



Socio-psychological factors influencing farmers' willingness to continue participating in collaborative activities of community-based innovation platforms in eastern Uganda

Rebecca Mukebezi, Bernard Bonton Obaa, Florence Birungi Kyazze, Settumba B. Mukasa & Irene Bulenzibuto Tamubula

To cite this article: Rebecca Mukebezi, Bernard Bonton Obaa, Florence Birungi Kyazze, Settumba B. Mukasa & Irene Bulenzibuto Tamubula (2022): Socio-psychological factors influencing farmers' willingness to continue participating in collaborative activities of community-based innovation platforms in eastern Uganda, African Journal of Science, Technology, Innovation and Development, DOI: [10.1080/20421338.2022.2062654](https://doi.org/10.1080/20421338.2022.2062654)

To link to this article: <https://doi.org/10.1080/20421338.2022.2062654>



Published online: 23 May 2022.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

Socio-psychological factors influencing farmers' willingness to continue participating in collaborative activities of community-based innovation platforms in eastern Uganda

Rebecca Mukebezi ^{1*}, Bernard Bonton Obaa¹, Florence Birungi Kyazze¹, Setumba B. Mukasa² and Irene Bulenzibuto Tamubula ³

¹Department of Extension and Innovation Studies, College of Agricultural and Environmental Sciences, Makerere University, Kampala, Uganda

²Department of Agricultural Production, College of Agricultural and Environmental Sciences, Makerere University, Kampala, Uganda

³Department of Agriculture, Faculty of Vocational Studies, Kyambogo University, Kampala Uganda

*Corresponding author. e-mail: mukebezir@gmail.com

This study employed an extended theory of planned behaviour to assess the socio-psychological factors influencing farmers' willingness to continue participating (WTCP) in collaborative activities of community-based innovation platforms (CB-IPs). Using a structured questionnaire, data were obtained from a random sample of 231 farmers who had participated in collaborative activities of the CB-IPs. Data were analyzed using partial least squares-structural equation modelling. Findings showed that although farmers' past-experience did not directly influence their WTCP in collaborative activities of CB-IPs, it was positive and significant when mediated by attitudes and perceived behavioural control (t -value = 6.840; p -value = 0.000). Therefore, it can be concluded that farmers' WTCP in collaborative activities of CB-IPs is enhanced by three socio-psychological factors: favourable past-experience, positive attitudes towards collaborative activities of CB-IPs, and farmers' perceived capacity to participate. Hence, conveners of collaborative activities of CB-IPs ought to improve farmers' attitudes through organizing beneficial activities and building their capacity to participate. This study contributed to the body of knowledge by using a behavioural perspective to examine the socio-psychological factors that influence farmers' continued participation in collaboration activities of CB-IPs.

Keywords: collaboration intentions, innovation platforms, socio-psychological factors, theory of planned behaviour, Uganda

Introduction

Organizations collaborate as a way of enhancing their survival in an increasingly changing socioeconomic environment (Cornforth, Hayes, and Vangen 2015). Collaborations are initiated for various reasons, including developing innovations, pooling resources (Deken et al. 2018), enhancing service delivery (Leung 2013), and advancing competitiveness and ability to respond to complex problems (Andrews and Entwistle 2010). In this study, collaboration refers to various organizations working together to pool resources towards attainment of mutual objectives that they cannot realise singly (Berends and Sydow 2019; Gray 1985).

Innovation platforms (IPs) typify an approach for fostering collaboration and innovation among heterogeneous actors along an agricultural value chain (Schut et al. 2019; Sell et al. 2018; Mahiya 2021). IPs provide space for diverse actors to interact and optimise joint benefits that come with the collaborations. IPs normally operate at three levels: regional, national, and community. At national and regional levels, IPs largely target policy change while at community level, the focus is on solving farmers' problems (Nederlof, Wongtschowski, and van der Lee 2011). Community-based IPs are initiated by farmers to find practical solutions to their problems through creation of linkages with various actors along a value chain (Nederlof, Wongtschowski, and van der Lee 2011; Sanyang et al. 2014). This study focused on two community-based IPs (CB-IPs) engaged in the production, processing, and marketing of cassava products in Serere and Bukedea districts in eastern Uganda. The

smallholder farmers, who dominate the CB-IPs, often participate in collaborative activities with other actors to solve problems within the cassava value chain.

A myriad of research on collaboration tends to focus on the nature, form, process, and outcomes of collaborations (Gazley 2010). Moreover, there is extensive research on drivers and barriers to successful collaborations among public and private organizations (Deken et al. 2018; Gazley and Brudney 2007) as well as their governance (Cornforth, Hayes, and Vangen 2015). However, research on continued participation in collaborative activities especially in the context of IPs is still limited. Current literature does not adequately explain factors that influence farmers' willingness to continue participating (WTCP) in collaborative activities of IPs. In addition, minimal attention has been given to behaviours and socio-psychological aspects of individuals involved in collaborations (Tsisis, Cooke-Lauder, and Evans 2015), yet these are important determinants of collaboration success (Andrews and Entwistle 2010; Rosas and Camarinha-Matos 2010). In particular, it is important to examine from a behavioural perspective, the willingness to collaborate among individuals behind the collaborations (Rosas and Camarinha-Matos 2010), given that the decision to collaborate is both psychological and cognitive (Gazley 2017). This study examined how farmers' attitudes, subjective norms, perceived behavioural control, and past-experience influenced their WTCP in collaborative activities of CB-IPs. Empirical evidence from this study deepens our understanding of predictors of farmers' continued participation in collaborative

activities of CB-IPs. Accordingly, appropriate strategies could be employed to increase farmers' WTCP in collaborative activities of IPs.

Theoretical framework

This study employed the theory of planned behaviour (TPB), which is an extension of the theory of reasoned action. The TPB relates to an individual's beliefs and behaviour, and is premised on the assumption that individuals behave rationally after implicitly or explicitly considering available information and the implications of their actions (Ajzen 2005). The TPB is a socio-psychological model that has been widely used to predict individual's intentions to perform particular behaviours across various disciplines. For instance, the TPB has been used to predict texting while driving behaviour (Shevlin and Goodwin 2019), consumer purchase behaviour (Han and Stoel 2017; Yadav and Pathak 2017), pro-environmental behaviour (Yuriev et al. 2020), retention of information technology skills (Albertus and Hamman-Fisher 2021), and e-collaborative intentions (Cheng 2017; Cheng and Chu 2016). These studies demonstrated the strong predictive power of TPB, making TPB an appropriate theory for this study.

According to the TPB, behavioural intentions, which refer to an individual's willingness to engage in a behaviour, are important predictors of actual behaviour (Ajzen 2005, 2020). The greater an individual's behavioural intention, the more likely the individual will engage in a particular behaviour (Ajzen 2020; Yadav and Pathak 2017). Hence, this study considered farmers' WTCP in collaborative activities of CB-IPs as the dependent variable. Behavioural intentions, are, in turn, influenced by attitudes, subjective norms (SN), and perceived behavioural control (PBC) (Ajzen 2005, 2020; Han and Stoel 2017). Notably, the relative importance of attitude, SN, and PBC in predicting behavioural intentions varies with the context of the behaviour and population under study (Ajzen 2005; Ajzen and Fishbein 2005). Attitude refers to an individual's evaluation of the likely consequences of engaging in a behaviour (Ajzen 2005). A person's attitude therefore is based on expected outcomes associated with engaging in a certain behaviour (Sun et al. 2017). SN refer to an individual's perception of social support to perform a particular behaviour (Ajzen 2005, 2020; Kovac, Cameron, and Høigaard 2014). PBC refers to an individual's belief regarding the ease or difficulty of performing a given behaviour (Ajzen 2005; Yuriev et al. 2020).

Ajzen (2014) recommends adding other predictors to improve the predictive power of the TPB. Previous studies have added various predictors to the standard TPB constructs to improve the explained variance of behavioural intention. Some of the predictors added include past behaviour, future orientation, action planning, actual behavioural control, and previous experience (Carr and Sequeira 2007; Cheng 2017; Cheng, Chu, and Ma 2016; Kovac, Cameron, and Høigaard 2014; Shevlin and Goodwin 2019). Accordingly, this study added past-experience to the standard TPB model (Cheng and Chu 2016; Cheng, Chu, and Ma 2016) to improve its predictive

power in explaining farmers' WTCP in collaborative activities of CB-IPs. Previous studies confirmed that past-experience is a predictor of attitude, SN, PBC, and behavioural intentions (Cheng and Chu 2016; Cheng, Chu, and Ma 2016). Hence, this study hypothesised past-experience to have both direct and indirect effects on farmers' WTCP in collaborative activities of CB-IPs.

Conceptual model and hypotheses

This study extended the TPB by adding past-experience to predict farmers' WTCP in collaborative activities of CB-IPs. Notably, the proposed conceptual model used behavioural intention as the dependent variable rather than actual behaviour, given that behavioural intentions can be used to accurately predict actual behaviour (Ajzen 2005). This was confirmed by Xia, Chen, and Hou (2020) who established that collaboration intention had a significant positive influence on collaboration behaviour.

Prior research has demonstrated that past-experience both directly and indirectly influences intention to collaborate. For instance, Cheng and Chu (2016) established that past-experience accounted for a great variance of students' online collaborative intentions, and significantly influenced their attitudes towards e-collaboration. Similarly, Cheng, Chu, and Ma (2016) found out that there was a significant relationship between past-experience and e-collaborative intentions. They further confirmed that attitude mediates past-experience and e-collaborative intentions. Thus, this study hypothesised that farmers' past-experience with CB-IP collaborative activities had an influence on their WTCP in such activities both directly and indirectly. The indirect influence of past-experience on farmers' WTCP in collaborative activities of CB-IPs was hypothesised to be through the mediation of attitude, SN, and PBC. In line with this, the following hypotheses were proposed:

- H₁:** Past-experience positively influences farmers' willingness to continue participating in collaborative activities of CB-IPs.
- H₂:** Past-experience positively influences farmers' attitudes towards collaborative activities of CB-IPs
- H₃:** Past-experience positively influences farmers' subjective norms towards collaborative activities of CB-IPs.
- H₄:** Past-experience positively influences farmers' perceived behavioural control over collaborative activities of CB-IPs.

Attitude measures the extent to which an individual positively or negatively assesses a particular behaviour, which influences the individual's decision to participate in that behaviour (Yadav and Pathak 2017). Previous research has indicated that attitudes towards collaboration affect collaboration intention. For instance, Cheng and Chu (2016) established that students' attitudes towards e-collaboration for group projects significantly influenced their e-collaborative intentions. In the context of this study, when a farmer has positive attitudes towards collaborative activities of a CB-IP and believes that engaging in such activities leads to valuable outcomes, s/he will be more willing to continue participating in similar activities. Hence, the following hypothesis was proposed:

H₅: Attitudes towards collaborative activities of CB-IPs positively influence farmers’ willingness to continue participating in collaborative activities of CB-IPs.

SN refer to an individual’s perception of the extent to which ‘significant others’ approve of his/her decision to participate in a specific behaviour (Yadav and Pathak 2017). Previous studies have highlighted that there is a positive relationship between SN and behavioural intentions (Cheng and Chu 2016; Kovac, Cameron, and Høigaard 2014; Teng, Wu, and Liu 2015). Hence, individuals are more likely to perform behaviours that are approved of and supported by their referents (Ajzen 2020). It was therefore predicted that farmers are likely to continue participating in collaborative activities of CB-IPs if their ‘significant others’ (e.g., CB-IP leaders, fellow farmers, and relatives) approve. Thus, the following hypothesis was proposed:

H₆: Subjective norms positively influence farmers’ willingness to continue participating in collaborative activities of CB-IPs.

PBC refers to an individual’s perception of the feasibility of performing a given behaviour (Yuriev et al. 2020). Specifically, PBC assesses the existence of internal and external factors that facilitate or hinder performance of a certain behaviour such as opportunity and resources availability (Ajzen 2020; Carr and Sequeira 2007). Extant literature has demonstrated that PBC has a significant positive effect on behavioural intentions (Sun et al. 2017; Teng, Wu, and Liu 2015). Hence, this study proposed that farmers’ perceptions pertaining their ability to engage in collaborative activities of CB-IPs influence their WTCP in such activities. Accordingly, the following hypothesis was suggested:

H₇: Perceived behavioural control positively influences farmers’ willingness to continue participating in collaborative activities of CB-IPs.

Based on the above discussions, the conceptual model was proposed (Figure 1).

Methodology

This study employed a descriptive cross-sectional research design (Bryman and Bell 2019) to collect data on socio-psychological factors influencing farmers’

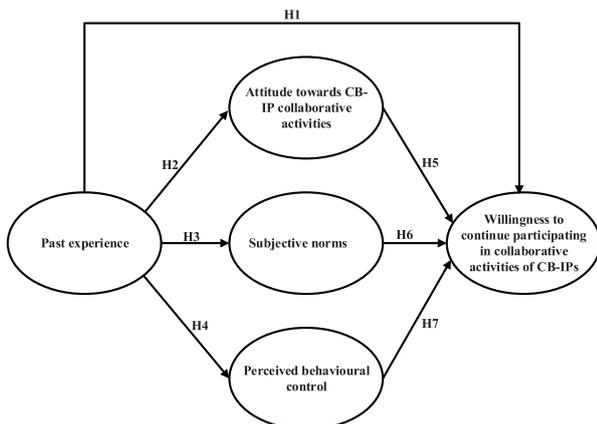


Figure 1: The proposed conceptual model.

WTCP in collaborative activities of CB-IPs. Data were collected using a semi-structured questionnaire during the months of May and June 2021.

Data for this study were collected from two CB-IPs in eastern Uganda, namely Soroti Sweet potato Producers and Processors Association (SOSPPA), and Popular Knowledge Women’s Initiative (P’KWI). SOSPPA CB-IP focuses on two root crops i.e., cassava and sweet potato, while P’KWI CB-IP deals with cassava and oil crops. In both CB-IPs, the focus was on collaborative activities related to production, processing, and marketing of cassava products. SOSPPA and P’KWI CB-IPs are located in Serere and Bukedea districts, respectively, in eastern Uganda (Figure 2). Selection of the two CB-IPs was purposive, based on two main criteria: (1) they are the two largest CB-IPs in eastern Uganda with more than 2500 members and collaborating with several actors; and (2) they were the pilot sites for the Cassava Community Action Research Project (Cassava CARP) in eastern Uganda. The Cassava CARP worked with already established CB-IPs to promote community-based sustainable production, utilization and marketing of cassava-based products in Serere and Bukedea districts in eastern Uganda.

The sampling frame comprised of lists of farmers who had participated in collaborative cassava activities in the two CB-IPs. The lists were compiled by the leaders of each CB-IP, giving a total of 556 farmers in both CB-IPs. A sample of 226 respondents was drawn through simple random sampling based on the formula given by Krejcie and Morgan (1970):

$$S = \frac{x^2NP(1 - P)}{d^2(N - 1) + x^2P(1 - P)}$$

where: S = Required sample size

x^2 = Constant value of 3.841 (the square of the Z value of 1.96 for 95% confidence level)

N = Population size (1418)

P = Population parameter of 0.9 (i.e., 90% of the households were farmers)

d = The degree of accuracy expressed as a proportion (0.05), a probability that the sample represents the population.

The calculated sample size of 226 was increased by 2% to cater for non-response, making the final sample size of 231 farmers. This represents about 42% of the farmers involved in collaborative activities of the two CB-IPs. The sample size of 231 was appropriate since, according Field (2009), a sample size of 200 is adequate for achieving a medium effect of predictors on the dependent variable. Informed consent was orally obtained from each respondent before proceeding with data collection.

The questionnaire was designed after a review of literature on key constructs: Attitude, SN, PBC, WTCP, and past-experience. The constructs were measured using multiple items adapted from previous research. Specifically, items for attitude and PBC were adapted from Xia, Chen, and Hou (2020). Items for SN were adapted from Cheng (2017) and Xia, Chen, and Hou

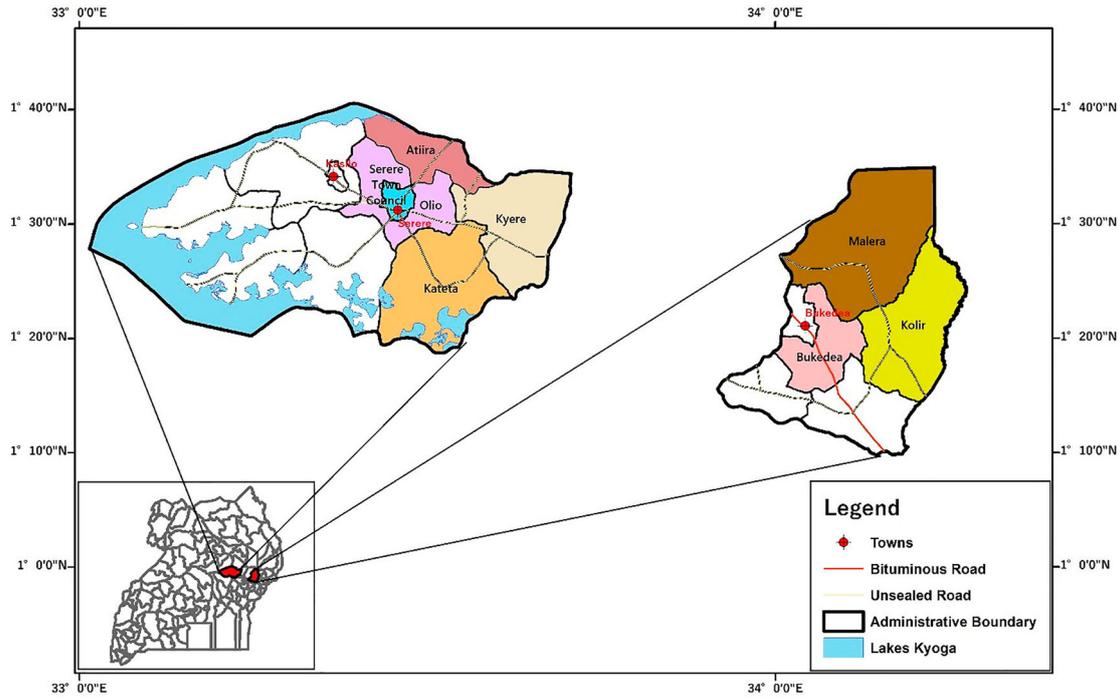


Figure 2. Map of study area.

(2020), past-experience from Cheng (2017) and Cheng, Chu, and Ma (2016), while WTCP in collaborative activities of CB-IPs items were adapted from Cheng (2017). For each measurement item, respondents were asked to state their level of agreement with each statement using a rating scale that ranged from 1 (lowest score) to 5 (highest score).

Data were analyzed using the partial least squares-structural equation modelling (PLS-SEM) through SmartPLS 3.2.7 software (Ringle et al. 2020). PLS-SEM is best suited for predictive rather than confirmatory studies (Hair et al. 2017), and was hence deemed appropriate for this study. Further, PLS-SEM is a robust method preferred for multivariate analysis and testing of

Table 1: Item loadings, reliability, and convergent validity of the constructs.

Constructs	Item codes	Loadings	Cronbach's alpha	CR	AVE
Attitude	ATT1	0.768	0.880	0.909	0.626
	ATT2	0.760			
	ATT3	0.823			
	ATT4	0.808			
	ATT5	0.734			
	ATT6	0.850			
Subjective norms	SN1	0.750	0.881	0.911	0.630
	SN2	0.763			
	SN3	0.835			
	SN4	0.729			
	SN5	0.781			
	SN6	0.894			
Perceived behavioural control	PBC1	0.736	0.875	0.900	0.530
	PBC2	0.712			
	PBC3	0.700			
	PBC4	0.670			
	PBC5	0.743			
	PBC6	0.749			
	PBC7	0.703			
	PBC8	0.806			
Past-experience	PE1	0.812	0.903	0.925	0.674
	PE2	0.843			
	PE3	0.848			
	PE4	0.842			
	PE5	0.804			
	PE6	0.776			
WTCP in CB-IP collaborative activities	WTCP1	0.931	0.924	0.952	0.867
	WTCP2	0.915			
	WTCP3	0.947			

mediator constructs (Hair, Hult, and Sarstedt 2014). The statistical analysis followed a two-step procedure that involved assessment of measurement models followed by the structural model (Hair et al. 2017; Sarstedt et al. 2014). Firstly, the five reflective measurement models were evaluated using composite reliability, convergent validity, and discriminant validity. Secondly, the structural model was assessed based on statistical significance and relevance of path coefficients, explained variance (R^2), and predictive relevance (Q^2) (Hair et al. 2017; Sarstedt et al. 2014).

Findings

Socio-demographic characteristics

A total of 231 respondents participated in the study, of which 52% were females and 48% were males, with a mean age of 43 years. Approximately 60% of the respondents had attained primary level education and about 5% post-secondary education. The respondents' average experience in participating in CB-IP collaborative activities was seven years.

Measurement model results

The five constructs of attitude, SN, PBC, past-experience, and WTCP in collaborative activities of CB-IPs had reflective measurement models. The measurement models were evaluated for construct internal consistency reliability (using Cronbach's alpha and composite reliability), and validity (using convergent and discriminant validity) as recommended by Hair et al. (2017). Cronbach's alpha and composite reliability (CR) values (Table 1) were greater than the 0.70 threshold value (Farooq et al. 2018; Hair et al. 2017), hence confirming internal consistency of the constructs. Convergent validity was assessed using measurement item loadings, and average variance extracted (AVE) (Table 1). Item loadings exceeded the 0.708 threshold value, thereby confirming item reliability. AVE values were above the 0.50 threshold, indicating that each construct explained more than 50% of the variance of its items (Hair et al. 2019; Sarstedt, Ringle, and Hair 2017).

To establish discriminant validity of the constructs, the Fornell-Larcker criterion and the Heterotrait-monotrait (HTMT) ratio of correlations were calculated (Henseler, Ringle, and Sarstedt 2015). A measurement model has discriminant validity if: (1) the Fornell-Larcker criterion for each construct's AVE is higher than its squared correlations with other constructs (Henseler, Ringle, and Sarstedt 2015), and (2) the HTMT value is below 0.90 (Hair et al. 2017). The Fornell-Larcker criterion results indicate that the square root for each construct's AVE was larger than its correlation values with other constructs, while all HTMT values were below the threshold of 0.90 (Henseler, Ringle, and Sarstedt 2015; Sarstedt, Ringle, and Hair 2017). Hence, results confirm discriminant validity of attitude, SN, PBC, past-experience, and WTCP in collaborative activities of CB-IPs. This confirms that the constructs were empirically distinct from each other.

Structural model results

Assessment of the structural model was performed after confirming suitability of the measurement models. The structural model was first examined for potential collinearity issues among the constructs using the variance inflation factor (VIF) (Sarstedt, Ringle, and Hair 2017). VIF values ranged between 1.000 and 2.060, which are lower than the threshold of 5; hence, there were no collinearity issues among predictor constructs (Sarstedt, Ringle, and Hair 2017). The structural model was then assessed for statistical significance and relevance of path coefficients, overall explanatory power (R^2 values), and predictive relevance (Q^2 values) (Hair et al. 2019).

Path analysis was conducted via the bootstrapping procedure using the no sign changes option, 95% BCa bootstrap confidence interval, two-tailed testing and 5000 iterations (Aguirre-Urreta and Rönkkö 2018). Further analysis of the relationships between the latent constructs in the structural model was conducted using the direct, indirect, and total effect (Sarstedt et al. 2014). Path analysis of the hypothesised relationships indicated that five of the seven path coefficients were statistically significant at the 5% level of significance based on direct effects. The direct effect explained relationships shown by the hypotheses in the proposed conceptual model. Results indicated that the direct relationship between past-experience and WTCP in collaborative activities of CB-IPs was not significant, thus not supporting H_1 (t -value = 1.284; p -value = 0.199). However, past-experience positively and significantly influenced attitudes towards collaborative activities of CB-IPs (t -value = 8.702; p -value = 0.000); SN (t -value = 8.451; p -value = 0.000) and PBC (t -value = 12.200; p -value = 0.000), hence supporting H_2 , H_3 , and H_4 , respectively. Results further revealed that both attitude and PBC had positive significant influences on WTCP in collaborative activities of CB-IPs (t -value = 3.036, p -value = 0.002; and t -value = 3.415, p = 0.001, respectively), hence supporting H_5 and H_7 . However, SN did not show a significant effect on WTCP in collaborative activities of CB-IPs (t -value = 1.361; p -value = 0.174), thus not supporting H_6 . Notably, the relationship between past-experience and PBC showed the strongest effect (t -value = 12.200; p -value = 0.000).

Based on indirect effect, past-experience, mediated by attitude and PBC had a significant positive effect on WTCP in collaborative activities of CB-IPs. However, when mediated by SN, past-experience did not significantly influence farmers' WTCP in collaborative activities of CB-IPs. The total indirect effect of past-experience on farmers' WTCP in collaborative activities of CB-IPs was positive and significant (t -value = 8.249; p -value = 0.000) (Table 3).

Regarding total effect, there was a significant relationship between past-experience and WTCP in collaborative activities of CB-IPs (t -value = 6.840; p -value = 0.000). Thus, past-experience mediated by attitude and PBC was a significant predictor of farmers' WTCP in collaborative activities of CB-IPs (Table 3).

Results revealed that R^2 values ranged from 0.282 to 0.460. The R^2 value for WTCP in collaborative activities

Table 2: Discriminant validity of constructs in the measurement models.

Fornell-Larcker criterion					
Construct	Attitude	Past-experience	Perceived behavioural control	Subjective norms	Willingness to continue participating
Attitude	0.791				
Past-experience	0.531	0.821			
PBC	0.569	0.573	0.728		
SN	0.675	0.492	0.574	0.794	
Willingness to continue participating	0.579	0.474	0.607	0.528	0.931
Heterotrait-Monotrait ratio of correlations					
Latent construct	Attitude	Past-experience	Perceived behavioural control	Subjective norms	Willingness to continue participating
Attitude					
Past-experience	0.590				
PBC	0.624	0.621			
SN	0.764	0.543	0.635		
Willingness to continue participating	0.639	0.516	0.647	0.581	

*Values in bold are square root of AVE

of CB-IPs was 0.460, indicating a relatively high explanatory power, according to Rasoolimanesh et al. (2019). This implies that past-experience explained 46.0% of farmers’ WTCP in collaborative activities of CB-IPs through the mediating effects of attitude and PBC. In particular, past-experience explained 28.2%, 32.8%, and 24.2% of the variance in attitude, PBC, and SN, respectively. Each of these R² values indicate that past-experience moderately explains attitude, SN, and PBC.

The structural model’s predictive relevance was further assessed through performing the Stone-Geisser’s Q² test via blindfolding procedure using the cross-validated redundancy approach with an omission distance of seven (Hair et al. 2017; Sarstedt, Ringle, and Hair 2017). Findings showed Q² values of the endogenous constructs were above the zero threshold recommended by Hair et al. (2019). Specifically, WTCP in collaborative activities of CB-IPs had the highest Q² values (0.368), followed by attitude (0.169), PBC (0.161), and SN (0.144). These results are indicative of predictive relevance of the concepts in the conceptual model.

Discussion

The objective of this study was to examine the socio-psychological factors that influence farmers’ WTCP in collaborative activities of CB-IPs. The direct effect of past-experience on farmers’ WTCP in collaborative activities was not significant (H₁). These findings are contrary to the positive significant relationship between past-experience and collaboration intentions established by Cheng, Chu, and Ma (2016). Besides, past-experience was a significant predictor of attitude towards collaborative activities (H₂), subjective norms (H₃), and perceived behavioural control (H₄). Past-experience explained more variance in perceived behavioural control than in attitude and subjective norms. These findings are in line with previous research studies, which established that past-experience is a predictor of attitude, subjective norms, and perceived behavioural control (Cheng 2017; Cheng and Chu 2016).

Attitude (H₅) and perceived behavioural control (H₇) were significant predictors of farmers’ WTCP in collaborative activities of CB-IPs, with perceived behavioural

Table 3: Total and indirect effects of the hypothesized relationships.

Relationships	t-value	p-value
Direct effect		
Past-experience → Willingness to continue participating	1.284	0.199
Attitude → Willingness to continue participating	3.036*	0.002
SN → Willingness to continue participating	1.361	0.174
PBC → WTCP	3.415*	0.001
Past-experience → Attitude	8.702*	0.000
Past-experience → SN	8.451*	0.000
Past-experience → PBC	12.200*	0.000
Specific indirect effect		
Past-experience → Attitude → Willingness to continue participating	2.688*	0.007
Past-experience → PBC → Willingness to continue participating	3.470*	0.001
Past-experience → SN → Willingness to continue participating	1.304	0.192
Total indirect effect		
Past-experience → Willingness to continue participating	8.249*	0.000
Total effect		
Past-experience → Willingness to continue participating	6.840*	0.000

*Statistically significant at P < 0.05

control having the strongest effect. The strong relationship shown between perceived behavioural control and WTCP in collaborative activities (t -value = 3.415; p -value = 0.001) could be explained by farmers' perceived ease of performing collaborative activities as well as the availability of opportunities and requisite resources to perform those activities. These results are in agreement with the TPB that emphasizes that the extent to which individuals have control over performance of a behaviour determines their ability to act on their intentions (Ajzen 2020). Arguably, farmers' past-experience of about seven years of participating in CB-IP collaborative activities enhanced their perceived behavioural control. For instance, the collaborative activities enabled farmers to access resources and training that boosted their belief in their capacity to continue participating in similar activities. These findings are in conformity with Bamberg, Rees, and Seebauer (2015) who found that perceived behavioural control was a significant predictor of participation intention in community-based pro-environmental initiatives. Furthermore, the positive relationship between attitudes and WTCP in collaborative activities of CB-IPs (H_5) indicates the existence of favourable personal evaluations of collaborative activities by farmers. Farmers who believed that engaging in CB-IP collaborative activities led to valuable outcomes were more willing to continue participating in similar activities. It is evident that the extent of farmers' perceived behavioural control and attitude determine their WTCP in collaborative activities of CB-IPs. These findings are in conformity with Cheng and Chu (2016) who established that attitudes significantly influenced students' collaborative intentions.

In collaborative activities of CB-IPs, farmers' 'significant others' include CB-IP leaders, fellow farmers, and relatives. Results showed that subjective norms (H_6) did not significantly influence farmers' WTCP in collaborative activities of CB-IPs. This implies that CB-IP leaders, fellow farmers, and relatives were not salient influencers of farmers' WTCP in collaborative activities. Indeed, the decision to continue participating in collaborative activities is more of an individual farmer's decision than due to external social influences. Farmers tend to rely more on their attitudes to, and perceived behavioural control over executing collaborative activities than the views and opinions of CB-IP leaders, relatives, or fellow farmers. These findings are inconsistent with Chancellor (2012) who established that subjective norms were important predictors of collaboration intention. However, they are consistent with Cheng, Chu, and Ma (2016) who found that subjective norms did not significantly influence e-collaborative intentions of tertiary students. Moreover, Ajzen and Fishbein (2005) highlighted that the relative importance of attitude, subjective norms, and perceived behavioural control in predicting behavioural intentions vary with the situation and context of the behaviour being studied.

Generally, the observed significant relationships among constructs in the proposed conceptual model provide evidence to demonstrate that past-experience, attitudes, and perceived behavioural control are important in explaining farmers' WTCP in collaborative activities of

CB-IPs. Jointly, past-experience, attitude, and perceived behavioural control explained 46.0% of farmers' WTCP in collaborative activities of CB-IPs. This confirms that past-experience, attitude, and perceived behavioural control are key determinants of farmers' WTCP in collaborative activities of CB-IPs.

Conclusions

This study assessed socio-psychological factors that influence farmers' WTCP in collaborative activities of CB-IPs through extending the theory of planned behaviour by adding *past-experience*. Farmers' past experience in collaborative activities of CB-IPs had a positive indirect effect on their WTCP in similar activities. Furthermore, attitude and perceived behavioural control had positive significant influences on farmers' WTCP in collaborative activities of CB-IPs with perceived behavioural control having the strongest influence. However, it is important to note that there could be other factors accounting for farmers' WTCP in collaborative activities of CB-IPs as evidenced by the coefficient of determination ($R^2 = 0.460$).

From a theoretical perspective, this study deepens understanding of the socio-psychological factors influencing farmers' WTCP in collaborative activities of CB-IPs. Despite the plethora of literature on the importance of collaboration, the few studies that have used a behavioural perspective to examine willingness to collaborate have largely focused on the organizational level, with less attention paid to individuals within those organizations. Moreover, there is limited research on continued participation in collaboration activities especially in the context of innovation platforms. Yet, success of a collaboration is as much an organizational as it is an individual effort. Hence, findings of this study offer insights into the socio-psychological factors influencing individual farmers' continued participation in collaborative activities of CB-IPs.

This study offers several practical implications for conveners of collaborative activities in CB-IPs. Conveners of collaborative activities in CB-IPs need to consider factors that facilitate or hinder farmers' ability to continue participating in such activities to sustain CB-IPs. The findings suggest that a farmer who perceives him/herself to possess the required competencies and resources to participate in collaborative activities of CB-IPs would be more willing to continue participating in similar activities. Further, past-experience that creates positive attitudes enhances farmers' WTCP in such activities. Indeed, conveners of CB-IPs ought to devise strategies that promote meaningful experiences so that farmers form favourable perceptions towards collaborative activities of CB-IPs to appreciate the benefits of participating in such activities. Significant results notwithstanding, this study poses some limitations. This study employed a cross-sectional research design; therefore, it was difficult to determine how farmers' perceptions change over time. Moreover, this study was based on two CB-IPs located in one region of Uganda; thus, the findings are contextual. Hence, further research considering both spatial and temporal diversity of farmers would provide useful theoretical and practical implications. Furthermore, this study indicated that socio-psychological factors only explained

46.0% of farmers' WTCP in collaborative activities of CB-IPs. This implies that there is need to identify other factors that could be influencing farmers' WTCP in collaborative activities of CB-IPs.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Cassava Community Action Research Project (Cassava CARP) with funding from the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM).

Notes on contributors

Rebecca Mukebezi is a PhD Fellow in Agricultural and Rural Innovations of Makerere University. She is an Assistant Lecturer in the Department of Extension and Innovation Studies, Makerere University. Her interests are in research methods, process documentation, communication skills, managing collaborative engagements, and facilitating multi-stakeholder engagements.

Bernard Bonton Obaa is a Senior Lecturer in the Department of Extension and Innovation Studies, Makerere University. His research mainly focuses on analysis of social networks and resource access, food security, agricultural technology development, farmer organizations including cooperatives and agricultural extension services in post-conflict and pastoral communities in Uganda.

Florence Birungi Kyazze is a Senior Lecturer in the Department of Extension and Innovation Studies, Makerere University. Her research interests are in research methods and statistics, program development and evaluation, and community resource management innovations oriented towards climate change adaptation and livelihoods improvement.

Settumba B. Mukasa is an Associate Professor in the Department of Agricultural Production, Makerere University. His research interests are in plant biotechnology, seed systems, and community action research.

Irene Bulenzibuto Tamubula is a Lecturer at Kyambogo University with interests in rural development, agricultural projects management, and ICTs in agricultural education and extension.

ORCID iDs

Rebecca Mukebezi  <http://orcid.org/0000-0002-3335-6885>

Irene Bulenzibuto Tamubula  <http://orcid.org/0000-0002-8271-4546>

References

- Aguirre-Urreta, Miguel I., and Mikko Rönkkö. 2018. "Statistical Inference with PLSc Using Bootstrap Confidence Intervals." *MIS Quarterly: Management Information Systems* 42 (3): 1001–1020. <https://doi.org/10.25300/MISQ/2018/13587>.
- Ajzen, Icek. 2005. *Attitudes, Personality and Behavior*. 2nd ed. New York: Open University Press.
- Ajzen, Icek. 2014. "The Theory of Planned Behaviour Is Alive and Well, and Not Ready to Retire: A Commentary on Sniehotta, Presseau, and Araújo-Soares." *Health Psychology Review* 9 (2): 131–137. <https://doi.org/10.1080/17437199.2014.883474>.
- Ajzen, Icek. 2020. "The Theory of Planned Behavior: Frequently Asked Questions." *Human Behavior and Emerging Technologies* 2 (4): 314–324. <https://doi.org/10.1002/hbe2.195>.
- Ajzen, Icek, and Martin Fishbein. 2005. "The Influence of Attitudes on Behavior." In *Handbook About Attitudes*,

- edited by Dolores Albarracín, Blair T. Johnson, and Mark P. Zanna, 173–222. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Al-Debei, Mutaz M., Enas Al-Lozi, and Anastasia Papazafeiropoulou. 2013. "Why People Keep Coming Back to Facebook: Explaining and Predicting Continuance Participation from an Extended Theory of Planned Behaviour Perspective." *Decision Support Systems* 55 (1): 43–54. <https://doi.org/10.1016/j.dss.2012.12.032>.
- Albertus, Rene W., and Desiree Hamman-Fisher. 2021. "Investigating Information Technology Skills Retention Challenges in South Africa's Public Sector." *African Journal of Science, Technology, Innovation and Development* 13 (5): 541–49. <https://doi.org/10.1080/20421338.2020.1791386>.
- Andrews, Rhys, and Tom Entwistle. 2010. "Does Cross-Sectoral Partnership Deliver? An Empirical Exploration of Public Service Effectiveness, Efficiency, and Equity." *Journal of Public Administration Research and Theory* 20 (3): 679–701. <https://doi.org/10.1093/jopart/mup045>.
- Bamberg, Sebastian, Jonas Rees, and Sebastian Seebauer. 2015. "Collective Climate Action: Determinants of Participation Intention in Community-Based pro-Environmental Initiatives." *Journal of Environmental Psychology* 43: 155–165. <https://doi.org/10.1016/j.jenvp.2015.06.006>.
- Berends, Hans, and Jörg Sydow. 2019. "Introduction: Process Views on Inter-Organizational Collaborations." *Research in the Sociology of Organizations* 64: 1–10. <https://doi.org/10.1108/S0733-558X2019000064001>.
- Bryman, Alan, and Edward Bell. 2019. *Social Research Methods*. 5th ed. Canada: Oxford University Press.
- Carr, Jon C., and Jennifer M. Sequeira. 2007. "Prior Family Business Exposure as Intergenerational Influence and Entrepreneurial Intent: A Theory of Planned Behavior Approach." *Journal of Business Research* 60: 1090–1098. <https://doi.org/10.1016/j.jbusres.2006.12.016>.
- Chancellor, Charles. 2012. "Assessing the Intention of Land Trust Representatives to Collaborate with Tourism Entities to Protect Natural Areas." *Journal of Sustainable Tourism* 20 (2): 277–296. <https://doi.org/10.1080/09669582.2011.610510>.
- Cheng, Eddie W. L. 2017. "Students Working Online for Group Projects: A Test of an Extended Theory of Planned Behaviour Model." *Educational Psychology* 37 (9): 1044–1056. <https://doi.org/10.1080/01443410.2016.1150424>.
- Cheng, Eddie W.L., and Samuel K.W. Chu. 2016. "Students' Online Collaborative Intention for Group Projects: Evidence from an Extended Version of the Theory of Planned Behaviour." *International Journal of Psychology* 51 (4): 296–300. <https://doi.org/10.1002/ijop.12159>.
- Cheng, Eddie W.L., Samuel K.W. Chu, and Carol S.M. Ma. 2016. "Tertiary Students' Intention to e-Collaborate for Group Projects: Exploring the Missing Link from an Extended Theory of Planned Behaviour Model." *British Journal of Educational Technology* 47 (5): 958–969. <https://doi.org/10.1111/bjet.12379>.
- Cornforth, Chris, John Paul Hayes, and Siv Vangen. 2015. "Nonprofit – Public Collaborations: Understanding Governance Dynamics." *Nonprofit and Voluntary Sector Quarterly* 44 (4): 775–795. <https://doi.org/10.1177/0899764014532836>.
- Deken, Fleur, Hans Berends, Gerda Gemser, and Kristina Lanche. 2018. "Strategizing and the Initiation of Interorganizational Collaboration through Prospective Resourcing." *Academy of Management Journal* 61 (5): 1920–1950.
- Farooq, Muhammad Shoaib, Maimoona Salam, Alain Fayolle, Norizan Jaafar, and Kartinah Ayupp. 2018. "Impact of Service Quality on Customer Satisfaction in Malaysia Airlines: A PLS-SEM Approach." *Journal of Air Transport Management* 67: 169–180. <https://doi.org/10.1016/j.jairtraman.2017.12.008>.
- Field, Andy. 2009. *Discovering Statistics Using SPSS. Third Edit*. Thousand Oaks, CA: SAGE Publications, inc.

- Gazley, Beth. 2010. "Linking Collaborative Capacity to Performance Measurement in Government-Nonprofit Partnerships." *Nonprofit and Voluntary Sector Quarterly* 39 (4): 653–673. <https://doi.org/10.1177/0899764009360823>.
- Gazley, Beth. 2017. "The Current State of Interorganizational Collaboration: Lessons for Human Service Research and Management." *Human Service Organizations: Management, Leadership & Governance* 41 (1): 1–5. <https://doi.org/10.1080/23303131.2015.1095582>.
- Gazley, Beth, and Jeffrey L. Brudney. 2007. "The Purpose (and Perils) of Government-Nonprofit Partnership." *Nonprofit and Voluntary Sector Quarterly* 36 (3): 389–415. <https://doi.org/10.1177/0899764006295997>.
- Gray, Barbara. 1985. "Conditions Facilitating Interorganizational Collaboration." *Human Relations* 38 (10): 911–936. <https://doi.org/10.1177/001872678503801001>.
- Hair, Joseph F.Jr., Christian M. Ringle Hult, and Marko Sarstedt. 2014. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Long Range Planning. Vol. 46. Thousand Oaks, CA: SAGE Publications, inc.
- Hair, Joseph F.Jr., M. T. G. Hult, M. C. Ringle, and M. Sarstedt. 2017. *A Primer on Partial Least Squares Structural Equation Modeling*. Thousand Oaks, CA: SAGE Publications, inc
- Hair, Joseph F. Jr, Lucy M. Matthews, Ryan L. Matthews, and Marko Sarstedt. 2017. "PLS-SEM or CB-SEM: Updated Guidelines on Which Method to Use." *International Journal of Multivariate Data Analysis* 1 (2): 107–123. <https://doi.org/10.1504/ijmda.2017.10008574>.
- Hair, Joseph F.Jr., Christian M. Ringle, and Marko Sarstedt. 2011. "PLS-SEM: Indeed a Silver Bullet." *Journal of Marketing Theory and Practice* 19 (2): 139–151.
- Hair, Joseph F. Jr., Jeffrey J. Risher, Marko Sarstedt, and Christian M. Ringle. 2019. "When to Use and How to Report the Results of PLS-SEM." *European Business Review* 31 (1): 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>.
- Han, Tae-Im, and Leslie Stoel. 2017. "Explaining Socially Responsible Consumer Behavior: A Meta-Analytic Review of Theory of Planned Behavior." *Journal of International Consumer Marketing* 29 (2): 91–103. <https://doi.org/10.1080/08961530.2016.1251870>.
- Henseler, Jörg, Christian M. Ringle, and Marko Sarstedt. 2015. "A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling." *Journal of the Academy of Marketing Science* 43: 115–135. <https://doi.org/10.1007/s11747-014-0403-8>.
- Kovac, Velibor Bobo, David Lansing Cameron, and Rune Hoigaard. 2014. "The Extended Theory of Planned Behaviour and College Grades: The Role of Cognition and Past Behaviour in the Prediction of Students' Academic Intentions and Achievements." *Educational Psychology* 36 (4): 792–811. <https://doi.org/10.1080/01443410.2014.923557>.
- Krejcie, Robert V, and Daryle W. Morgan. 1970. "Determining Sample Size for Research Activities." *Educational and Psychological Measurement* 30 (3): 607–10. <https://doi.org/10.1177/001316447003000308>.
- Leung, Zeno C.S. 2013. "Boundary Spanning in Interorganizational Collaboration." *Administration in Social Work* 37 (5): 447–457.
- Lin, Hsiu Fen. 2006. "Understanding Behavioral Intention to Participate in Virtual Communities." *Cyberpsychology and Behavior* 9(5): 540–547. <https://doi.org/10.1089/cpb.2006.9.540>.
- Mahiya, Innocent T. 2021. "An Exploratory Study into the Establishment of Agricultural Innovation Platforms to Improve Agricultural Efficiency in Hwedza District, Zimbabwe." *African Journal of Science, Technology, Innovation and Development* 13 (4): 437–448. <https://doi.org/10.1080/20421338.2020.1800221>.
- Nederlof, Suzanne, Mariana Wongtschowski, and Femke van der Lee. 2011. *Putting Heads Together: Agricultural Innovation Platforms in Practice*. Amsterdam, The Netherlands: KIT Publishers. <https://doi.org/10.1093/nq/s10-l.17.326-d>.
- Rasoolimanes, S. Mostafa, Shuhaida Md Noor, Florian Schuberth, and Mastura Jaafar. 2019. "Investigating the Effects of Tourist Engagement on Satisfaction and Loyalty." *Service Industries Journal* 39 (7–8): 559–574. <https://doi.org/10.1080/02642069.2019.1570152>.
- Ringle, Christian M., Marko Sarstedt, Rebecca Mitchell, and Siegfried P. Gudergan. 2020. "Partial Least Squares Structural Equation Modeling in HRM Research." *International Journal of Human Resource Management* 31 (12): 1617–1643. <https://doi.org/10.1080/09585192.2017.1416655>.
- Rosas, João, and Luis M. Camarinha-Matos. 2010. "Assessment of the Willingness to Collaborate in Enterprise Networks." In *Doctoral Conference on Computing, Electrical and Industrial Systems*, 14–23. Berlin: Springer. https://doi.org/10.1007/978-3-642-11628-5_2.
- Sanyang, Sidi, Rhiannon Pyburn, Remco Mur, and Geneviève Audet-Bélanger, eds. 2014. *Against the Grain and to the Roots: Maize and Cassava Innovation Platforms in West and Central Africa*, 1–299. Arnhem, Netherlands: LM Publishers.
- Sarstedt, Marko, Christian M Ringle, and Joseph F Hair. 2017. "Partial Least Squares Structural Equation Modeling." In *Handbook of Market Research*, edited by C. Homburg, M. Klarmann, and A. Vomberg, 1–40. Springer International Publishing AG. <https://doi.org/10.1007/978-3-319-05542-8>.
- Sarstedt, Marko, Christian M Ringle, Donna Smith, Russell Reams, and Joseph F Hair. 2014. "Partial Least Squares Structural Equation Modeling (PLS-SEM): A Useful Tool for Family Business Researchers." *Journal of Family Business Strategy* 5: 105–115. <https://doi.org/10.1016/j.jfbs.2014.01.002>.
- Schut, Marc, Josey Kamanda, Andreas Gramzow, Thomas Dubois, Dietmar Stoian, Jens A. Andersson, Iddo Dror, et al. 2019. "Innovation Platforms in Agricultural Research for Development." *Experimental Agriculture* 55 (4): 575–96. <https://doi.org/10.1017/S0014479718000200>.
- Sell, Mila, Hilka Vihinen, Galfato Gabiso, and Kristina Lindström. 2018. "Innovation Platforms: A Tool to Enhance Small-Scale Farmer Potential through Co-Creation." *Development in Practice* 28 (8): 999–1011. <https://doi.org/10.1080/09614524.2018.1510473>.
- Shevlin, Blair R K, and Kerri A Goodwin. 2019. "Past Behavior and the Decision to Text While Driving among Young Adults." *Transportation Research Part F* 60: 58–67. <https://doi.org/10.1016/j.trf.2018.09.027>.
- Sun, Ying, Shanyong Wang, Jun Li, Dingtao Zhao, and Jin Fan. 2017. "Understanding Consumers' Intention to Use Plastic Bags: Using an Extended Theory of Planned Behaviour Model." *Natural Hazards* 89: 1327–1342. <https://doi.org/10.1007/s11069-017-3022-0>.
- Teng, Yi Man, Kun Shan Wu, and Hsiao Hui Liu. 2015. "Integrating Altruism and the Theory of Planned Behavior to Predict Patronage Intention of a Green Hotel." *Journal of Hospitality and Tourism Research* 39 (3): 299–315. <https://doi.org/10.1177/1096348012471383>.
- Tsasis, Peter, Jane Cooke-Lauder, and Jenna M. Evans. 2015. "Working Together in a Complex Environment: Collaborative Behaviors and Social Capital." *International Journal of Public Administration* 38 (8): 544–552. <https://doi.org/10.1080/01900692.2014.949749>.
- Xia, Hongmei, Tong Chen, and Guanghui Hou. 2020. "Study on Collaboration Intentions and Behaviors of Public Participation in the Inheritance of ICH Based on an Extended Theory of Planned Behavior." *Sustainability (Switzerland)* 12 (11): 4349. <https://doi.org/10.3390/su12114349>.
- Yadav, Rambalak, and Govind S Pathak. 2017. "Determinants of Consumers' Green Purchase Behavior in a Developing Nation: Applying and Extending the Theory of Planned Behavior." *Ecological Economics* 134: 114–122. <https://doi.org/10.1016/j.ecolecon.2016.12.019>.
- Yuriev, Alexander, Mehdi Dahmen, Pascal Paillé, Olivier Boiral, and Laurence Guillaumie. 2020. "Pro-Environmental Behaviors through the Lens of the Theory of Planned Behavior: A Scoping Review." *Resources, Conservation and Recycling* 155: 104660. <https://doi.org/10.1016/j.resconrec.2019.104660>.