acceptance of the implementation of circular economy in firms.

4.1. Sample

The inclusion criteria were companies in the service sector in Peru. The sample consists of 71 firms. The mean of years of the creation of firms was 26 (SD = 38.94).

4.2. Instrument and Data Collection

The questionnaire includes questions based on the instrument used by Khan [94]. The variables were measured using a 5-point Likert-type scale (from 1 = completely disagree to 5 = agree). The scale of attitudes consists of six items, subjective norms five items, perceived behavioral control five items, intentions of circular economy four items, pressures six items and behavior of circular economy six items. Sustainability experts checked the first version of the online questionnaire. The original items were translated and adapted linguistically. The final version of the questionnaire was uploaded in Google Forms. The managers completed the online form anonymously.

The data collection was made using an online questionnaire in Google Forms distributed to managers of firms by emails and personal chats between 22 October and 21 November 2020. The authors followed international requirements for research ethics. The participants received the following information: "The online questionnaire is for scientific purposes. If after you start answering the questions, you do not want to go ahead for different reasons, feel free to do so". The participants answered yes/no to statements "I have freely decided to participate in this study", "I understand that my participation is voluntary," and "I received information about the objectives of the present investigation".

4.3. Data Analysis

To evaluate the data collected, SmartPLS version 3.3.2 was employed. Variance-Based SEM (PLS) was used in the current study as it is an exploratory analysis, a theory currently under development. SEM PLS was used for samples that do not have a normal distribution and require a non-parametric analysis, as is the case for the current study. Additionally, SEM PLS delivers the R2 values and, simultaneously, shows the significance of relationships between variables to demonstrate how well the model is performing. Finally, SEM PLS can handle many independent variables simultaneously [95]. There are several reasons for choosing PLS-SEM for the current study. The internal consistency of subscales was analyzed using Cronbach's alpha reliability coefficient, construct and discriminant validity, and internal consistency through composite reliability [96]. The reliability of each indicator is evaluated by measuring the indicator's loads. The average extracted variance is utilized to analyze the fit of the model. Additionally, the Fornell–Larcker criterion [97,98] is used to evaluate the discriminant validity.

5. Results

5.1. Reliability

The reliability of scales was calculated by analysis of internal consistency. The variables' scales showed reliability coefficients (Cronbach's Alpha) higher than 0.7, the expected minimum in the exploratory analysis.

5.1.1. SEM-PLS for Validation

The validation process of the instrument by SEM-PLS includes a reliability analysis of each item, the internal consistency of dimensions using composite reliability, analysis of the average variance extracted, and discriminant validity. The coefficients of composite reliability of each instrument's sub-scales were between 0.574 and 0.957 (Table 1). According

to the values reached in the sub-scales are, we can confirm the reliability of the instrument. We expected for composite reliability a value higher than 0.707.

Table 1. Construct validity of the items of the scales using Structural Equations of Variance using Partial Least Squares.

Scale–Item	Factorial Weight	Composite Reliability	Extracted Variance
Attitudes			
Recycling plastic waste is good	0.894		
Recycling plastic waste is useful	0.904		
Recycling plastic waste is rewarding	0.876	0.957	0.788
Recycling plastic waste is sensible	0.919		
Recycling plastic waste would give our organization great satisfaction	0.889		
It is our organization's responsibility to recycle plastic waste	0.843		
Subjective Norms			
Most people who influence our decisions think that we should recycle plastic waste	0.887		
Most people inside our organization think that we should participate in recycling plastic waste	0.908	0.930	0.727
Most people outside our organization think that we should participate in recycling plastic waste	0.870		
Many organizations similar to our organization participate in recycling plastic waste	0.838		
Our neighboring organizations participate in recycling plastic waste	0.750		
Perceived Behavioral Control			
Our organization knows what items of plastic waste can be recycled	0.880		
Our organization knows where to take plastic waste for recycling	0.915	0.918	0.695
Our organization knows how to recycle plastic waste	0.934		
Whether our organization recycles plastic waste is entirely up to us	0.682		
Whether our organization recycles plastic waste effectively is entirely within our control	0.725		
Intention of Circular Economy			
Our organization intends to recycle plastic waste	0.967		
Our organization plans to recycle plastic waste	0.963	0.982	0.931
Our organization is willing to put efforts to recycle plastic waste	0.965		
Our organization is willing to participate or continue plastic recycling	0.964		
Pressures			
International trade regulations	0.809		
Regional regulations on plastic recycling	0.864		
Local regulations on plastic recycling	0.686	0.889	0.574
Threat of future environmental regulations	0.704		
Green strategies of competitors	0.711		
Environmental awareness of customers	0.756		
Behavior of Circular Economy			
Utilizing eco-friendly packaging	0.849		
Segregating plastics from other waste	0.879		
Handing over generated plastic waste to a waste management company	0.853	0.917	0.651
Selling generated plastic waste to other organizations	0.643		
Reusing generated plastic waste within our organization	0.719		
Reducing the generation of plastic waste	0.870		

Sample: 71 companies.

5.1.2. Discriminant Validity Using SEM-PLS

Discriminant validity was calculated using the Fornell–Larcker criterion [97], as shown in Table 2. To do this, in the first column, the square root of the extracted variance that appears in the upper part in parentheses must be greater than the correlations that appear in the same column in the following lines of the same column. Table 2 shows the fulfillment of this criterion at all subscales, demonstrating the discriminant validity of the tested instrument.

Table 2. Discriminant validity of sub-scales using the Fornell–Larcker criterion.

Scale	ATTITU	BEHAVI	INTENT	PERCEI	PRESSU	SUBJEC
ATTITU	(0.888)					
BEHAVI	0.482	(0.807)				
INTENT	0.624	0.710	(0.965)			
PERCEI	0.670	0.770	0.769	(0.834)		
PRESSU	0.612	0.589	0.520	0.620	(0.758)	
SUBJEC	0.692	0.541	0.643	0.709	0.566	0.852

Sample: 71 companies. ATTITU: Attitude; BEHAVI: Behavior of circular economy; INTENT: Intention of circular economy; PERCEI: Perceived Behavioral Control; PRESSU: Pressure; SUBJEC: Subjective norm.

5.1.3. Bootstrapping

The Bootstrapping Technique is a non-parametric procedure employed to check if the path coefficients (beta) are significant [99]. If the tested model is significant, the calculation is carried out, indicating that it will be carried out 5000 times. It can be seen in Table 3 that the values are significant (p values < 0.01).

Table 3. Significance of trajectory coefficients (beta).

Scales	Original Sample	Mean Sample	Standard Deviation	t-Statistic	p
ATTITU → (INTENT)	0.144	0.157	0.126	1.138	0.255
INTENT → (BEHAVI)	0.272	0..280	0.159	1.710	0.087
PERCEI → (BEHAVI)	0.461	0.445	0.150	3.064	0.000
PERCEI → (INTENT)	0.578	0.575	0.129	4.486	0.000
PRESSU → (BEHAVI)	0.162	0.178	0.082	1.983	0.047
SUBJEC → (INTENT)	0.133	0.128	0.101	1.314	0.189

Bootstrapping technique (5000 times) using Smart PLS. p value < 0.01. Sample: 71 companies. ATTITU: Attitude; BEHAVI: Behavior of circular economy; INTENT: Intention of circular economy; PERCEI: Perceived Behavioral Control; PRESSU: Pressure; SUBJEC: Subjective norm.

Figure 2 shows the research model tested. The outcomes confirm that attitude, subjective norm, and perceived behavioral control through intentions toward the circular economy influenced the behavior of the circular economy. Additionally, the intention of circular economy and pressure has an influence on behavior regarding a circular economy.
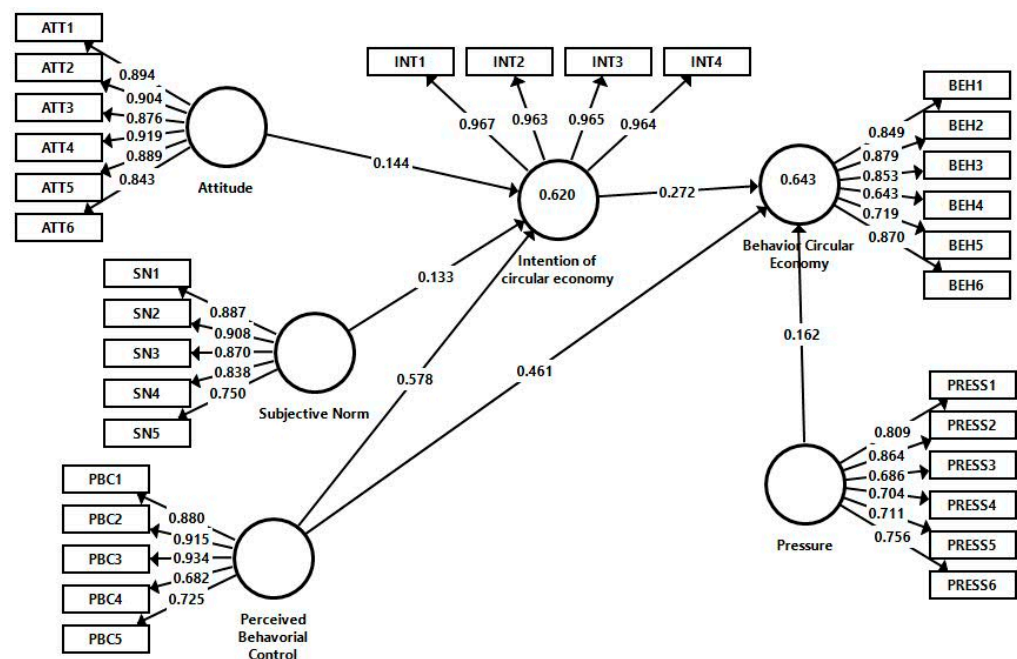
Figure 2. Research model tested.

5.1.4. Test of Hypothesis

Hypothesis 1 (H1). *Attitude has a positive influence on the intention of circular economy.*

Attitude has a positive influence of 0.144 over the intention of circular economy. The hypothesis was confirmed.

Hypothesis 2 (H2). *Subjective norm has a positive influence on intention of circular economy.*

Subjective norm has a positive influence of 0.133 over the intention of circular economy. The hypothesis was confirmed.

Hypothesis 3 (H3). *Perceived behavioral control has a positive influence on the intention of circular economy.*

The hypothesis was confirmed. Perceived behavioral control has a positive influence of 0.578 over intention of circular economy. Additionally, attitude, subjective norm, and perceived behavioral control explain 62% of the intention of circular economy.

Hypothesis 4 (H4). *Perceived behavioral control has a positive influence on the behavior of circular economy.*

Perceived behavioral control has a positive influence of 0.461 on the behavior of circular economy. The hypothesis was confirmed.

Hypothesis 5 (H5). *Intention of circular economy has a positive influence on the behavior of circular economy.*

The intention of circular economy has a positive influence of 0.272 on the behavior of circular economy. The hypothesis was confirmed.

Hypothesis 6 (H6). *Pressure has a positive influence on behavior of circular economy.*

The hypothesis was confirmed. Pressure has a positive influence of 0.162 over the behavior of circular economy. Additionally, the intention of circular economy and pressure explain 64.3% of the behavior of circular economy.

6. Discussion

The current study aims to evaluate the influence of attitudes, subjective norms, perceived behavioral norms, intentions, and pressures on behaviors towards the circular economy by firms in Peru. We ensured that the questionnaire would be valid; we used the discriminant validity and reliability (internal consistency—Cronbach's alpha coefficient and composite reliability). The results obtained showed that the questionnaire was valid, reliable, and statistically relevant in applying the sample and showed that the model explained the variables that describe behavior regarding the circular economy.

Our study shows that attitudes are significant determinants of behavioral intentions, consistent with previous studies [100–105]. In the model, it has been possible to corroborate that the most substantial influence occurred from perceived behavioral control both towards the intention of circular economy and towards the behavior of circular economy. Another essential aspect is that the three dependent variables explain 62% of the mediating variable, which is an essential strength of the model. Finally, the model explains 64.3% of the dependent variable.

An important score was obtained for the statement "Recycling plastic waste is good." Other statements that obtained a good factor load were "Recycling plastic waste is useful" and "Recycling plastic waste is sensible," which express that companies recognize that having a circular approach is very useful for companies in resource management and process optimization. Previous answers are related to the implementation of circular performance indicators and e-waste recycling intentions.

About the statement "Recycling plastic waste is rewarding", it can be confirmed that it is very relevant for decision-makers in companies because they manage to recognize that the circular economy goes beyond the simple assessment of good results or even just feeling, which is helpful. The recognition of its value to generate profits allows the interest to continue with the modification of processes to be evidenced because, in the end, it will be possible to recover the investment through the optimization of processes [94,106].

The phrase "Recycling plastic waste would give our organization great satisfaction" expresses the recognition of the companies that implement the circular economy. The satisfaction captured is evidenced since the implementation saves time and materials, making processes more efficient and more competitive products can be achieved [107,108].

The phrase "It is our organization's responsibility to recycle plastic waste" has a significant impact on implementing recycling. It is recognized that when manufacturing products that go to market, they also take charge of recycling those products. This aspect shows a clear responsibility. In some countries, there are regulations to take care of plastic products [109–111].

The companies recognize that various external and internal actors expect companies to take charge of plastic recycling. The process of recycling plastic is a constant pressure for companies to implement the circular economy [112,113]. Companies' approach to recognizing that recycling is good also positively impacts the appreciation that customers have of the companies and a better reputation, which can be reflected in preferences regarding sales and change of behavior of the consumers.

However, when asked about the activities of other organizations regarding the circular economy through recycling of plastics, the vast majority reported that these other organizations are not very involved. Perhaps there is this involvement, but little seems to be evident. However, there are new regulations that seek to encourage companies to be more sustainable. An obvious example is the creation of the BGreen seal [114]. Likewise, it has been possible to recognize more than 40,000 recycled materials, more than 12,000 kg of trash from beaches, and 38 t of CO_2 that can be avoided.

It is recognized that the pressures are explained by the national and international trade regulations, competitors' green strategies, and customers' environmental awareness. This pressure from consumers is likely to increase, as the literature has increasingly reported [115–118].

The results obtained here can serve as a starting point to show the implementation processes carried out with more force over the last two years and show which variables continue to influence the business decision to implement the circular economy focused on plastics recycling.

7. Conclusions

The current study's main contribution is to improve understanding of the behavioral variables regarding the circular economy. As the literature is limited to a circular economy, this study seeks to broaden interest in that issue. The analysis technique employed is a strength of this article, as it has permitted evaluation of the correlations between the variables using multivariate analysis by modeling structural equations using partial least squares (SEM PLS). We found that the variables explained to have a relevant impact on the intention of the mediator variable, the intention of circular economy, which is the last variable for the behavior of circular economy evaluated in firms.

The study merits being reproduced in other countries and regions to understand the circular economy's implementation process and which variables have a more substantial influence. Additionally, it is essential to examine various kinds of firms to capture the differences between them. It was possible to develop a questionnaire that can be applied in future research and refined for further research.

7.1. Theoretical Implications

The circular economy is a relatively new concept in the literature, and some variables are currently in testing. Some of these publications are related to manufacturing processes and even customer expectations; in this way, the contribution of this study is relevant since there are very few studies that address the subject in companies in Latin America and certainly not in Peru. As a novelty, we developed a model based on planned behavior theory to evaluate companies. It is expected that the results for firms in different countries may differ somewhat, considering that regulations and the contributions of universities are different. When using SEM-PLS, it has been possible to attain results that measure both the correlation between variables and the pathways to explain behavior regarding the circular economy. This study can serve as a guide for subsequent research and can supply a valid instrument and theoretical framework.

7.2. Practical Implications

Through Supreme Decree 003-2020, the Ministry of Production of Peru approved the Roadmap towards a circular economy in the industrial sector [119] which shows that governments, in this case Peru, are committed to regulating and promoting the circular economy in companies. There is also funding from the State to develop specific projects such as coconut shells as an energy generator (eco carbon), and eggshells converted into calcium salts.

The Clean Production Agreements (APLs) that the Ministry of the Environment (Minam) of Peru has been promoting, in close coordination with companies that are engaged in productive, extractive, or service activities, seek to improve the production and environmental conditions of their processes, joining efforts and alliances towards a circular economy. Currently, seven APLs with companies from different sectors have voluntarily implemented actions that promote the minimization and valorization of solid waste, such as reuse and recycling, the circularity of materials through their recovery.

Additionally, the incorporation of recycled material in the composition of their products recognized waste or secondary materials as inputs to new production processes.

It has been recognized that, in the face of the COVID-19 pandemic, the circular economy approach is appropriate [64,120–123] and should continue to be supported for its further development, regardless of the pandemic period, since more and more companies will continue to be interested in the implementation of the circular economy. The new generations of professionals and university students have the opportunity to make contributions to the circular economy and resilience after COVID-19 in firms and universities. We recognize some evidence of the literature highlighting a circular economy and resilience in the fashion industry [124], food industry [64], and supply chains [125].

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Institutional Review Board Statement: Ethical review and approval were waived for this study because it does not involve any risk to the participant's life or health. No substance has been tested on the participants or put them in danger at any time.

Informed Consent Statement: Patient consent was waived because it would not be part of any medical intervention and no drug substance tested.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

Ethical Approval and Informed Consent: All procedures performed in studies involving human participants were by the ethical standards with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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