

Article

Factors and Paths Affecting Payment for Forest Ecosystem Service: Evidence from Voluntary Forest Carbon Market in South Korea

Jang-Hwan Jo ^{1,†}, Taewoo Roh ^{2,†} , Jongmin Hwang ³, Kyeong-hak Lee ⁴ and Changbae Lee ^{4,*} 

¹ Environmental Change Institute, School of Geography and the Environment, University of Oxford, South Parks Road, Oxford OX1 3QY, UK; osmanthusfvam.jo@ouce.ox.ac.uk

² Department of International Trade and Commerce, Global Business School, Soonchunhyang University, Unitopia 901, Soonchunhyang-ro 22, Sinchang-myeon, Asan-si 31538, Chungchungnam-do, Korea; troh@sch.ac.kr

³ Forest Management Support Division, Korea Forestry Promotion Institute, 58 Hwagok-ro, 66-gil, Gangseo-gu, Seoul 07569, Korea; hjmin31a@kofpi.or.kr

⁴ Department of Forestry, Environment, and Systems, College of Science and Technology, Kookmin University, 77 Jeongneung-ro, Seongbuk-gu, Seoul 136-702, Korea; kyeonghlee@kookmin.ac.kr

* Correspondence: kecolee@kookmin.ac.kr

† Jang-Hwan Jo and Taewoo Roh contribute to this article equally.

Received: 17 July 2020; Accepted: 24 August 2020; Published: 27 August 2020



Abstract: This study aims to identify factors and paths affecting payment for forest ecosystem service based on evidence from the voluntary forest carbon market in South Korea. The study was built based on the theory of planned behavior and institutional theory. The survey was conducted to 24 private forest owners, 21 workers of local governments, 9 of public institutes, and 6 of private companies. Partial least squares structural equation model was applied to verify the hypothetical structural model displaying the effects among the constructs of subjects' recognition, intention, and behavior in participating in the forest carbon offset project. Results showed that raising awareness of forest carbon offset (FCO) is essential for revitalizing the forest carbon market. In addition, it was found that forest managers' expectations for FCO were practical operations. Moreover, with the presence of intent to participate in the FCO, the FCO market could be revitalized only by increasing the intention of use in the management aspect and by increasing the commitment of the owner and CEO to this project. The detailed theoretical and managerial implications based on the findings are discussed in the paper.

Keywords: ecosystem service; forest carbon; theory of planned behavior; institutional theory

1. Introduction

Recently, ecosystem services are increasingly a subject of interest in a variety of places [1]. The commodification of ecosystem services in the form of payments for ecosystem services (PES) schemes and the development of new markets for ecosystem services is growing in popularity [2]. PES tries to internalize the positive externalities made by nature systems, creating incentives for the landlord's behavior that ensures service provision [3]. In particular, forests, initially valued for their provision of wood, are now increasingly valued for their function as the global carbon sinks [4]: enhancement of the biodiversity [5,6], improvement of the air quality [7–11], and support for a healthy life [12–14]. As a policy instrument to combat climate change, the forest carbon and land-use carbon market is one of the most actively traded PES sectors. US \$2.8 billion has been spent since 2009 for forestry and land-use practices that sequester carbon, quantifying carbon benefits in the form of a

standardized offset [3]. Although previous research has reported the characteristics of demand-side players in the carbon market such as firms, NGOs, governments and the intention of the supply side participants like forestland owners [15,16], there are few existent tasks regarding dynamic flows: participant recognition, intention and the behavior towards the voluntary carbon markets. Basically, a deeper understanding of the factors and paths affected by multi-participants will be beneficial as projects and policies are advanced to engage multi-participants with the market. Thus, analyzing participants' intention and path in contributing PES for the forest and land-use carbon could provide important insights not only for the sustainable operation of the forest carbon market but also for designing a PES scheme that utilizes other ecosystem services in the future.

With the Paris Agreement endorsing continued carbon market development [17], South Korea also announced a revised roadmap for reducing greenhouse gas emissions: by 2030, a total of 314.8 million tons in all sectors and 22.1 million tons in the forest carbon offset sector [18]. The forest carbon offset (FCO) market, operated in South Korea, is a system in which the government certifies the amount of forest carbon offset secured to the companies, the forest owners, and the local governments when they voluntarily promote carbon offsets using forests to reduce greenhouse gas emissions. The following projects are the examples: afforestation/reforestation, forest management, use of wood products, use of forest biomass energy, and mixtures of the other types. South Korea enacted the Act on the Maintenance and Promotion of Carbon Absorbing Sources in 2012 and has been operating the forest carbon offset market for seven years since 2013. Given that the majority of forest in South Korea is privately owned (69%), private forest owners may play a key role in achieving the planned national greenhouse gas reduction target. It is important to understand the project participants' intentions and perceptions for forest carbon offset and trading because the forest carbon market is one of the key elements of payments for ecosystem services schemes. This study employs the Theory of Planned Behavior (TPB) [19] and institutional theory as a framework in order to investigate the potential antecedents of participants' intentions.

In TPB, a personal behavior is affected by attitude, norms, control, and intentions [20]. Before having an intention to do something, people usually ask themselves whether such behavior is required for the purpose. Attitudinal behavior towards a certain situation works as a first recognition in understanding how they should react. In the next stage of recognition, people are likely to think about whether others will accept such behavior as a norm. Lastly, their behavior is controlled or allowed by a layer of authorities. Prior to having an intention to a specific behavior, people ponder which behavior is appropriate and how to respond in the recognition stage.

When identifying people's intent to actively participate in the FCOs at the recognition stage, institutional theory can support in three ways to expand the understanding of our theoretical lens [21]. First, institution theory helps to identify the sequential relationship between people's perception and intention even in case a different type of psychological procedure such as attitude, norm, and control, influences their intention [22]. Second, it identifies the people's intent from an institutional perspective that may occur between recognition and action. Subjective norms (SN) and perceived behavioral control (PBC), according to the TPB, play a major role in having an attitude. While previous studies view this attitude as a psychological state, this study explores the possibilities for market participants to be directly affected by market and regulation, such as attitude towards FCO (AFCO). Third, intention of participants may be considered to have more than one direction. From an institutional perspective, the intent of the participant to use the FCO may result in the intention to use the FCO. That is, it may suggest that the degree of "action" may vary. This study applies the two theories, TPB and institutional theory, as working tools to study the FCO. The results of our study could bring insights to countries with consideration of introducing FCOs in the future who consider introducing FCOs.

2. Hypothesis Development

2.1. Carbon Markets and Forestry Offsets in Korea

Carbon market and offset schemes have developed rapidly over the last ten years. In the forest and land-use sector, actions eligible for carbon offsets include afforestation/reforestation, improved forest management, sustainable agricultural land management, and Reducing Emissions from Deforestation and Forest Degradation (REDD+). A review in 2018 found 48 forest and land-use carbon PES programs were operating globally: 31 financed by governments and 17 voluntary schemes driven either by corporate social responsibility (CSR) or in anticipation of future compliance obligations [3]. Forest carbon schemes dominate the voluntary carbon market, with a greater market value than renewable energy projects [4]. However, the scale of uptake so far has been relatively small. Although Article 5 of the Paris Agreement requires parties to conserve and enhance sinks and reservoirs of greenhouse gases, including forests, negotiations have failed to reach agreement on the rules and safeguards for using forest and land-use carbon offsets to meet emissions reduction targets.

In the Republic of Korea, the forest carbon offset project was initiated in 2013. By the end of 2018, a total of 212 projects had been registered, with an area of 20,000 hectares and an estimated absorption of 200,000 tons (Table 1).

Table 1. Registration status of forest carbon offset in South Korea.

Classification	2013	2014	2015	2016	2017	2018	2019	Sum
Registration (count)	2	31	40	37	46	55	40	251
Area (ha)	5	93	332	5551	6358	7812	11,544	31,695
Expected offset (ton)	63	785	7888	45,041	64,474	80,574	117,183	316,008

Source: Korea Forestry Promotion Institute (2020).

Participation types include 141 transactions, which is about twice as many as non-transaction types with 71 cases. In Table 2, most projects were in forest management (97 cases), followed by reforestation (50 cases), restoration (46), afforestation (10), wood products use (6), and forest biomass energy (3). This is thought to be because the forest management and restoration are relatively easy options for Korean forests' owners to apply.

Table 2. Specific types of forest carbon offset in South Korea.

Type	Aff	Ref	FM	FB	WP	Res	Sum
Transactions	6	17	92	3	1	22	141
Non-Transaction	4	33	5	0	5	24	71
Total (units)	10	50	97	3	6	46	212

Note: Aff = afforestation, Ref = reforestation, FM = forest management, FB = forest biomass energy use, WP = wood products, Res = restoration.

2.2. Conceptual Development and Research Hypothesis

2.2.1. The Theory of Planned Behavior

TPB begins with rational behavior theory and predicts an individual's intention to engage in behavior at a specific time and place [19]. TBP is intended to explain all the actions people can control. Behavioral intention is an important variable in predicting behavior change and behavior is often related to individual motivation. It is influenced by subjective norms or opinions that form positive attitudes toward behavior and support behavior [23,24]. For perceived behavioral control to affect behavioral change, it must have the ability to perform actions. Therefore, controlling the necessary opportunities, resources, and skills is the important part of the change process. Behavioral intention is predicted not only by attitude, but also by subjective norms [25].

TPB mainly focuses on recognition, intention, and behavior. However, more dynamic interaction between three psychological processes is involved when the planned behavior is examined internally. Although the sequence of behavioral manner follows the standard order, from the cue to action, the causal relationship within each stage may differ depending on people's situation.

Behavioral beliefs lead to a friendly or unfavorable attitude toward behavior. Normative beliefs lead to perceived social pressures or subjective norms, and controlled beliefs generate control of perceived behavior. When the three beliefs are combined, attitudes toward behavior, subjective norms, and awareness of behavior control the form of the intention of behavior. In general, when attitudes and subjective norms are favorable, perceived control is greater and the individual's willingness to perform a problematic search behavior is stronger [19,25].

Recognition refers to personal perception towards a situation before making a decision about the action [26–28]. Recognition of the situation can be uncovered partly by institutional theory as it provides an in-depth discussion on an organization's survival strategies against the changes in its society [29,30]. For instance, organizations are often forced to adapt to the changes made in the society (e.g., new laws and regulations) [28,31]. In such cases, the majority of organizations choose to wait for some time and then follow some social norms as they investigate other organizations undergoing trial and error [22,32].

2.2.2. Recognition

To examine and better understand intentions of forest owners to participate in carbon offset schemes, the Theory of Planned Behavior (TPB) is applied as the theoretical frame of reference. The TPB [19] is an extension of the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975) [33]. The TRA suggests that a given behavior is dependent upon the intention to perform the behavior, and that these intentions are dependent upon individual attitudes towards the behavior and subjective norms (or social pressures). The TPB extended the TRA by including a perceived behavioral control construct which also acts as an antecedent to behavioral intentions. The TPB has been applied in a wide range of behavioral studies related to health [23], wildlife and recreation [34], recycling [35] and has also been used successfully in business and organizational applications such as environmental management [36], adoption of information technology [37], aspirations of business managers [38]. A meta-analysis conducted by Armitage and Conner (2001) [39] demonstrated support for the use of the TPB in a multitude of research fields. Relevant to the current research, the TPB has also been used in making the forest management decisions on reforestation [40] and non-industrial private forest owners entering the forest carbon market [15,16].

There are various theoretical assumptions about human collective action. Above all, the claim to explain human collective behavior stands out in terms of economic rationality. In other words, because individual choices and actions constitute social aggregates, individual choice based on economic rationality is the fundamental basis for explaining social phenomena [28,41]. However, human beings cannot act solely to satisfy their individual needs apart from their own community, society's moral needs, and social responsibilities. Some argue that arbitrary or irresponsible behavior can lead to economic losses [28,42]. On the contrary, transparency can be applied to the overall policy-making process in the public sector due to its legitimacy effect between communities. Thus, the hypothesis can be derived as the fact that if the project participants' awareness of the system increases, the subjective norm corresponding to the system's transparency will increase.

According to a previous study, the lower the level of transparency in the market, the lower the tax audit expertise of the Corporate Audit Committee [43]. Companies with financial experts in the audit committee operate more efficiently [44]. Presumably, it is unlikely that a significant vulnerability of the internal accounting management system will occur when the company has high transparency [45]. In particular, the presence of accounting experts in the audit committee can provide stronger evidence of improved financial reporting quality [46]. It can be inferred that transparency is related to professionalism in the operation of the system or business. Previous research related to

FCO reports that industrial forestland owners' attitudes regarding carbon sequestration are highly dependent upon their belief that legislation will develop [15]. Based on the analysis of the previous studies, we set the hypothesis as the following sequential relationship between AFCO, SN, and PBC.

Hypothesis 1 (H1). *AFCO will positively influence SN in a forest carbon offset project.*

Hypothesis 2 (H2). *SN will positively influence PBC in a forest carbon offset project.*

2.2.3. Intention

Institutional theory suggested by Meyer and Rowan [26] has grown into the most important research field in organizational theory. In institutional theory, organizational structure and operation are not dependent on the environmental factors or internal technical factors faced by individual firms, but on what they define as desirable and natural [47]. The adoption of this formalized structure increases the legitimacy of the organization by showing internal and external stakeholders that the organization is reasonable [48]. Previous studies related to institutional theory mainly deal with the following subjects: isomorphism [32,49,50], decoupling [26,51,52], institutional logic [30,53], institutional change and innovation [54–56]. Among them, this study aims to focus on the process by which TPB is influenced by institutional isomorphism and forest management representatives participate in FCO. In this study, we applied the TPB to the isomorphism in institutional theory.

Institutional isomorphism can occur in three major ways: mimetic, normative, and coercive [27]. First, coercive isomorphism. In general, organizations must introduce certain systems by law and legally binding regulations. In that, the organizational structure and problem-solving methods become similar, which leads to homogenization. Second, mimetic isomorphism. When it comes to resolving problems arising in an organization, naturally used problem solving methods are used, which are generally considered to be standardized. Third, it is normative isomorphism. Organizations are adopting specific systems in accordance with social norms formed by the business community or a group of similar experts.

As a result, homogenization occurs naturally in a company that is in a similar environment [48]. These phenomena are such that the institutional environment defines what is a desirable structure, and the company that adopts the structure can more easily procure the resources necessary for survival. Imitation can be a rational decision when uncertainty about the relationship between means and objectives makes it difficult for policy makers to make optimal decisions. Therefore, the homogenization of these institutions is facilitated by taking for granted by theorizing and semanticizing the group of scientists and experts and typifying causality.

The Korean government enacted the "Act on the Maintenance and Promotion of Carbon Absorbers" to provide a legal basis for maintaining and promoting the function of forest carbon absorbers [18]. This law includes the provision of forest GHG reduction activities, expansion of forest carbon offset systems, management of carbon absorption performance and establishment of a trading base, and support for carbon sink promotion activities. In addition, in accordance with Article 27 of the Act, it has been announced to prepare operating standards suitable for international standards. This legislation makes participating organizations feel compelled and serves as a tool to reduce the expected disadvantages [32]. These legislations have the same objectives: (1) respond to climate change by maintaining and promoting the function of forest carbon sinks; (2) proactively respond to climate change issues raised in international negotiations; (3) implement climate change response activities that are beneficial to the forestry business and industry.

If mountain owners participate in FCO, they can register at any time by applying directly to the Forest Carbon Registration Department managed by the Korea Forestry Promotion Institution (KOFPI). After such application, mountain owners can register the business through feasibility assessment, authenticate the forest carbon absorption through procedures such as monitoring and verification,

and obtain a certificate [15,30]. In other words, owners who benefit from participating in FCO first are likely to send a positive signal about the effect in the market, and other owners are expected to imitate it. Most FCO projects in Korea have adopted an electronic business system throughout participation to ensure transparency and reliability of system operation [15]. For example, information on the forest carbon offset project through the forest carbon register can be checked at any time on the internet, as well as the status of the business registration and the amount of absorption. In addition, a convenient business registration certificate and certificate issuance service is provided through the internet. This transparency will lead to the formation of a subject norm for new institutional changes, so that organizations that have not even participated will naturally behave similarly.

According to the institutional theory, an organization does not choose an alternative action based on the rational calculation, but rather is a passive being who accepts what is defined as desirable and legitimate in a given institutional environment. In other words, the organization only performs legitimate and meaningful actions that are institutionally defined. As a result, organizations belonging to the same organizational domain, which are part of the same semantic system, defined by similar symbolic processes, and defined by a set of organizations with a common regulation [48], have a similar formal structure [27]. The subject that has been studied in this regard is the study of isomorphism. To sum up, the framework of this study was based on the TPB theory, and the hypothesis was established based on the institutional isomorphism theory. We summarized the abovementioned discussion in Table 3.

Table 3. Hypotheses applying the theory of planning action and institutional theory.

TPB Theory	Institutional Theory (Isomorphism)	Variables	Hypothesis
AFCO	Mimetic	Awareness of participants	H3
SN	Normative	Transparency in project operations	H4
PBC	Coercive	Expertise of the operating entity	H5

Hypothesis 3 (H3). *AFCO will positively influence behavioral intention (BI) in a forest carbon offset project.*

Hypothesis 4 (H4). *SN will positively influence BI in a forest carbon offset project.*

Hypothesis 5 (H5). *PBC will positively influence BI in a forest carbon offset project.*

2.2.4. Participants' Decision: Behavior

Institutional theory is the explanation of the organization's ability to imitate or select a specific strategy among the various changes surrounding the organization. PBC under the TPB can be a major factor explaining both intent and behavior [50]. Therefore, the hypothesis about the difference in behavior can be made based on both the normative isomorphism and mimetic isomorphism.

Normative isomorphism occurs when the organizations take the new operation, which has been rationalized, theorized, and justified by scholars and professionals, for granted scholars and professions generally apply local and regional social rules or practices. It acts as a rationalization and theorizing that transforms into a principle, and homogenization is achieved by adopting this theory [32]. With the discussion of the cost-payment of ecosystem services used in eco-economics, it was reported that companies would be more likely to participate in systems that are perceived to be reliable and at the same time socially correct [57]. From the experience gained through participation, the CEO operates a system that adapts to the new experience and reflects on it in the next move. Other previous studies have also suggested that firms' potential participation decisions can be predicted through repetition of similar organizational behavior even in the absence of behavior [58].

Mimetic isomorphism, on the other hand, appears when an organization mimics other organization in the same organizational domain. Most of the participants in forest carbon projects belong to the

same organizational role as forest owners. Galaskiewicz and Wasserman [59] argued that the spread of successful organizations in the new system was not because of their efficiency, but because they seek imitation of their own success. There are many examples of this, mainly in the field of business administration. The higher the adoption rate among organizations with network relationships, such as redundant outside directors, the higher the adoption rate among organizations with structural identity, the higher the adoption rate among organizations with high status, and the higher the adoption rate among organizations with similar characteristics [50,60,61]. Therefore, we set the following hypothesis.

Hypothesis 6 (H6). *BI will positively influence intention to use (IU) in a forest carbon offset project.*

Hypothesis 7 (H7). *BI will positively influence CEO's commitment (CC) in a forest carbon offset project.*

According to the above hypotheses, our research model was constructed in Figure 1.

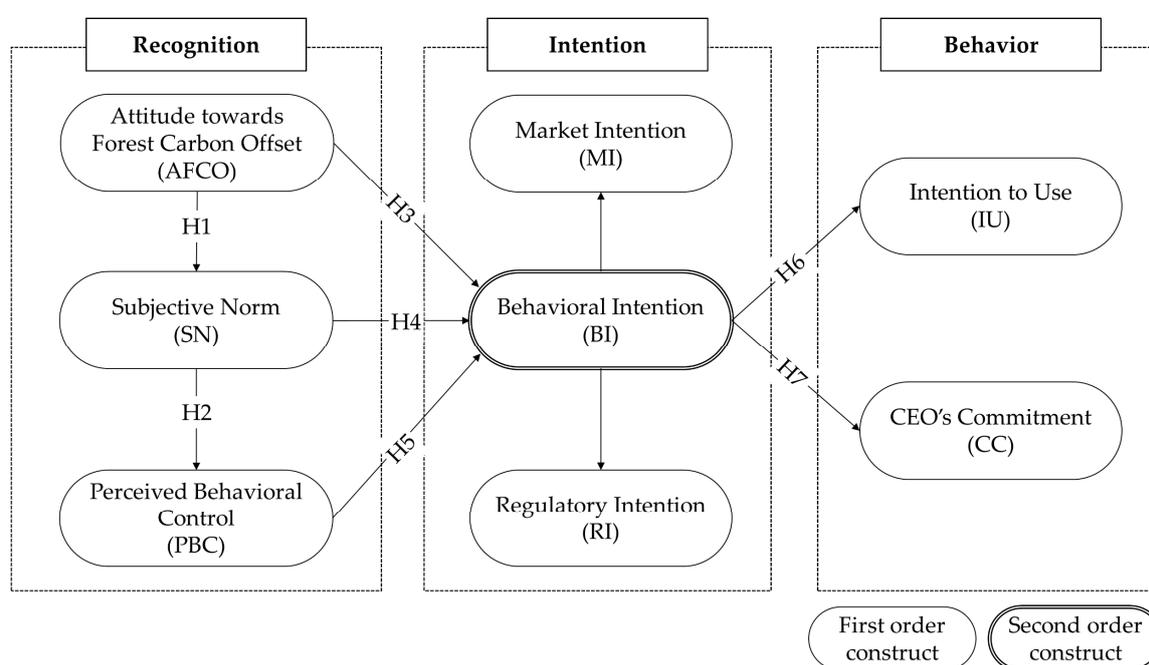


Figure 1. Extended model constructs of the theory of planned behavior.

3. Methodology

3.1. Samples

The methodology was based on face-to-face interviews with whole project participants in the 119 projects that were operating in July 2019. The data collection was conducted from 2 September 2019 to 8 November 2019. 60 participants agreed to take part in the survey, including 24 private forest owners, 21 from local governments, 9 from public institutes, and 6 from private companies.

3.2. PLS-SEM Estimation

Partial least squares structural equation model (PLS-SEM) estimation is a powerful analytical tool that not only factorizes constructs through observations but also demonstrates the relationships between them. The PLS-SEM method does not require regularity and/or normality of observations because it finds the most optimized construct through the factoring and maximizes the variance explained according to the extent that the construct affects the dependent variables. Therefore, it is free from sample size and advantageous for the verification of variables that follow the questionnaire structure. In general, CB (covariance-based)-SEM requires more than 200 samples, while PLS-SEM

can be applied to small samples of about 30–100 [62]. In order to test a model verification, fitness was confirmed through confirmatory factor analysis (CFA) measurement, and then the hypothesis between constructs in the structural model to be verified. The CFA evaluates the reliability, convergent and discriminant validity, and validates the hypothesis if the verification process has no problems. Even if the structural model has found significant results, it must be re-validated with bootstrap.

3.3. Variables

Attitudes and intentions towards forest carbon offset projects were measured based on the level of participant agreement with different statements. The statements were adapted from literature on similar studies [15,16,24,40,63–66]. Answers were based on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Attitude towards Forest Carbon Offset (AFCO) to participate in carbon offset was measured based on the level of participant agreement with seven statements regarding awareness of forest carbon offset projects in South Korea, adapted from [15,16,24,40,63–66]. Subjective Norms (SN) influencing participation in carbon offset projects were measured based on the level of participant agreement with three statements regarding transparency of forest carbon offset projects in South Korea, adapted from [14,16,40,66]. Perceived Behavioral Control (PBC) to participate in carbon offset was measured based on the level of participant agreement with five statements regarding professionalism of forest carbon offset projects in South Korea, adapted from [15,16,25,40,66].

Behavioral Intention (BI) was measured based on nine statements regarding the form of participation in forest carbon offset projects in South Korea, adapted from [15,16,24,36]. Market Intention (MI) was measured based on five statements regarding market motives for participating in forest carbon offset projects in South Korea, adapted from [14,16,65]. Regulatory Intention (RI) was measured based on 4 items regarding governmental motivation for participation in forest carbon offset projects in South Korea [15,16,31]. Answers were based on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Intention to Use (IU) was measured based on 5 items regarding service quality satisfaction of forest carbon offset projects in South Korea. The questionnaire items used to measure each construct and the corresponding literature [11,12,20,36] from which items were adapted. Answers are based on agreement with statements and provided on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). CEO's Commitment (CC) was measured based on 5 items regarding awareness of CEO's participation in forest carbon offset projects in South Korea. The questionnaire items were developed for this study. Answers were based on agreement with statements and provided on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

4. Results

4.1. Descriptive Statistics

Table 4 shows the descriptive statistical results of the survey. In the end, 60 questionnaires were used in the statistical analysis, except for those with fewer responses or missing questions. In the question about the path of finding the social contribution to forest carbon offset, 46 people (38.33%) answered that the system was known through the Korea Forestry Promotion Intuition. The remaining people's path to knowing about the system was the Forest Service—42 (35%), 18—others (15%), and 10—press release (8.33%). When asked about the respondent's affiliation, 46 private business (38.33%), 42 local governments (35%), and 18 public institutions (15%) were followed. As for the main purpose of participating in the forest carbon offset project, 52 (43.33%) responded that they were dealing with forest carbon transactions, 28 (23.33%) participated in government policy, and 20 (16.67%) were carbon absorbers. When asked about the type of participation of the respondent's organization, the number of transactional forest carbon offset projects ($n = 58$, 48.33%) was slightly larger than that of non-transactional forest carbon offset projects ($n = 48$, 40%). Fourteen people (11.67%) responded that they participated in both projects, indicating that they usually participate in one type of project.

Respondents were located in Gangwon-do and Chungcheongnam-do ($n = 18$, 15%, respectively) followed by Seoul ($n = 16$, 13.33%) and Gyeongsangbuk-do ($n = 14$, 11.67%).

Table 4. Descriptive statistics.

Item	Category	Freq. (n)	Percent. (%)
Path to knowing the social contribution of forest carbon offset	Press release	5	8.33
	Public presentation	2	3.33
	Korea Forest Service	21	35
	Korea forestry promotion Institution	23	38.33
	Others	9	15
Affiliation	Enterprise	6	10
	Local governments	21	35
	Public institutions	9	15
	Private business	23	38.33
	Consulting agency	1	1.67
Reasons for participating in forest carbon offset	Social contribution	8	13.33
	Advertisement	2	3.33
	Government policy participation	14	23.33
	Carbon absorber	10	16.67
	Forest carbon transaction	26	43.33
Participation type	Transactional forest carbon offset	29	48.33
	Non-transactional forest carbon offset	24	40
	Both	7	11.67
Location	Seoul	8	13.33
	Busan	2	3.33
	Daegu	1	1.67
	Incheon	3	5
	Gwangju	1	1.67
	Ulsan	1	1.67
	Gyeonggi-do	4	6.67
	Gangwon-do	9	15
	Chungcheongnam-do	9	15
	Chungcheongbuk-do	5	8.33
	Jeollanam-do	5	8.33
	Jeollabuk-do	4	6.67
	Gyeongsangnam-do	1	1.67
Gyeongsangbuk-do	7	11.67	
Position	Employee	37	61.67
	Executive	2	3.33
	Forest owner	21	35
Total		60	100

4.2. Validity Test

The acceptability of this model was verified through the reliability, convergence and discriminant validity, and internal consistency among items. In Table 5, this study excludes items such as IU1, IU3, RI1, and RI2 whose factor loading value does not exceed the threshold of 0.7 to improve the reliability [67]. Therefore, a total of 28 items were chosen. The factor loading value of all variables was much higher than the recommended level of 0.7. Among them, the highest factor loading was for SN1, which was 0.95. In addition, all included items were found to be significant at the 0.001 level.

Table 5. Confirmatory factor loading, mean, and standard deviation.

Construct [Reference]	Item (5-point Likert Scale)	Indicator	FL	M	SD
IU [65]	Compared to the services of other institutions or companies, the Korea Forest Service Institute's services related to FCO systems were satisfactory.	IU2	0.86 ^{***}	3.12	1.20
	I would like to use a scheme similar to the FCO Scheme. FCOs will improve because of the agencies involved in the FCO project.	IU4 MI1	0.91 ^{***} 0.75 ^{***}	3.20 3.62	1.20 1.01
MI [15,16,65]	Most of the organizations participating in the FCO project are positive about the FCO project.	MI2	0.89 ^{***}	3.67	1.23
	Organizations participating in the FCO project are expected to work well with companies involved in the FCO project.	MI3	0.90 ^{***}	3.33	1.11
	Organizations participating in the FCO Project are expected to work well with companies involved in the FCO Project.	MI4	0.88 ^{***}	3.38	1.07
	Employees of institutions participating in FCO projects will accept the FCO project positively.	MI5	0.91 ^{***}	3.55	1.08
	Entrepreneurs participating in forest-related projects expect the FCO project to work well.	RI3	0.93 ^{***}	4.42	0.76
RI [15,16,31]	Forest owners participating in forest-related projects expect the FCO project to work well.	RI4	0.93 ^{***}	4.25	0.93
	The work of a person in charge of the agency who is responsible for running the FCO system will be handled transparently and fairly.	SN1	0.95 ^{***}	3.80	0.93
SN [15,16,40,66]	The work of a feasibility evaluation committee member who evaluates the registration of FCO projects will be handled transparently and fairly.	SN2	0.91 ^{***}	3.93	0.84
	The overall work of the FCO project is handled in a transparent and fair manner.	SN3	0.94 ^{***}	3.93	0.82
	The expertise of those in charge of the agency that runs the FCO system is high.	PBC1	0.76 ^{***}	3.47	1.12
PBC [15,16,40,65,66]	The professionalism of the Feasibility Assessment Committee is high in assessing the registration of forest carbon smelting projects	PBC2	0.94 ^{***}	3.65	1.02
	Consultants who support the registration of forest carbon smelting projects are highly specialized.	PBC3	0.76 ^{***}	3.77	0.99
	The work of a person in charge of the agency in charge of running the FCO system will be handled transparently and fairly.	PBC4	0.92 ^{***}	3.72	0.95
	The work of a feasibility evaluation committee member who evaluates the registration of FCO projects will be handled transparently and fairly.	PBC5	0.94 ^{***}	3.77	0.96
	The chief executives of our organization (forest owner, CEO, executives, etc.) believe that the FCO business will help improve our performance in the future.	CC1	0.85 ^{***}	3.87	1.01
CC [44,46]	The chief executives of our organization believe that the FCO business will help to improve the competitiveness of the forest industry in the future.	CC2	0.94 ^{***}	3.95	1.00
	The chief executives of our organization believe that the FCO business will help to gain new forestry opportunities.	CC3	0.93 ^{***}	3.98	1.05
	The CEOs of our organization actively participate in the FCO business.	CC4	0.84 ^{***}	3.83	1.02
	I am well aware of the difference between "traded" and "non-traded" businesses, which are participatory types.	AFCO1	0.84 ^{***}	3.68	1.21
AFCO [15,16,24,40,63,65,66]	I am well aware of the difference between the FCO project and the emission trading system.	AFCO2	0.84 ^{***}	3.32	1.12
	I am well aware of how to prepare an FCO project plan.	AFCO3	0.86 ^{***}	2.97	1.05
	I am well aware of the frequency of monitoring the FCO project you are participating in.	AFCO4	0.87 ^{***}	3.15	1.21
	I am well aware of how to prepare an FCO monitoring report.	AFCO5	0.80 ^{***}	2.72	1.02
	I am well aware of the purpose of the operation of the social contribution-type FCO system.	AFCO6	0.75 ^{***}	3.63	1.12
	I am well aware of the administrative procedures related to the FCO project.	AFCO7	0.81 ^{***}	3.05	1.01

Note: FCO = forest carbon offset, FL = factor loading, M = mean, SD = standard deviation, IU = intention to use, MI = market intention, RI = regulatory intention, SN = subjective norm, PBC = perceived behavioral control, CC = CEO's commitment, AFCO = attitude towards forest carbon offset, ^{***} $p < 0.001$.

In Table 6, composite reliability, Cronbach's alpha, rho, correlations between constructs, AVE, and average variance extracted (AVE) square rooted values are listed. In general, composite reliability, rho, and Cronbach's alpha values above 0.7 are considered to have adequate internal consistency [67]. As a result of checking the composite reliability and Cronbach's alpha values of all the variables in this study, all of them showed that the internal consistency was more than 0.72. Cronbach's alpha and rho showed significantly higher values than 0.84 except for IU, while composite reliability showed very

high values above 0.88. The discriminant validity is explained by AVE values of each variable and all of them were 0.68 or higher, which is higher than the recommended level of 0.5. RI and SN were the highest with 0.87 and AFCO was the lowest with 0.68. In addition, as a result of comparing the correlation between the AVE square values of each latent variable and the other variables, the square root value of the AVE was significantly higher in all dyads. The largest difference is the square root of IU and the correlation coefficient between IU and CC, and the difference is 0.82. It is more closely related to the internal cohesion of the variable and is able to confirm the discriminant validity of this model [67–69].

Table 6. Inter-construct correlation and discriminant validity.

Cons.	alpha	CR	rho	AVE	IU	MI	RI	SN	PBC	CC	AFCO
IU	0.72	0.88	0.75	0.78	0.88						
MI	0.92	0.94	0.92	0.75	0.36	0.87					
RI	0.84	0.93	0.85	0.87	0.09	0.11	0.93				
SN	0.93	0.95	0.93	0.87	0.42	0.58	0.32	0.93			
PBC	0.91	0.94	0.93	0.75	0.48	0.49	0.48	0.83	0.87		
CC	0.91	0.94	0.94	0.79	0.06	0.18	0.59	0.31	0.46	0.89	
AFCO	0.92	0.94	0.93	0.68	0.14	0.06	0.24	0.30	0.31	0.26	0.82

Notes: Cons. = construct, alpha = Cronbach's alpha, CR = composite reliability, AVE = average variance extracted, IU = intention to use, MI = market intention, RI = regulatory intention, SN = subjective norm, PBC = perceived behavioral control, CC = CEO's commitment, AFCO = attitude towards forest carbon offset; square root of AVE on diagonal.

4.3. Common Method Bias Test

Even if all the items used in this study pass CFA, reliability, convergence validity and discriminant validity, common method bias (CMB) can be a problem in collinearity evaluation [70]. Kock and Lynn [62] argued that the variation inflation factor (VIF) between latent variables should not exceed 5 in PLS-SEM. The upper variance VIF value in the SEM model of this study is 1.96. Harman's single factor test [71] was conducted and the overall variance explained by the major single factor was less than 50%. Two tests indicate that CMB is not a problem in our study.

4.4. PLS-SEM Estimation

PLS-SEM was conducted to verify the hypothetical structural model displaying the effects between constructs. In Figure 2, PLS-SEM results are presented so that the effects of the eight constructed variables can be easily witnessed. Figure 1 shows the modeling of the hypotheses between constructs used in this study as paths and clarifies the model's standardized path coefficients and variances-explained (R^2). First, regarding H1, the path from AFCO to SN was found to be significant ($R^2 = 0.085$, $\beta = 0.305$, $p < 0.01$). The path H2 from SN to PBC was also significant ($R^2 = 0.691$, $\beta = 0.833$, $p < 0.001$). H3, H4, and H5, which are the paths of AFCO, SN, and PBC to BI were found to be insignificant except for H4 ($p < 0.05$, $\beta = 0.008$) where SN is directed to BI. In addition, AFCO has a negative effect on BI ($\beta = -0.001$). It implies that only the subjective norm among the three variables constituting the recognition has a significant effect on behavioral intention. As a result of investigating the effects of both market intention (MI) and regulatory intention (RI) on BI of the second order construct, each of them was found to be significant at the 0.001 level. Finally, paths for BI to IU and CC that make up H6 ($R^2 = 0.129$, $\beta = 0.369$, $p < 0.001$), H7 ($R^2 = 0.080$, $\beta = 0.296$, $p < 0.01$) were found to be all significant. As a result, although each path of the whole model was not high enough, most paths are positively significant at most 0.01 levels.

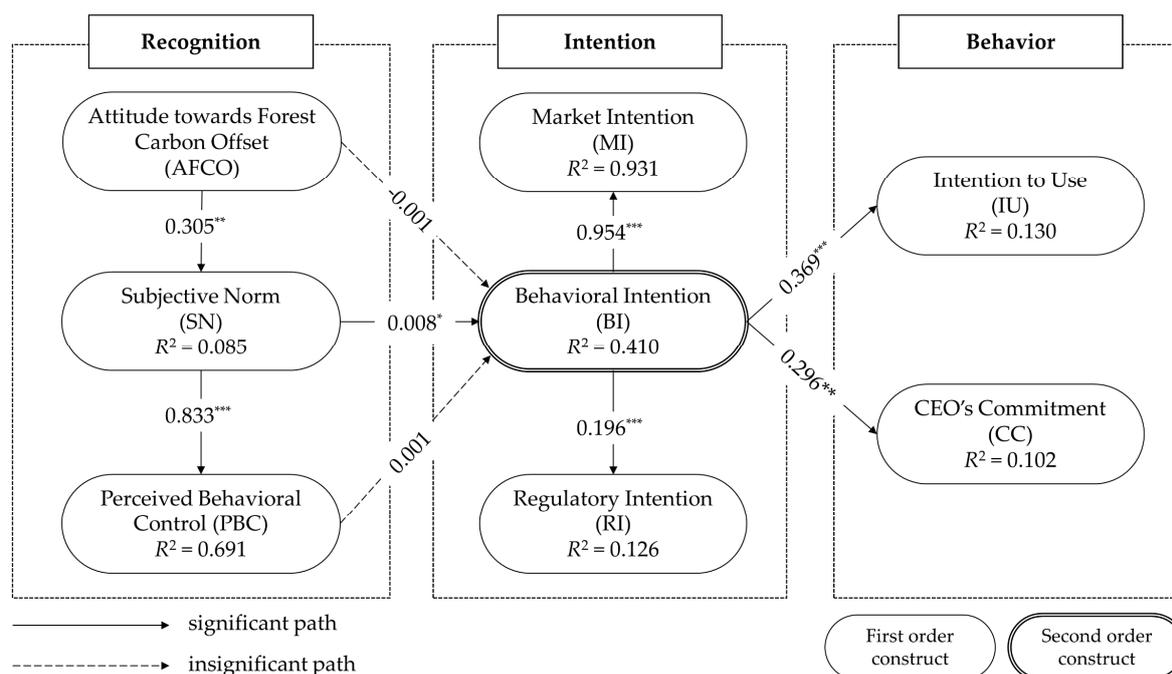


Figure 2. Result of the partial least squares structural equation model (PLS-SEM) (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

4.5. Mediation Effects

In this study, we tried to measure the mediating effect of SN that can occur in recognition. According to the TBP, SN mediates attitude and behavior control, so this effect has an indirect effect [24]. To verify this mediating effect, significance can be determined by using bootstrapping to include zeros in three intervals (e.g., normal, percentile, and bias-corrected) [67]. In Table 7, we concluded that SN mediates AFCO and PBC not only because all three intervals do not contain zeros but also because the p -value is less than 0.05.

Table 7. Mediation effect within Recognition.

Statistics	AFCO→SN→PBC
Indirect effect	0.254
Standard error	0.075
Z-statistic	3.401
p -value	0.001
Normal confidence interval	(0.108, 0.400)
Percentile confidence interval	(0.094, 0.396)
Bias-corrected confidence interval	(0.090, 0.394)

5. Conclusions and Implications

Countries that fall under Annex I of the United Nations Framework Convention on Climate Change are obliged to protect and promote carbon sinks and must be certified for their efforts through absorption activities (e.g., new planting, reforestation, forest management, and vegetation recovery). In other words, those countries should be recognized by the international community for their efforts to combat climate change. The carbon trading market has been stagnant overall due to the recent economic downturn and oversupply of carbon credits. Nevertheless, in the case of forest carbon credits, the demand for social contribution and improvement of the corporate image is maintained, and the scale of transactions is continuously increasing [18]. As an exploratory empirical study, this study is conducted in preparation for the full-fledged operation of FCO. The full-fledged operation of FCO can

offset carbon dioxide emissions in other fields by using carbon dioxide absorption obtained through various reduction activities to maintain and promote the function of forestry, which is anticipated to become a carbon absorption source. Our survey constructed based on the TPB was conducted on forest carbon offsetting companies already registered as initiators. Through the survey, attempt to identify the initiators' recognition of activating the FCO. In addition, the behavioral intention was identified to discover the barriers the initiators faced to participate in FCO projects [65]. We also analyzed the actual use of intention and commitment beyond the participants' perception and behavioral intention of FCO [16]. Through all these analyzes, this study suggests the following implications.

5.1. Theoretical Implications

The theoretical contribution of this study is to focus on the similarity of behavior of FCO participants and to examine the causes of these phenomena in detail from the perspective of isomorphism based on institutional theory. In the past, studies on consumer isomorphism and social impact have limited the similarity of consumer purchasing behavior. However, there have been few studies on the FCO market that specifically deal with the homogenization phenomenon itself or aim to identify its causes. This study not only embodies the perceived behavioral similarities of FCO participants [24,33], which appear as imitative behaviors and sympathetic behaviors, but also divides the homogenization factors that cause the intention to use FCO into three dimensions such as, AFCO, SN, and PBC [20]. Therefore, it can be considered that this study has expanded the homogenization study on the recognition process of subjects who are willing to participate in FCO.

The second theoretical contribution can be found in the exploratory development of a measure of cognitive isomorphism for FCO participation [15]. In the field of forestry, the development of a measure that can measure isomorphism factors for both forest carbon purchase and offset is expected to advance not only concerning imitation behavior but also to be the stepping stone for the expansion of research boundaries [16,18,65].

Third, this study found that SN has a mediating effect between attitude and PBC on FCO. Since SN has a normative isomorphic character in terms of institutionalization theory, no one seems to have an ethical discomfort in doing anything [1,15,63,65]. In this study, the transparency of FCO operation was regarded as a proxy to confirm how participants are aware of SN whose statistical effect was significant on PBC and BI. This transparency is expected to play a key role in the future of forestry in operating innovative systems for sustainability, such as FCO. In other words, the FCO market where mountain owners participate will be able to find an answer to what consumers who needed to buy forest carbon can fundamentally find legitimacy through the transparency of the system.

Fourth, it was confirmed that the intention of FCO participants occurred while confirming the market situation and the progress of institutional regulation. Prospective buyers who want to participate in the forest carbon market have a high intention to gain FCOs in a practically feasible situation [40,57]. According to institutional theory, organizations that have adapted to the isomorphism will survive after the institutional isomorphism is over; otherwise, they will disappear. This study assumed that the isomorphism was completed by most of participants through the recognition process [6,25,40]. This means that it is only a homogenization of the perception of FCO, not an actual intention or action itself. In other words, we found that it is important to consider under what conditions the intention that will occur after the isomorphism is completed.

5.2. Managerial Implications

First, we found that raising awareness of FCO is essential for revitalizing the forest carbon market. In order to raise awareness among prospective participants, it will be necessary to provide accurate information and promotion to prospective FCO operators. The Korea Forestry Promotion Institute, as the operating organization of FCO in South Korea, has worked to support various public information and regular detailed business briefing sessions through diverse routes such as a website and social network services (SNS). Besides, since there is no best practice model case for forest management and

carbon sink promotion through actual FCO business in Korea, it is considered necessary to develop an excellent model case that can motivate and benchmark other businesses.

Second, it was found that forest managers' expectations for FCO were for practical operations. After improving awareness, it was found that procedural transparency and expert participation are central to operating FCO better. Before the registration of the FCO project, preliminary operators need to understand their business entirely. At this time, the operating institution should create a public pool of experts who can support this and disclose it in advance and induce prospective operators to select suitable experts who can support their business. It will be important for prospective participants to gain a clear understanding of their professional knowledge through active interaction with the experts of their choice for the preparation of business plans and monitoring reports. In the process of monitoring and verifying the project, a practical review operation by a third-party expert will be performed. In this case, a system capable of maintaining mutual independence will need to be prepared by preventing experts from consulting with preliminary operators from being assigned. Furthermore, since the FCO should be a dynamic system that continuously develops to reflect trends at home and abroad, rather than a static system, it can be said that an extraordinary effort is required to increase the expertise of the FCO operation department of the Korea Forestry Promotion Institute.

Third, with the presence of the intention of forest managers to participate in the FCO, the FCO market can be revitalized only by increasing the intention of use in the management aspect and by increasing the commitment of the owner and CEO to this project. To solve this problem, we can think of a solution in line with corporate CSR needs. For example, in order to promote carbon sinks, continuous forest-growing activities such as removal of debris are required. It means that, unlike CSR activities that are simply funded and supported by corporations, large-scale forest-making activities require the workforce to be cost-effective for a large number of employees to participate directly in CSR activities. If FCO-related organizations actively promote this to large domestic companies and the Forest Service implements a forestry support policy such as fertilizer and seedling support to companies participating in the FCO business, many companies will increase their willingness to participate with direct and indirect incentives to absorb carbon. Meanwhile, major US private companies such as Microsoft, Disney, and Natura Cosméticos are known to voluntarily purchase FCOs for social contributions (Salzman et al. 2018). In order to increase CEOs' commitment to FCO, the operating institution should induce an opportunity to create a business council that can initially participate in the FCO business so that companies interested in CSR using forests can voluntarily share their opinions.

5.3. Limitations

Despite the above theoretical contribution, this study has the following three limitations. First, the initial sample design attempted to investigate all participants in a voluntary forest carbon project ($n = 119$) in South Korea; however, during the survey, 59 participants expressed their willingness to refuse to respond. Therefore, the analysis of only the final 60 respondents was a limitation of this study. We have limited the scope of the statistical tests used in this inquiry. Second, although TPB and institutional theory are used as a theoretical rationale in this study, only parts of original models are used for hypothetical investigation, not all models. It is because the limitation of the scope was formed when the survey on FCO implementation was constructed. Thus, it is necessary to improve the research design so that the entire model can be applied in future studies. Third, as a practical limitation, only those who participated in FCO were analyzed as a sample group. More diverse interpretations can be suggested if the scope of analysis is broadened. For example, we can divide the target sample into two groups: subjects that have the potential to participate in the project and those who do not intend to participate in the study.

Author Contributions: Conceptualization, J.-H.J., T.R. and C.L.; methodology, J.-H.J., T.R.; formal analysis, T.R.; investigation, J.-H.J. and J.H.; resources, J.H.; data curation, J.-H.J., T.R; writing—original draft preparation, J.-H.J., T.R., and C.L.; writing—review and editing, K.-h.L.; supervision, C.L. All authors have read and agreed to the published version of the manuscript.

Funding: This study was carried out with the support of R&D Program for Forest Science Technology (Project No. 2019159A00-1920-AB02) provided by Korea Forest Service (Korea Forestry Promotion Institute).

Acknowledgments: This work was supported by the Soonchunhyang University Research Fund.

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

References

1. Raum, S. Reasons for adoption and advocacy of the ecosystem services concept in UK forestry. *Ecol. Econ.* **2018**, *143*, 47–54. [CrossRef]
2. Gómez-Baggethun, E.; Ruiz-Pérez, M. Economic valuation and the commodification of ecosystem services. *Prog. Phys. Geogr.* **2011**, *35*, 613–628. [CrossRef]
3. Salzman, J.; Bennett, G.; Carroll, N.; Goldstein, A.; Jenkins, M. The global status and trends of payments for ecosystem services. *Nat. Sustain.* **2018**, *1*, 136–144. [CrossRef]
4. Wolff, S.; Schulp, C.J.E.; Verburg, P.H. Mapping ecosystem services demand: A review of current research and future perspectives. *Ecol. Indic.* **2015**, *55*, 159–171. [CrossRef]
5. Horne, P.; Boxall, P.C.; Adamowicz, W.L. Multiple-use management of forest recreation sites: A spatially explicit choice experiment. *For. Ecol. Manag.* **2005**, *207*, 189–199. [CrossRef]
6. Watson, D.O.; McFarlane, B.L.; Haener, M.K. Human dimensions of biodiversity conservation in the Interior forests of British Columbia. *BC J. Ecosyst. Manag.* **2004**, *4*, 1–20.
7. Akbari, H.; Pomerantz, M.; Taha, H. Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. *Sol. Energy* **2001**, *70*, 295–310. [CrossRef]
8. Beckett, K.P.; Freer-Smith, P.H.; Taylor, G. Urban woodlands: Their role in reducing the effects of particulate pollution. *Environ. Pollut.* **1998**, *99*, 347–360. [CrossRef]
9. Bolund, P.; Hunhammar, S. Ecosystem services in urban areas. *Ecol. Econ.* **1999**, *29*, 293–301. [CrossRef]
10. Nowak, D.J.; Crane, D.E.; Stevens, J.C. Air pollution removal by urban trees and shrubs in the United States. *Urban For. Urban Green.* **2006**, *4*, 115–123. [CrossRef]
11. Yang, J.; McBride, J.; Zhou, J.; Sun, Z. The urban forest in Beijing and its role in air pollution reduction. *Urban For. Urban Green.* **2004**, *3*, 65–78. [CrossRef]
12. Lachowycz, K.; Jones, A.P. Towards a better understanding of the relationship between greenspace and health: Development of a theoretical framework. *Landsc. Urban Plan.* **2013**, *118*, 62–69. [CrossRef]
13. Maas, J.; Verheij, R.A.; Groenewegen, P.P.; de Vries, S.; Spreeuwenberg, P. Green space, urbanity, and health: How strong is the relation? *J. Epidemiol. Community Health* **2006**, *60*, 587–592. [CrossRef]
14. Tzoulas, K.; Korpela, K.; Venn, S.; Yli-Pelkonen, V.; Kaźmierczak, A.; Niemela, J.; James, P. Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. *Landsc. Urban Plan.* **2007**, *81*, 167–178. [CrossRef]
15. Thompson, D.W.; Hansen, E.N. Institutional pressures and an evolving forest carbon market. *Bus. Strategy Environ.* **2012**, *21*, 351–369. [CrossRef]
16. Thompson, D.W.; Hansen, E.N. Carbon storage on non-industrial private forestland: An application of the theory of planned behavior. *Small Scale For.* **2013**, *12*, 631–657. [CrossRef]
17. Dargie, G.C.; Lawson, I.T.; Rayden, T.J.; Miles, L.; Mitchard, E.T.; Page, S.E.; Bocko, Y.E.; Ifo, S.A.; Lewis, S.L. Congo Basin peatlands: Threats and conservation priorities. *Mitig. Adapt. Strateg. Glob. Chang.* **2019**, *24*, 669–686. [CrossRef]
18. Korea_Forest_Service. The 2nd Comprehensive Plan for the Improvement of Carbon Absorption Sources. 2018. Available online: <https://www.gov.kr/portal/ntnadmNews/1503068> (accessed on 20 October 2019).
19. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [CrossRef]
20. Kautonen, T.; van Gelderen, M.; Fink, M. Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrep. Theory Pract.* **2015**, *39*, 655–674. [CrossRef]
21. Crilly, D.; Zollo, M.; Hansen, M.T. Faking it or muddling through? Understanding decoupling in response to stakeholder pressures. *Acad. Manag. J.* **2012**, *55*, 1429–1448. [CrossRef]
22. Suddaby, R. Challenges for Institutional Theory. *J. Manag. Inq.* **2010**, *19*, 14–20. [CrossRef]
23. Godin, G.; Kok, G. The theory of planned behavior: A review of its applications to health-related behaviors. *Am. J. Health Promot.* **1996**, *11*, 87–98. [CrossRef] [PubMed]

24. Harland, P.; Staats, H.; Wilke, H.A. Explaining proenvironmental intention and behavior by personal norms and the Theory of Planned Behavior 1. *J. Appl. Soc. Psychol.* **1999**, *29*, 2505–2528. [CrossRef]
25. Pouta, E.; Rekola, M. The theory of planned behavior in predicting willingness to pay for abatement of forest regeneration. *Soc. Nat. Resour.* **2001**, *14*, 93–106.
26. Meyer, J.W.; Rowan, B. Institutionalized organizations: Formal structure as myth and ceremony. *Am. J. Sociol.* **1977**, *83*, 340–363. [CrossRef]
27. DiMaggio, P.J.; Powell, W.W. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *Am. Sociol. Rev.* **1983**, *48*, 147–160. [CrossRef]
28. Ostrom, E. An agenda for the study of institutions. *Public Choice* **1986**, *48*, 3–25. [CrossRef]
29. Scott, W.R. *Institutions and Organizations: Ideas, Interests, and Identities*; Sage Publications: Thousand Oaks, CA, USA, 2008.
30. Greenwood, R.; Díaz, A.M.; Li, S.X.; Lorente, J.C. The multiplicity of institutional logics and the heterogeneity of organizational responses. *Organ. Sci.* **2010**, *21*, 521–539. [CrossRef]
31. Oliver, C. Strategic responses to institutional processes. *Acad. Manag. Rev.* **1991**, *16*, 145–179. [CrossRef]
32. Suchman, M.C. Managing legitimacy: Strategic and institutional approaches. *Acad. Manag. Rev.* **1995**, *20*, 571–610. [CrossRef]
33. Fishbein, M.; Ajzen, I. Belief, attitude, intention, and behavior: An introduction to theory and research. *Philos. Rhetor.* **1977**, *10*, 130–132.
34. Martin, S.R.; McCurdy, K. Wilderness food storage in Yosemite: Using the theory of planned behavior to understand backpacker canister use. *Hum. Dimens. Wildl.* **2009**, *14*, 206–218. [CrossRef]
35. Valle, P.O.D.; Rebelo, E.; Reis, E.; Menezes, J. Combining behavioral theories to predict recycling involvement. *Environ. Behav.* **2005**, *37*, 364–396. [CrossRef]
36. Cordano, M.; Frieze, I.H. Pollution reduction preferences of US environmental managers: Applying Ajzen's theory of planned behavior. *Acad. Manag. J.* **2000**, *43*, 627–641.
37. Harrison, D.A.; Mykytyn, P.P., Jr. Riemenschneider, C.K. Executive decisions about adoption of information technology in small business: Theory and empirical tests. *Inf. Syst. Res.* **1997**, *8*, 171–195. [CrossRef]
38. Wiklund, J.; Shepherd, D. Aspiring for, and achieving growth: The moderating role of resources and opportunities. *J. Manag. Stud.* **2003**, *40*, 1919–1941. [CrossRef]
39. Armitage, C.J.; Conner, M. Efficacy of the theory of planned behaviour: A meta-analytic review. *Br. J. Soc. Psychol.* **2001**, *40*, 471–499. [CrossRef] [PubMed]
40. Karppinen, H. Forest owners' choice of reforestation method: An application of the theory of planned behavior. *For. Policy Econ.* **2005**, *7*, 393–409. [CrossRef]
41. Coleman, J.S. Social capital in the creation of human capital. *Am. J. Sociol.* **1988**, *94*, S95–S120. [CrossRef]
42. Granovetter, M. Economic action and social structure: The problem of embeddedness. *Am. J. Sociol.* **1985**, *91*, 481–510. [CrossRef]
43. Duchin, R.; Matsusaka, J.G.; Ozbas, O. When are outside directors effective? *J. Financ. Econ.* **2010**, *96*, 195–214. [CrossRef]
44. DeFond, M.L.; Hann, R.N.; Hu, X. Does the market value financial expertise on audit committees of boards of directors? *J. Account. Res.* **2005**, *43*, 153–193. [CrossRef]
45. Hoitash, U.; Hoitash, R.; Bedard, J.C. Corporate governance and internal control over financial reporting: A comparison of regulatory regimes. *Account. Rev.* **2009**, *84*, 839–867. [CrossRef]
46. Dhaliwal, D.S.; Naiker, V.; Navissi, F. Audit Committee Financial Expertise, Corporate Governance and Accruals Quality: An Empirical Analysis. 2006. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=906690 (accessed on 22 November 2019).
47. Meyer, J.; Boli, J.; Thomas, G. Ontology and rationalization in the Western cultural account. In *Institutional Structure: Constituting State, Society, and the Individual*; Thomas, G., Meyer, J.W., Ramirez, F.O., Boli, J., Eds.; Sage Publications: Newbury Park, CA, USA, 1994; pp. 12–37.
48. Scott, W.R.; Meyer, J.W. Institutions and organizations: Toward a theoretical synthesis. In *Institutional Environments and Organizations: Structural Complexity and Individualism*; Scott, W.R., Ed.; Sage Publications: Thousand Oaks, CA, USA, 1994; pp. 55–80.
49. Strang, D.; Meyer, J.W. Institutional conditions for diffusion. *Theory Soc.* **1993**, *22*, 487–511. [CrossRef]
50. Haunschild, P.R.; Miner, A.S. Modes of interorganizational imitation: The effects of outcome salience and uncertainty. *Adm. Sci. Q.* **1997**, *472*–500. [CrossRef]

51. Lounsbury, M. Institutional sources of practice variation: Staffing college and university recycling programs. *Adm. Sci. Q.* **2001**, *46*, 29–56. [[CrossRef](#)]
52. Kostova, T.; Roth, K. Adoption of an organizational practice by subsidiaries of multinational corporations: Institutional and relational effects. *Acad. Manag. J.* **2002**, *45*, 215–233.
53. Ocasio, W.; Mauskopf, M.; Steele, C.W. History, society, and institutions: The role of collective memory in the emergence and evolution of societal logics. *Acad. Manag. Rev.* **2016**, *41*, 676–699. [[CrossRef](#)]
54. Maguire, S.; Phillips, N. ‘Citibankers’ at Citigroup: A study of the loss of institutional trust after a merger. *J. Manag. Stud.* **2008**, *45*, 372–401. [[CrossRef](#)]
55. Canales, R. From ideals to institutions: Institutional entrepreneurship and the growth of Mexican small business finance. *Organ. Sci.* **2016**, *27*, 1548–1573. [[CrossRef](#)]
56. Morgeson, F.P.; Mitchell, T.R.; Liu, D. Event system theory: An event-oriented approach to the organizational sciences. *Acad. Manag. Rev.* **2015**, *40*, 515–537. [[CrossRef](#)]
57. Koellner, T.; Sell, J.; Navarro, G. Why and how much are firms willing to invest in ecosystem services from tropical forests? A comparison of international and Costa Rican firms. *Ecol. Econ.* **2010**, *69*, 2127–2139. [[CrossRef](#)]
58. Nelson, R.R. Why do firms differ, and how does it matter? *Strateg. Manag. J.* **1991**, *12*, 61–74. [[CrossRef](#)]
59. Galaskiewicz, J.; Wasserman, S. Mimetic processes within an interorganizational field: An empirical test. *Adm. Sci. Q.* **1989**, *34*, 454–479. [[CrossRef](#)]
60. Davis, G.F. Agents without principles? The spread of the poison pill through the intercorporate network. *Adm. Sci. Q.* **1991**, *36*, 583–613. [[CrossRef](#)]
61. Burns, L.R.; Wholey, D.R. Adoption and abandonment of matrix management programs: Effects of organizational characteristics and interorganizational networks. *Acad. Manag. J.* **1993**, *36*, 106–138.
62. Kock, N.; Lynn, G. Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *J. Assoc. Inf. Syst.* **2012**, *13*, 546–580. [[CrossRef](#)]
63. McFarlane, B.L.; Boxall, P.C. Factors influencing forest values and attitudes of two stakeholder groups: The case of the Foothills Model Forest, Alberta, Canada. *Soc. Nat. Resour.* **2000**, *13*, 649–661.
64. Uliczka, H.; Angelstam, P.; Jansson, G.; Bro, A. Non-industrial private forest owners’ knowledge of and attitudes towards nature conservation. *Scand. J. For. Res.* **2004**, *19*, 274–288. [[CrossRef](#)]
65. Kelly, E.C.; Gold, G.J.; Di Tommaso, J. The willingness of non-industrial private forest owners to enter California’s carbon offset market. *Environ. Manag.* **2017**, *60*, 882–895. [[CrossRef](#)]
66. Francis, J.; Eccles, M.P.; Johnston, M.; Walker, A.; Grimshaw, J.M.; Foy, R.; Kaner, E.F.; Smith, L.; Bonetti, D. Constructing Questionnaires Based on the Theory of Planned Behaviour: A Manual for Health Services Researchers. 2004. Available online: <https://openaccess.city.ac.uk/id/eprint/1735/1/> (accessed on 25 August 2019).
67. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E. *Multivariate Data Analysis*, 7th ed.; Pearson: Harlow, Essex, UK, 2009.
68. Bentler, P.M.; Raykov, T. On measures of explained variance in nonrecursive structural equation models. *J. Appl. Psychol.* **2000**, *85*, 125–131. [[CrossRef](#)] [[PubMed](#)]
69. Chin, W.W. The partial least squares approach to structural equation modeling. In *Modern Methods for Business Research*; Marcoulides, G.A., Ed.; Lawrence Erlbaum Associates: Mahwah, NJ, USA, 1998; pp. 295–336.
70. Kock, N. Common method bias in PLS-SEM: A full collinearity assessment approach. *Int. J. E-Collab.* **2015**, *11*, 1–10. [[CrossRef](#)]
71. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.-Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [[CrossRef](#)] [[PubMed](#)]

