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Integrating Green Process Skills into Construction Technology: Nigeria's Roadmap to Sustainable Economic Growth and Development

Abstract

This research aims to create and validate a comprehensive framework for integrating green process skills into Nigeria's construction technology sector, thereby driving economic growth and development. An exploratory mixed-methods approach was employed, combining cluster sampling of technical colleges and construction firms with proportionate stratified random sampling of stakeholders, and utilizing techniques such as thematic analysis, exploratory factor analysis, confirmatory factor analysis, and structural equation modelling to derive the study's findings. The resulting green process skills model encompasses critical areas, including information, strategy, interaction, and coordination skills. The study recommends that federal and state governments adopt and effectively implement this model to ensure sustainable economic growth.

Keywords: *green process skills, integration, construction technology, Roadmap, sustainable economic growth development*

1 Introduction

How can generic concepts, skills, and attitudes to green skills be integrated into the construction technology curriculum? The first approach is to classify the green skills to be taught. Authors (Turok & Taylor 2006; Learning and Skills Council 2008; Strietska-Ilina et al. 2011; Sack 2012; Pavlova 2013a; Knibb & Paci 2016) have come up with various green skills that could be assimilated into any trade. In line with this, Turok and Taylor (2006) classify green skills to include process skills to enable change. Consequently, when aligning the green process skills identified above, not all the skills are considered to be applicable to construction technology at the technical college level, which is the focus of this paper, while some can be merged.

To facilitate the widespread adoption of green practices, researchers emphasize the importance of educating construction technology professionals and related firms (McCoy et al. 2012). By empowering these stakeholders with knowledge, they can make informed decisions about energy efficiency and sustainable building options. Furthermore, online platforms can be valuable tools for experts to share knowledge and best practices, fostering a collaborative environment that promotes green innovation (Yoddumnern 2024). Given the nature of the construction technology and the application of each of the aforementioned skills, green process skills are deemed suitable and hence considered in this study.

Based on the above, Remziye et al. (2011) highlight the significance of process skills in facilitating student-centred learning, promoting active participation, and fostering a sense of responsibility among learners. To support this approach, Chinengundu and Hondonga (2024) recommend that TVET colleges establish specialized support units and provide training for lecturers to better cater to students' needs. By integrating process skills into the curriculum, students can develop essential problem-solving skills and address their concerns effectively. Furthermore, Strietska-Ilina et al. (2011) emphasise the importance of possessing a broad range of technical skills in building construction, including specific training in handling sustainable technologies like solar panels. This study focuses on integrating green process skills into the construction technology curriculum at Nigerian technical colleges.

2 Research Objectives and Hypothesis

2.1 Objectives

This research aims to create and validate the integration of the green process skills model for construction technology as Nigeria’s roadmap to economic growth and development. Specifically, they sought to:

- Explore green process skills elements considered important for the green process skills integration model for construction technology programmes at technical colleges as Nigeria’s roadmap to economic growth and development.
- Determine appropriate areas of the green process skills integration model for construction technology programmes at technical colleges as Nigeria’s roadmap to economic growth and development.
- Determine the relationship between the respondents' replies and essential areas of green process skills regarding the appropriate integration model for construction technology programmes at technical colleges as Nigeria’s roadmap to economic growth and development.

2.2 Hypothesis

There exists a relationship between the research sample responses and important areas of green process skills considered appropriate for an integration model for construction technology programmes at technical colleges as Nigeria’s roadmap to economic growth and development.

3 Literature Review

3.1 Green Process Skills in Construction Technology

Process skills refer to the tangible actions that facilitate the systematic organisation and adaptation of various tasks. When executed sequentially, these skills enable individuals to accomplish daily tasks efficiently. Essentially, process skills encompass the behavioural components that are vital for effective task completion, and research has shown that they are strong predictors of successful participation, particularly in children (Rosenberg et al. 2011; Rosenberg et al. 2013). At the organisational level, Pavlova (2013b) lamented that the specific green skills found in workplace learning and analysis aim to develop process skills for enabling change. This clearly shows that this development generates productive students with technological skills who can work in any organisation, especially technologically oriented organisations like construction industries, with a view to achieving sustainable development environmentally, economically, and socially.

Based on the above, Makgato (2011) demonstrated that the primary goal of technological literacy is to equip individuals with skills that address the nation's evolving economic and social needs while fostering flexibility and adaptability for future career paths and life endeavours. Makgato further identified essential skills for advancing technological literacy, including critical thinking and problem-solving, digital literacy, effective communication and entrepreneurship, ethical decision-making, and design and innovation capabilities.

Examining technological process skills reveals their potential to drive organizational change, particularly when taught to students at the school level. Remziye et al. (2011) define process skills as those that facilitate learning, promote active participation, and encourage students to take responsibility for their own learning. These skills also enable students to develop research methods, think critically, and solve problems. Studies have shown that integrating process skills into education can significantly improve student understanding and application of skills and concepts. Yager and Akcay (2010) found that students who received instruction emphasising process skills demonstrated greater gains in creativity, critical thinking, and science concept application.

Accordingly, Remziye et al. (2011) identify basic process skills as observing, comparing, and classifying, while integrated process skills include formulating hypotheses and experimenting. These skills are essential for construction trade students to acquire, as the skills enable the effective completion of building construction projects. Educational alignment of process skills is critical, as it promotes experiences that foster observing, measuring, and predicting (İnce Aka et al. 2010). The National Science Teachers Association NSTA (2013) emphasises the importance of student autonomy in using process skills rather than relying on teacher direction. Research highlights the benefits of process skills in promoting individual independence, autonomy, and participation (Turiman et al. 2012). By implication, integrating process skills into building construction trade education can significantly impact the construction of green buildings in Nigeria, mitigating climate change effects and boosting the economy.

4 Methodology

This study adopted a mixed-methods approach grounded in a pragmatic worldview (Creswell 2014) to collect and analyse both quantitative and qualitative data sequentially. The research involved a sequential exploratory mixed-methods design, characterised by an initial qualitative data collection and analysis phase, followed by a quantitative data collection and analysis phase (Rouzies 2013). The target population comprised 508 respondents from five categories: construction technology administrators, teachers, instructors, professionals, and craftsmen. Proportionate stratified random sampling was used to select 376 respondents for the quantitative phase.

Semi-structured interviews were used for qualitative data collection, allowing for interactive and conversational exchanges between participants and the researcher. The interviews were audio-recorded and conducted after obtaining informed consent from participants. A structured questionnaire, developed from an extensive literature review, was used for quantitative data collection, incorporating a 6-point Likert scale weighting values assigned as follows: AI (1)- Absolutely inappropriate, I (2)-Inappropriate, SI (3)- Slightly Inappropriate, SA (SA)- Slightly Appropriate, A (3) - Appropriate, and AA (4)- Absolutely appropriate. To ensure the reliability of the qualitative results, member checking and peer debriefing were employed (Creswell 2014). A pilot study established the quantitative instrument's reliability, yielding a Cronbach's Alpha coefficient score of 0.785. To verify the accuracy of the qualitative findings, member checking was used for validity. Quantitative data analysis involved descriptive statistics (mean and standard deviation), exploratory factor analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM), using IBM-SPSS version 21 and IBM-SPSS-AMOS.

5 Data Analysis and Findings

5.1 Green Process Skills Elements for Construction Technology Programme in Nigeria

This study segment explores elements of green process skills considered essential for a green process skills integration model for construction technology programmes at technical colleges as part of Nigeria's roadmap to economic growth and development. To address the first research objective, which explored relevant areas of process skills, the research question was subdivided into two specific queries, supplemented by three probing questions. These questions elicited opinions on process skills areas, which were then analysed using thematic analysis. The interview transcripts were transcribed, coded, and categorised into four subthemes.

The analysis focused on participants' perspectives on integrating green process skills into construction technology programs and identifying suitable areas for integration. The qualitative data revealed that two-thirds of the participants considered green process skills crucial for sustainable economic growth and development characterised by profitability and long-term economic production. Furthermore, the in-depth interview analysis yielded four key themes related to appropriate areas of process skills (*information, strategy, interaction and coordination*), as shown in Table 1 below.

Table 1: **Summary of Appropriate Areas of Green Process Skills for Construction Technology Programme**

Participant	**Theme 1**	**Theme 2**	**Theme 3**	**Theme 4**
	Information Technology skills	**Strategy skills**	**Interaction skills**	**Coordination skills**
GS (1,11,25,2, 16, 21, 5, 12, 19, 8, 18, 23)	*Gather information*	*Identify a strategy that goes beyond routine action*	*Share prior knowledge on any problem*	*Coordinate efforts to accomplish a goal*
GS (3, 9, 17, 2, 16, 21, 5, 12, 19, 8, 18, 23, 22, 10, 20)	*Interpret information*	*Execute a strategy that goes beyond routine action*	*Reflect on experiences*	*Use of the five senses to describe an idea*
GS (1, 11, 25, 4, 13, 27, 5, 12, 19, 6, 14, 24, 10, 20)	*Manipulate information*	*Plan a strategy that goes beyond routine action*	*Interact with others effectively*	*Create action plan*
GS (3, 9, 17, 2, 16, 21, 7, 15, 26, 8, 18, 23, 22)	*Transform information*	*Perform activities in the correct order*	*Building on individual's strengths and skills*	*Organize efforts to accomplish a goal.*
GS (1, 11, 25, 17, 4, 13, 27, 7, 15, 26, 6, 14, 24, 22)	*Evaluate relevant information*	*Promote creative thinking*	*Understand non-verbal behaviors*	*Plan to accomplish a goal.*
GS (3, 9, 17, 4, 13, 27, 7, 15, 26, 6, 14, 24, 10, 20)	*Analyze and synthesize relevant information*	*Promote discipline.*	*facilitation and negotiation*	*Direct efforts to accomplish a goal*

Table 1 summarizes the qualitative data analysis findings on the relevant areas of process skills elements suitable for integration into construction technology programs. The data is organized into four themes, which emerged from the in-depth interview analysis after transcription, coding, and categorization. Specifically, Theme 1 (Information Technology Skills) revealed that 12 of the 27 participants emphasised the importance of incorporating *information gathering skills* into the construction technology curriculum; 15 (56%) stressed the ability to *interpret information* to be incorporated; 14(52%) felt that the *ability to manipulate information* should be integrated; nearly half of the participants viewed the *ability to transform information* as the area to be integrated; most of the respondents focused on the ability to *evaluate relevant information*; and 14 (52%) see the ability to *analyse and* s*ynthesise relevant information* as the area of process skills that should be integrated into the Building Construction Technology BCT curriculum. The interviewees highlighted various aspects of information technology (Table 1), concluding that incorporating these skills into the construction technology curriculum at Nigerian technical colleges is essential.

In the strategy skills Theme 2, respondents emphasised several key areas. Nearly two-thirds stressed the importance of *identifying and executing strategies beyond routine actions*. Specifically, 14 (52%) of respondents considered *planning and promoting creative thinking* as crucial areas for integration, while 13 (48%) focused on *performing activities in the correct order*. Additionally, 14 (52%) of respondents saw *promoting discipline* as a vital aspect of strategy skills to be incorporated into the curriculum (Table 1). These findings collectively indicate that strategy skills are critical to integrating into the construction technology curriculum at Nigerian technical colleges.

In Theme 3 (interaction skills), 12 participants stressed *the ability to share prior knowledge on any problem* to be incorporated; 15 (56%) of the participants felt that ability to *reflect on experiences* should be integrated; 14 (52%) viewed *interact with others effectively* as the area to be integrated; 13 (48%) focused on the ability to *building on individual's strengths and skills*; and most of the interviewees see the ability to *understand non-verbal behaviours* as the area of process skills element that should be integrated into the construction technology curriculum; and 14 (52%) maintained that *facilitation and negotiation* should be incorporated. The participants agreed with these aspects of interaction (Table 1). Therefore, these outcomes indicated that interaction skills should be integrated into the construction technology curriculum at technical colleges in Nigeria.

In Themes 4 (coordination skills), almost half of the participants stressed the ability to *coordinate efforts to accomplish a goal* to be incorporated; 15 (56%) felt that the ability to us*e the five senses to describe an idea* should be integrated; 14 (52%) viewed the ability to *create an action plan* as the area to be integrated; 13 (48%) focused on the ability to *organise efforts to accomplish a goal*; and 14 (52%) see the ability to p*lan to accomplish a goal* as the area of process skills element that should be integrated into the construction technology curriculum; and 14 (52%) maintained that ability to *direct efforts to accomplish a goal* should be integrated. The participants considered these aspects of coordination for integration (Table 1). Thus, these findings showed that coordination skills need to be incorporated into the curriculum of construction technology in technical colleges in Nigeria.

5.2 Exploratory Factor Analysis of Green Process Skills

This section determines appropriate areas of the green process skills integration model for construction technology programmes at technical colleges as part of Nigeria's economic growth and development roadmap. The results of the Exploratory Factor Analysis (EFA) for process skills, comprising 12 items (PRC1-PRC12), are presented in the following tables. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.813, surpassing the recommended threshold of 0.5 for factor analysis validity (Hair et al. 2012;

Beavers et al. 2013). The Bartlett's test of Sphericity further validated the results, with a significant p-value of 0.000 (Table 2). Notably, inter-item correlations exceeded 0.3, indicating a patterned relationship among the variables (Yong & Pearce 2013). Additionally, the anti-image correlation diagonal values, measuring sampling adequacy, were all above 0.5 for the 12 items (Table 2). These findings confirm that the EFA assumptions were met, and hence, the data is suitable for EFA (Comrey & Lee 2013).

Table 2: **Measure of Inter-item Correlation and Sampling Adequacy of Green Skills Process**

KMO and Bartlett's Test		
KMO (MSA)		.813
Bartlett's Test of Sphericity	ACS	1164.437
	df	66
	Sig.	.000

Item	Anti-image AIs Corr. Diagonal
PRC1	.791[a]
PRC 2	.782[a]
PRC3	.600[a]
PRC4	.792[a]
PRC5	.851[a]
PRC6	.874[a]
PRC7	.923[a]
PRC8	.736[a]
PRC9	.902[a]
PRC10	.767[a]
PRC11	.915[a]
PRC12	.764[a]

Table 3 reveals that two components emerged with initial eigenvalues exceeding 1, collectively explaining 66.345% of the variance in the observed variables. This exceeds the recommended threshold of 60% for variance explained, as suggested by (Hair et al. 2012). The presence of only two extracted factors with significant associative relationships is thus confirmed. Furthermore, the cumulative Extraction and Rotation Sums of Squared Loadings also equalled 66.345%, indicating that the extraction method was suitable and did not result in a loss of explained variance due to latent factors (see Table 3 below).

Table 3: **Total Variance Explained of Green Process Skills**

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	**\% of Variance**	**Cumulative \%**	**Total**	**\% of Variance**	**Cumulative \%**	**Total**	**\% of Variance**	**Cumulative \%**
1	4.329	48.095	48.095	4.329	48.095	48.095	3.277	36.408	36.408
2	1.643	18.250	66.345	1.643	18.250	**66.345**	2.694	29.937	**66.345**
3	.787	8.745	75.090						
4	.578	6.427	81.517						
5	.552	6.133	87.651						
6	.480	5.330	92.981						
7	.360	3.999	96.980						
8	.272	3.020	100.000						

Table 4 below displays the variance proportions for each item in relation to the others and the matrix for PROCSKILL. The extraction values for all 12 PROCSKILL items exceeded 0.4, except for PRC4 and PRC11, which were re-examined and excluded from the EFA. This outcome suggests satisfactory extraction communalities obtained through principal component analysis. Subsequently, the remaining 10 process skills (PROCSKILL) items loaded into two factors, except for PRC7 and PRC3, which cross-loaded onto multiple factors and were therefore excluded from the Confirmatory Factor Analysis (CFA) after re-examination.

Table 4: **Communalities and Rotated Component Matrix of Green Process Skills**

Communalities			**Rotated Component Matrix[a]**		
	Initial	**Extraction**		**1**	**2**
PRC1	1.000	.607	PRC12	.846	

PRC2	1.000	.571		PRC1	.732	
PRC3	1.000	.618		PRC6	.619	
PRC4	1.000	.348		PRC5	.587	
PRC5	1.000	.474		PRC2	.529	
PRC6	1.000	.497		PRC10		.876
PRC7	1.000	.433		PRC8		.851
PRC8	1.000	.712		PRC9		.648
PRC9	1.000	.501				
PRC10	1.000	.731				
PRC11	1.000	.353				
PRC12	1.000	.731				

First factor involved 5 items which were PRC2 ("Plan a strategy that goes beyond routine action in order to find a solution to a situation or question."); PRC5 ("Interact with others and build on individual's strengths and skills"); PRC6 ("Analyse relevant information to reach a conclusion supported with evidence."); PRC1 ("Exchange information through speaking, listening, and non-verbal behaviours."); and PRC12 ("Use the five senses to describe what is seen, felt, heard, smelled, and (if appropriate) tasted."). Factor 2 consisted of 3 items which were PRC9 ("Gather, interpret, manipulate and transform relevant information."); PRC8 ("Plan, organise, coordinate and direct one's own and others' efforts to accomplish a goal."); and PRC10 ("Create action plan leading to a potential solution to a problem").

5.3 Measurement Model of Green Process Skills

This section investigates the relationships between the sampled respondents and the critical areas of green Process Skills deemed suitable for integration into the construction technology program at Nigerian technical colleges, a strategic pathway to driving the nation's economic growth and development. Furthermore, this section evaluates the study's hypothesis at a 0.05 significance level.

5.4 Hypothesis

This study revealed a significant relationship between the research samples' responses and the critical areas of green process skills suitable for integration into the construction technology program at Nigerian technical colleges, aligning with Nigeria's economic growth and development roadmap.

This data analysis section evaluated the measurement model of process skills, addressing research question 3j and testing hypothesis 1j at a significance level of 0.05. The Exploratory Factor Analysis (EFA) results indicated that the process skills variable (PROCSKILL) is a second-order latent construct comprising two first-order latent constructs. Initially, 12 measurement items were used; however, PRC4, PRC11, PRC7, and PRC3 were removed after EFA, leaving 8 items that loaded into two factors.

In the Confirmatory Factor Analysis (CFA), the two factors were PROC1 and PROC2. PROC1 consisted of three items (PRC9, PRC8, and PRC10), while PROC2 comprised five items (PRC2, PRC5, PRC6, PRC1, and PRC12). The CFA results via Amos 23 showed that the initial measurement model did not meet the goodness-of-fit criteria, with a normed chi-square (x2/DF) of 4.534, GFI = 0.946, TLI = 0.881, CFI = 0.919, AGFI = 0.897, RMSEA = 0.099, and $p < 0.005$. Consequently, the initial model was modified by removing variables that contributed less to the model's goodness of fit. Figure 4.23 illustrates the revised measurement model.

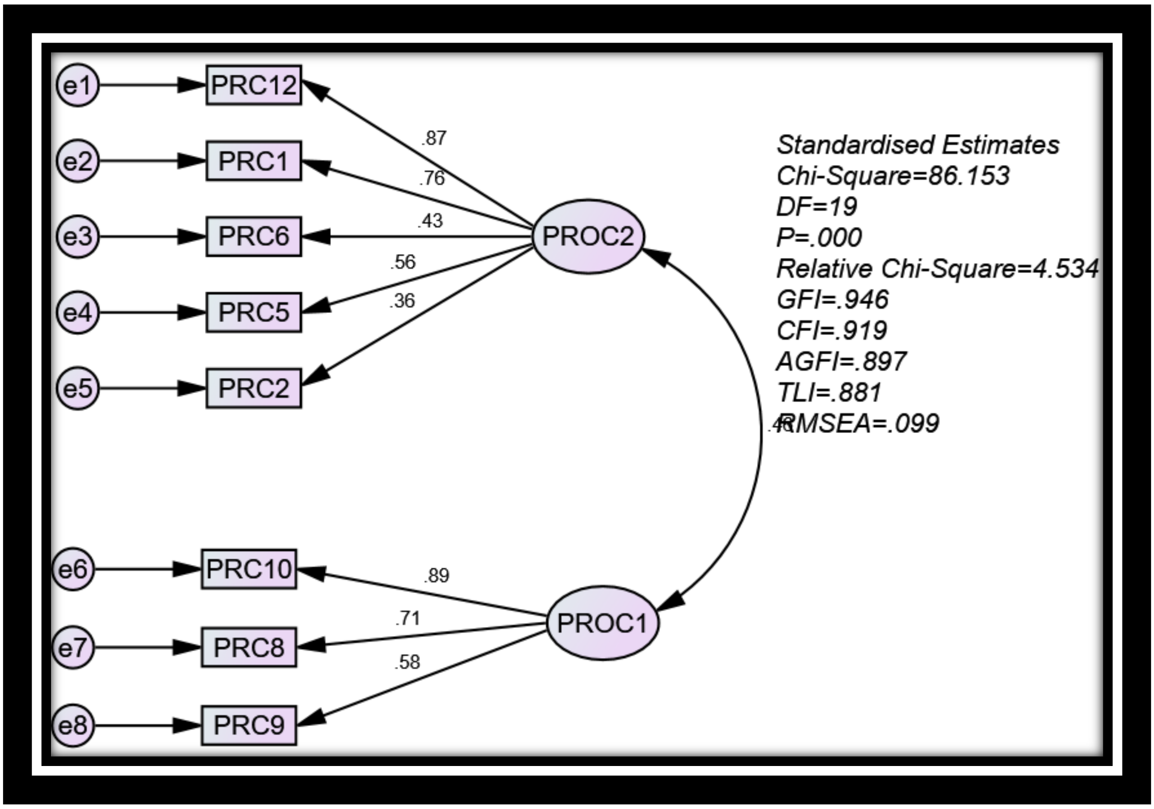

Figure 1: Measurement Model of Green Process Skills

Figure 1 above illustrates eight crucial areas of PROCSKILL, including PRC9, PRC8, PRC10, PRC2, PRC5, PRC6, PRC1, and PRC12, which were assessed to determine their relationship with the research data sample and process skill areas for integration in construction technology. The initial model revealed that PRC9 had a modification index (MI) value of 22.266, exceeding the threshold value of 15. Consequently, PRC9 was removed from the CFA after re-examining its contents. The subsequent CFA run via Amos 23 yielded satisfactory results, indicating a good model fit. The standardised estimates (Figure 1) showed a CMIN value 36.123 with 12 DF. Although the associated p-value was significant at p <

0.005, the large sample size (N = 361) in this study for CFA likely contributed to this outcome (Hair et al. 2006).

The normed CMIN (1.789) fell within the acceptable range (between 1 and 3), indicating a good model fit (Hair et al. 2006). The GFI (0.975), AGFI (0.941), CFI (0.965), and TLI (0.939) all exceeded 0.9, while the RMSEA (0.075) was below the recommended threshold of 0.08, establishing the goodness-of-fit analysis. These results suggest the modified process skills model demonstrated a satisfactory fit (Hair et al. 2006; Awang 2012). Therefore, the hypothesis proposing a significant relationship between the research samples' responses and important areas of process skills was accepted, leading to the generation of Figure 2.

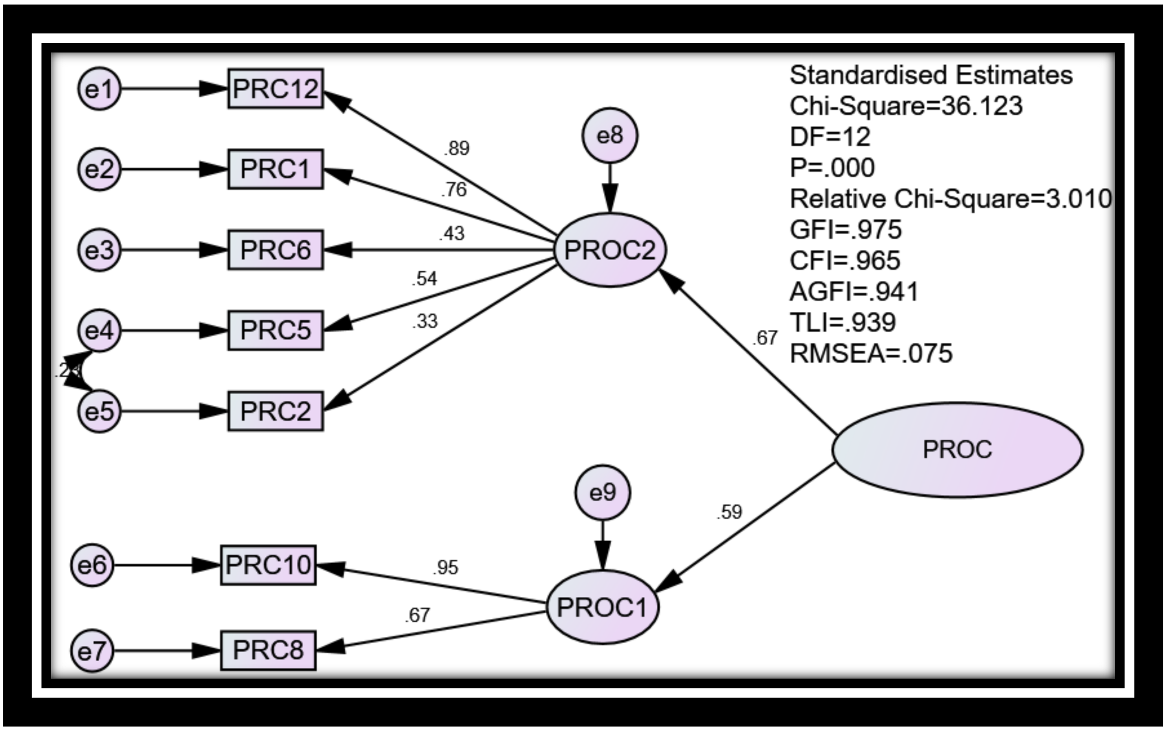

Figure 2: Modified Measurement Model of Green Process Skills

Figure 2 shows a refined measurement model, illustrating the significant relationship between the research samples' responses and the seven crucial areas identified for integration into the construction technology curriculum at Nigerian technical colleges. The modified model (Figure 2) suggests that incorporating green skills into the construction technology curriculum requires careful consideration of these essential process skills areas.

6 Discussion of findings

In this section of integrating important areas of process skills into BCT, participants agreed upon embedding information skills, which involves the ability to analyse relevant information to reach a conclusion supported with evidence and exchange information through spelling, listening and non-verbal behaviour. This finding corresponds with the recommendation of

Rojewski (2009) that unprecedented changes in the twenty-first century accelerated by myriad phenomena such as globalisation and a need for knowledgeable workers skilled in information technologies confront people in every region of the world. In addition, UNESCO (2016) recommended that the main obstacles to countries' progress in greening TVET include a lack of information regarding the knowledge, skills and competencies required for green jobs. Consistent with this finding, Agada (2014) recommended that skills are the ability individuals need to transfer information involving written, oral, visual, and nonverbal communication to create sound awareness about an enterprise's products.

The findings also indicated that experts agreed on the need for incorporating strategy and interaction skills that involved interacting with others, building on individuals' strengths and skills, and planning a strategy that goes beyond routine action to find a solution to a situation or question. These findings agreed with the recommendations of the Organisation for Economic Co-operation Development OECD (2015), who maintain that construction is a major part of the economy for which strategy should be developed, such as upgrading skills, and generating incentives for using greener approaches and provisions for recycling construction and demolition waste. These findings were also supported by Ayodele and Alabi (2011) The construction industry is where there is interaction and management of labour, materials, and plants, resulting in the procurement of building, civil engineering, heavy engineering, and manufacturing products. Additionally, Voeun and Ai (2024) recommends that substantial attention be given to creating solid jobs and industrial growth, especially the policy of ensuring high productivity and quality workforces to compete with other countries in the economy and other sectors.

Based on the above, CEDEFOP (2012) recommended that reviewing changing demand and the current learning provision to meet green skill needs were the most widespread activity among learning providers, while few included green skills in the organisation's learning strategy. According to the OECD (2015), a strategy should be developed for the construction sector that consists of the need for upgrading skills and incentives for using greener approaches. Also, Dirin (2009) stated that sustainable development, in particular pertaining to the development of teaching methods and interaction, should focus on hands-on experiences, visits to factories, fieldwork, laboratory work, and placement in specific industries.

Finally, in this section, it was found that coordination skills (which include the ability to use the five senses to describe what is seen, felt, heard, smelled, and (if possible) tested) need to be included in the BCT curriculum for economic sustainability. These findings are consistent with the recommendations of Strietska-Ilina et al. (2011) to enable policy-makers and business executives to set the right incentives and create conducive conditions. There is a need to integrate coordination, management, and business skills to facilitate holistic and interdisciplinary approaches that incorporate economic objectives. Moreover, Chaiyong et al. (2024) maintained that Dual Vocational Education has been a form of TVE and of training arrangements between educational institutions and the private sector. It is also in line with the recommendation of Bubou et al. (2010) that the strategic framework of green technology capacity building must also make provision for the coordination and development of educational activities. Additionally, Gunawan and Frasier (2014) recommended that the coordination mechanism across ministries and between government levels creates enormous challenges concerning policy standardisation, programme alignment, and effective implementation methods. The findings under process skills were consistent with recommendations made by many authors, which make it necessary for their integration into the BCT curriculum at colleges of education in Nigeria.

7 Conclusion and recommendations

This study's findings – encompassing information, strategy, interaction, and coordination skills – informed the development and validation of an integration model for green process skills in construction technology, aligning with Nigeria's economic growth and development agenda. A comprehensive framework was created, drawing from the insights of five categories of respondents to identify crucial areas of green process skills. The framework adheres to the analysed data, highlighting the most suitable areas for integration into the construction technology curriculum in Nigeria. The proposed model has significant implications for the National Board for Technical Education (NBTE), emphasizing the need to incorporate these identified areas into the curriculum and ensure effective instruction. This model will facilitate the seamless integration of green process skills by serving as a guiding tool, empowering construction technology graduates to contribute substantially to Nigeria's economic growth and development.

The global nature of economic challenges has hindered sustainable development in numerous developing countries, including Nigeria. To address this issue, the proposed model advocates for integrating green process skills into construction technology education, thereby empowering students to contribute to economic sustainability.

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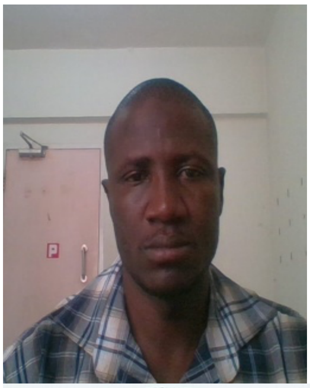

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