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Technological Opportunism Capability and Corporate ESG Performance: The Role of Digital Technologies, Circular Supply Chain Capability and Organizational Agility

Stephen Kamran
MPhil Scholar, Department of Commerce & Finance, GC University, Lahore
Email: kamran.msbf@gmail.com

Farah Saman
PhD Researcher, Department of Communications, Drama and Film. University of Exeter, United Kingdom, Email: fs531@exeter.ac.uk

Waqas Khan
Deputy Treasurer, GC University, Lahore
Email: waqas.khan@gcu.edu.pk

Ali Raza Elahi
Assistant Professor, Department of Commerce & Finance, GC University, Lahore Email: alirazaelahi@gcu.edu.pk

Ali Fayyaz Munir
Assistant Professor, Department of Commerce & Finance, GC University, Lahore Email: ali.fayyaz@gcu.edu.pk

Ijaz Butt
Lecturer (Management Sciences), Virtual University of Pakistan
Email: ijaz.butt@vu.edu.pk

ABSTRACT
This study inspects the role of the technological and organizational orientation of a company to assist companies to embrace new digital technologies, enhance their virtual supply chain, and achieve higher environmental, social, and governance (ESG) performance. The study is centered on the business textile manufacturing division of Pakistan where digital transformation and sustainability are becoming a significant concern. The article is based on Technology Organization Environment (TOE) model and Dynamic Capability Theory that describe the way firms feel, adapt and utilize new technologies. Data were collected from 424 managers working in corporate textile manufacturing firms through a structured questionnaire. The analysis was conducted using SmartPLS 3.0, a widely used and reliable tool for structural equation modeling. The outcomes confirm that there is a strong technological and organizational context significantly promotes the adoption of digital technologies. These emerging digital technologies, in turn, better the circular supply chain capabilities of organization, which lead to better ESG performance. The results also emphasize the key role of organizational agility. Agile corporations are more competent to use emerging digital technologies smoothly, strengthen the circular supply chain practices, and eventually get the higher ESG performance.

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1. Introduction

If we see the dynamics of Pakistan's economy and the GDP, it is heavily dependent of textile manufacturing and apparel industry. In GDP its contribution is more than 8 % and if we see exports, it contributes more than 50 percent of total exports. This Industry gives employment to over 25 million people (Board of Investment, Ministry of Finance-Pakistan, Pakistan Credit Rating Agency).Textile sector of Pakistan has a lot of problems for instance water wastage, less availability of water resources, chemical contamination in air and water. This is building extreme pressure from international communities for strict ESG standards of GOTS, CBAM, EU Green Deal, the forthcoming digital product passport and ZDHC. It is inevitable to achieve the targets set by United Nation Sustainable Development Goal-12 (SDG-12) on responsible production and consumption, which is not an option any more but is a compulsory demand of international market of importers of textile . In short its mandatory for long-run survival of this industry that represent textile sector of Global South because of its size and production standards. This is why major hubs of textile in Pakistan were known as Manchester of Global South giving the global importance to this sector .

Considering the above context Pakistan textile, is rigorously moving to sense and integrate digital technologies (DT) such as big data analytics (BDA) , Internet of Things (IoT) and Block Chain ;to significantly improve Circular Supply Chain Capability for improving the corporate ESG performance (ESGP) (Bag et al., 2023; Massari et al., 2023; Yadav et al., 2024; Liu et al., 2022; Choi & Chen, 2021). However, the parameters through which inorganizations in monetarily constrained Global South sense, seize, and integrate these technological and circular opportunities are not revealed and known widely there, because of lack of resources, awareness and skilled human resources.

We did a systematic literature review with trend analysis and with proper search mechanism (Linnenluecke et al., 2020) .It was done by using Google Scholar, Web of Science and Scopus. We focused English language articles that are peer-reviewed and are published from 2018 till 2025. The key terms that we searched were "UN-SDG-12", "Organizational Agility", "Technological Opportunism Capability", "Digital Technologies", "Internet of Things", "Big data Analytics", "Block Chain", "Corporate level Textile Sector", "Circular Supply Chain Capability in Global South". Elimination criteria dropped out the publications that are not in English, the conference papers, studies before 2018, and research unconnected to the Global South contexts and textile sector (Bag et al., 2023; Khan et al., 2021; Chatha et al., 2015).

The literature depicts that although individual variables are well defined, technological opportunism (TOC) as the early sensing and using those emerging technologies (Srinivasan & Lilien, 2002; Li et al., 2023; Al-Swidi et al., 2023). Digital technologies (DT) when brought into by these business brings in transparency and efficiency (Tanveer et al., 2023; Queiroz et al., 2020; Mikalef et al., 2019). Circular supply chain capability (CSCC) is the cutting edge capability of an organization to manage closed-loop systems with agility (Farooque et al., 2019; de Lima et al., 2022; Batista et al., 2023). Organizational agility is a very quick competency resource for reconfiguration of the systems in an institution (Teece et al., 2016; Gligor et al., 2015; Dubey et al., 2018). Corporate ESG performance (ESGP) is the competence of an organization that shows its sustainability and Environmental, Social, and Governance outcomes (Ali et al., 2023; Friede et al., 2015; Azmi et al., 2021; Lee & Rhee, 2023) .Very less studies fit in the above within a single theoretical framework in Global South context. Although there has been

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significant studies on individual notions, extensive quantitative models are presently scarce that simultaneously study: TOC → DT adoption → CSCC formation (Al Hadwer et al., 2021; Gupta et al., 2020); - sequential DT–CSCC mediation in the TOC–ESGP relationship (Liu et al., 2022; Faisal, 2023; Chittipaka et al., 2023); also the direct and moderating advantage on organizational agility (Shams et al., 2021; Troise et al., 2022; Sahoo et al., 2023); and the collaborative integration for TOE and DCT in export focused industries in the Global South (Teece et al., 1997; Teece, 2007; Khan et al., 2021).

This research plugs in current deficiencies by empirically assessing a TOE–DCT collaborative framework within Pakistan's textile sector. It shows that the technological opportunism capability boosts ESG performance by utilizing DT–CSCC sequential mediation and these can be both moderated and directly driven by organizational agility thus providing a unique and practical option /opportunities for accomplishing SDG-12 by 2030.

2.Literature Review:

2.1 Theoretical Development and Conceptual Framework

2.1.1 Technology-Organization-Environment (TOE)

Tornatzky and Fleischer developed the Technology-Organization-Environment (TOE) approach back in 1990. This discusses about the way the following contextual elements—technology, organization, and environment—are used to demonstrate how novel innovations are adopted. This framework proves particularly valuable as it demonstrates how corporations manage the adoption of digital technologies (DTs), thus optimizing corporate ESG performance (ESGP) as well as encouraging circular supply chain capabilities (CSCC) (Khan et al., 2021; Sultana et al., 2018). Blockchain, big data analytics (BDA), and the Internet of Things (IoT) comprise every facets of the technology side of things. The functional aspect involves elements such as resources within the company, structure, and flexibility. The environmental dimension includes things like international ESG rules, export compliance requirements, and demands from Sustainable Development Goal (SDG) 12. These demands for sustainable development have significant impacts on the textile industry in Pakistan, which serves as a major industrial hub in the Global South. In order to achieve SDG-12 by 2030, it's necessary to focus on it since manufacturing consumes a lot of resources, uses a lot of scarce water, and is attracting greater attention coming from global ESG advocacy organizations. Therefore, in addition to increasing productivity, deploying digital technologies and circular supply chain methods are as essential in advancing environmentally conscious and ecologic transformations in industry. xpand and stay in business. Massari et al. (2023), Faisal (2023), Bag et al. (2023), Yadav et al. (2024), and Mikalef et al. (2019) all say that DTs make it possible for transparency, connectedness, and automation, which are all necessary for reaching environmental sustainability goals. By using natural resources utilization at optimum level, evaluating water usage and wastage, encouraging the sustainable procurement, and accelerating the advancement toward SDG-12 implementation, the effective use of digital technology (DT) will help he textile industry of Global south reach its goal of responsible production and consumption by 2030.

2.1.2 Dynamic Capabilities Theory (DCT)

The Dynamic Capabilities Theory (DCT) by Teece et al. (1997) says that a company has a competitive edge when it recognizes possibilities, make the most of those opportunities, and adapt to changes in the external environment. Technological opportunism (TOC) shows how excellent an organization is at discovering and taking advantage of

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possibilities, while organizational agility indicates how successful it is at evolving. The theory has significance because it describes how businesses deal with agility and technical opportunism (TOC), resulting in their ESG performance (ESGP).These broad abilities, expertise, and skills are facilitated by information systems, techniques, and frameworks. But getting responsive as a company lets a business move its possessions around as necessary. it really support the organization achieve its urgent objectives while remaining afloat. They also view digital technologies (DTs) and circular supply chain capability (CSCC) as possibilities for new innovation and development. The circular supply chain capability (CSCC) manages closed-loop systems that take into consideration the long-lasting, social, and environmental effects of what a business does. Textile industry in Global South needs CSCC to meet its SDG-12 commitments. Circular strategies emphasize the significance the industry is to achieving the 2030 sustainability objectives of environmentally conscious manufacturing, decreasing environmental impact, and expanding sustainably.It indicates which an enterprises might put investments to acquire fresh abilities and knowledge that will assist them remain operational for many years to come (Menon & Suresh, 2021; Darvishmotevali et al., 2020; Irfan, 2019).

This study employs a strategic framework rooted in the TOE framework and Dynamic Capabilities Theory (DCT) to explore how business organizations might improve their environmental,societal, and governance performance (ESGP) through combining the discovery of novel opportunities via digital technologies (DTs) and circular supply chain capability (CSCC) with the effective use of existing capacities.This implies that organizations are really sustainable provided they can use existing abilities by coming up with novel concepts that will render them environmentally conscious. This multifaceted place is vital for maintaining company assets adaptable while meeting the needs that stakeholders have that are perpetually evolving. In the textile industry of , having the capacity to adapt particularly essential to reaching the objectives of SDG-12. Organizations must use technological opportunism, DTs, and CSCC in their business strategies to achieve both local industrial challenges and global sustainability objectives. To achieve long-term sustainable performance, organizational agility is essential for the leadership and their integration of multiple emerging requirements evolving with time (Al-Swidi et al., 2023; Teece et al., 1997; Farooque et al., 2019; Shams et al., 2021; Chari et al., 2022; Ojha et al., 2018; Troise et al., 2022).

2.2 Hypothesis Development

These abilities are very important for Textile manufacturing industry, which is an excellent instance of the Global South, to stay competitive and accomplish the critical global goal of SDG-12 by 2030. Srinivasan and Lilien (2002) describe technological opportunism capability (TOC) as the mix of abilities, expertise, and inventiveness required to recognize and take advantage of new improvements in technology. A great number of individuals believe TOC is essential for an organization to be successful. This means that organizations that are better at sensing technology usually do better overall (Al-Swidi et al., 2023; Asim et al., 2019; Ali & Haseeb, 2019; Al-Khatib, 2023). Sustainable TOC ensure that actions that are good for people and the environment are planned, developed and then executed out successfully. When addressing the challenges of ecological sustainability, businesses are required to recognize how essential TOC is for attaining lasting progress (Li et al., 2023; Chen & Lien, 2013).

2.2.1 TOC's emphasize innovation and adaptability enables it to be simpler for the business to develop and come up with novel approaches to deal with sustainability issues (Tanveer

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et al., 2023; Liu et al., 2022; Choi & Chen, 2021; Bag et al., 2023). Including environmentally conscious processes into everyday operations additionally makes it a driving force for sustainable development (Teece et al., 1997). the above notion is being explained in numerous research studies (Farooque et al., 2019; Batista et al., 2023; de Lima et al., 2024; de Lima et al., 2022; Nag et al., 2021) and futher alot of studies suggest that businesses with a high TOC are more innovative and agile, which minimizes down on pollution and waste. Working collectively with customers, manufacturers, and government agencies may assist to enhance ESG performance (Seuring and Gold, 2013; Kolk and Pinkse, 2010; Al-Swidi et al., 2023; Asim et al., 2019).

H1. Technological Opportunism Capability (TOC) has a direct and significant positive (CESGP) Corporate ESG Performance .

2.2.2 TOC provides the us with the knowledge , processes, and organizational systems required to manage operations and increase the flexibility (Srinivasan and Lilien, 2002; Lucia-Palacios et al., 2014). It makes a business competent enough to see before hand , adopt and equip it digital technologies (DT) that promote the sustainable innovation, enabling environmentally friendly solutions in the face of increasing sustainability pressures (Al-Swidi et al., 2023).

H2. Technological Opportunism Capability significantly and positively influences the adoption of digital technologies .

2.2.3 Digital technologies allows it to be simpler to maintain track of things, anticipate then before hand when maintenance will be needed, and minimize waste. In the textile industry, blockchain ensures sure cotton is obtained in an ethical manner, the Internet of Things (IoT) maintains track of the quantity of water is utilized, and Big Data Analytics using artificial intellegence makes reverse logistics easier (Bag et al., 2023; Faisal, 2023; Massari et al., 2023; Yadav et al., 2024; Liu et al., 2022; Choi & Chen, 2021). Utilizing DT enhances the circular supply chain abilities of an enterprise (CSCC) by making closed-loop logistics, ethical sourcing, and efficient utilization of materials easier.

H3. Digital technologies has an enormous and beneficial effect on an organization's Circular Supply Chain Capability.

2.2.4 TOC-driven CSCC enhances ESG results through making businesses environmentally conscious (Farooque et al., 2019; Batista et al., 2023; de Lima et al., 2024; de Lima et al., 2022; Nag et al., 2021). Organizations implement internal processes and knowledge governance (Teece et al., 1997) that foster circular innovation, enhance performance, and mitigate their impact on the environment. Collaborating harmoniously throughout the value supply chain helps to make easier for the organization to implement ESG practices efficiently (Al-Swidi et al., 2023).
This approach is very vital to textile businesses since circular supply chain techniques promote responsible production and consumption. This will make it more feasible for the sector to accomplish SDG-12 till 2030.

H4. Circular Supply Chain Capability creates an immaculate effect over corporate ESG performance.

2.2.5 TOC promotes the utilization of DT, which contributes to CSCC, thereby making operations more transparent, environmentally conscious, and resource- effective (Bag et al., 2023; Liu et al., 2022; Choi & Chen, 2021).

H5. If Technological Opportunism Capability has an advantageous impact on Digital

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Technologies, subsequently Digital Technologies will greatly improve Circular Supply Chain Capability (sequential mediation).

2.2.6 Organizational agility minimizes carbon emissions and increases operational effectiveness through enabling rapid responses regarding ecological hazards (Teece et al., 2016; Gligor et al., 2015; Al Humdan et al., 2020; Dubey et al., 2018). Adaptable supply chains, reverse logistics, and agile innovation are all techniques designed to get all stakeholders engaged while rendering the organization environmentally friendly (Shams et al., 2021; Troise et al., 2022; Sahoo et al., 2023). Agility promotes ESG performance by enhancing the trust of investors, employee satisfaction, customer retention, and brand equity (Scuotto et al., 2022).

H6. Organizational agility enhances the organization's Corporate ESG performance. directly.

2.2.7 Organizational agility enhances the effects of DT on CSCC stronger through promoting the application of DT and making operations more adaptable (Ojha et al., 2018; Troise et al., 2022; Sahoo et al., 2023). Innovative and agile organizations utilize internal as well as outside collaborators to transform their innovative thoughts into long-lasting results through rendering their products and practices healthier for the environment.

H7. The Organizational Agility buffer the utilization of digital technologies that has an enormous and favorable effect on the circular supply chain capability.

2.2.8 Adopting DT enhances CSCC through rendering it more sustainable, productive, and democratic (Massari et al., 2023; Yadav et al., 2024). Better CSCC creates a sequential pathway to DT to ESG outcomes. This, in turn, strengthens the ESG performance by preventing waste, conformance, and participation by stakeholders.

H8. If digital technologies improve the Circular Supply Chain Efficiently , than the Corporate ESG Performance will significantly go up a lot with sequential mediation.

The current study presents the theoretical framework illustrated in Figure 1, supported by an extensive examination of theoretical underpinnings and their relationship with fundamental constructs, as confirmed by the available research.

Figure 1: Theoretical Framework

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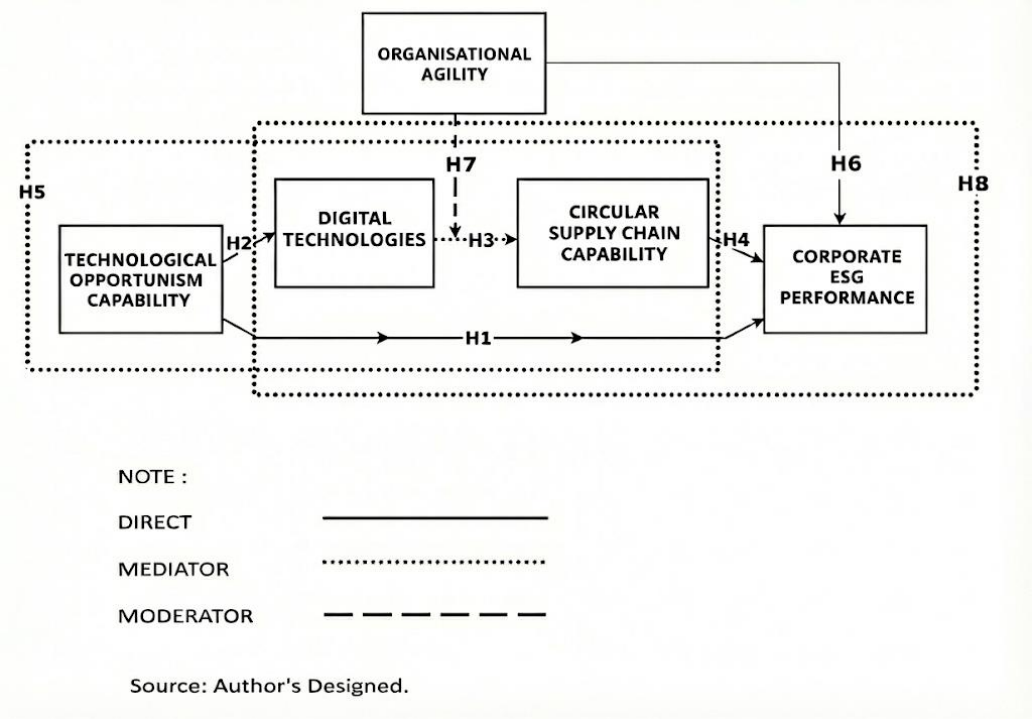

3. Methodology

3.1 Data Collection and Sampling

As suggested by the concept of (Dulock, 1993; Siedlecki, 2020), the investigation structure was quantitative e in nature and relied on hypothetical deductive methodology rather than merely numerical development (Dursun, 2023; Meriam and Grenier, 2019). The primary questionnaire for gathering information was a five-level Likert scale (Harkness et al., 2003; Meitinger et al., 2023). There are 76 registered Chamber of Commerce & Industries registered under the Federation of Commerce and Industries Pakistan (FPCCI) working in various provinces of Pakistan, including 30 women chamber of commerce as well. The Corporate Sector of Pakistan specially textile production sector has been targeted, which consists of the powerful and active corporations. The Chamber of Commerce & Industry Final Corporate Voters List for 2024–2026, which includes 1,216 registered corporate entities, served as the primary source of population data. The target population method used for all Pakistan Business Forum data representation is convenience-cum-snowball sampling (Bañez, 2013; Guarte and Barrios, 2006; Perera and Ramayanake, 2019). In order to achieve UN-SDG 12 until 2030, a study was done on the textile manufacturing and production sector that recommended using digital technologies and a circular supply chain.To support sample validity recommendations, a total of 350 samples were gathered (Ruane, 2005; Sharma, 2023), 300 completed samples from the SME were used in the study (after missing values were removed). Smart PLS-3 was used to analyze all of the data using confirmatory factor analysis and the two-step Measurement Model Assessment (MMA) and Structural Model Assessment methodology. Slope analysis was also taken into consideration during the investigation.

3.2 Measures

5-point Likert scale was taken with Closed-ended questions incorporated in a well-defined Questionnaire based on adopted from already validated and reliable studies , started with strongly disagree (1) to strongly agree (5) . The survey made use of the afore mentioned scales. Data gathering was done from the textile corporate sector in, Pakistan, and a

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significant component of the Global South . It is crucial to achieve the UNSDG-12 goals of responsible production and consumption in this sector for Sustainability in Global South . Table 1 provides more details about the measures.

Table 1: Measures of the Study Constructs

Construct	No. of Items	Metrics	References
Corporate ESG Performance	26	Perceived environmental, social, and governance practices aligned with UN-SDG 12 (Responsible Consumption and Production).	Oh et al. (2024)
Technological Opportunism Capability	9	Sense-and-respond capabilities to technological changes, including awareness, evaluation, and implementation of new technologies.	Srinivasan et al. (2002)
Digital Technologies	5	Adoption and use of AI, IoT, blockchain, and BDA in supply chain processes for transparency and efficiency.	Bag et al. (2023)
Circular Supply Chain Capability	8	Capabilities for closed-loop systems, resource efficiency, waste reduction, and reverse logistics.	Farooque et al. (2019)
Organizational Agility	7	Flexibility in resource reconfiguration, rapid response to changes, and adaptive strategies.	Teece et al. (2016)

Source: Author's Designed

4. Results and Discussions

4.1. Measurement Model Assessment

Table 2 and Figure 2 provide convergent validity of the constructs, and it can be seen that most of the item loadings are satisfactory, as most of them are above the recommended 0.70 loadings with some of the items in the DT and OA slightly lower but still acceptable. All constructs are characterised by good internal consistency, because Cronbach's alpha and composite reliability (CR) are more than 0.70. Also, the values of the average variance extracted (AVE) of all constructs are greater than the recommended value of 0.50, which is an indication of sufficient convergent validity. All in all, measurement model shows good reliability and convergent validity among all constructs.

Table 2. Convergent Validity

Constructs	Items	Loadings	Alpha	CR	AVE
CSCC	CSCC_1	0.752	0.723	0.827	0.544
	CSCC_2	0.759			
	CSCC_3	0.721			
	CSCC_4	0.720			
DT	DT_BC1	0.573	0.889	0.911	0.537
	DT_BC2	0.612			
	DT_BC3	0.666			
	DT_BDA1	0.738			

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	DT_BDA2	0.764			
	DT_BDA3	0.859			
	DT_IOT1	0.753			
	DT_IOT2	0.829			
	DT_IOT3	0.750			
ESG	E1_ESG	0.825	0.943	0.951	0.686
	E2_ESG	0.854			
	G1_ESG	0.874			
	G2_ESG	0.858			
	G3_ESG	0.645			
	G4_ESG	0.661			
	S1_ESG	0.916			
	S2_ESG	0.919			
	S3_ESG	0.813			
OA	OA_1	0.783	0.779	0.761	0.516
	OA_2	0.766			
	OA_3	0.795			
	OA_4	0.533			
	OA_5	0.570			
TOC	TOC_R1	0.947	0.931	0.945	0.714
	TOC_R2	0.690			
	TOC_R3	0.853			
	TOC_R4	0.948			
	TOC_S1	0.736			
	TOC_S2	0.802			
	TOC_S3	0.900			

Source: Author calculated through Smart PLS

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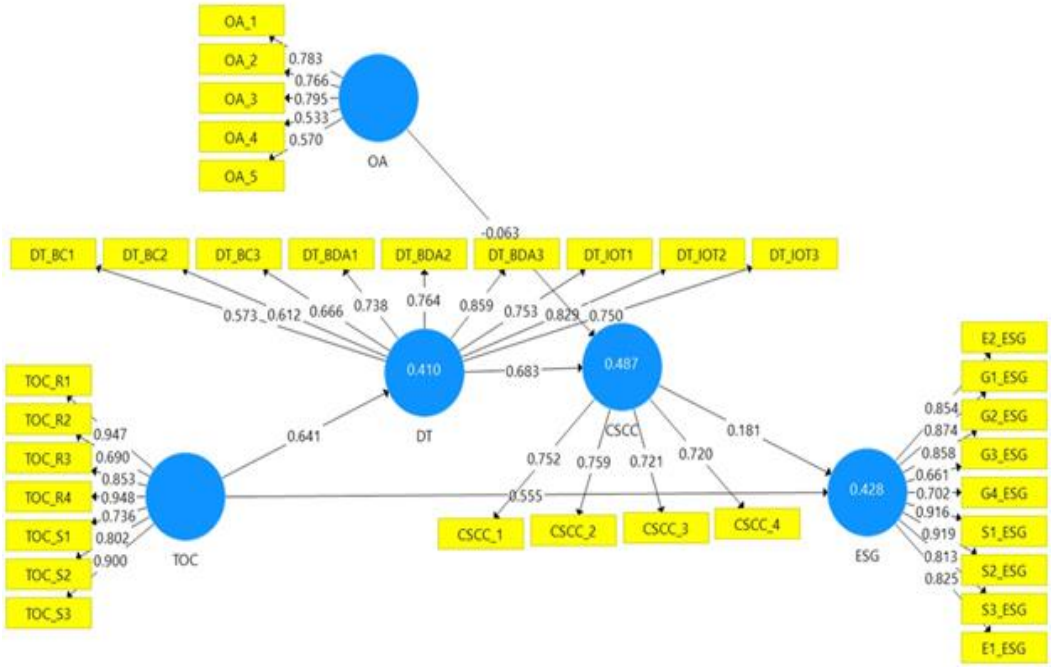

Figure 2. Measurement model assessment

4.1.1 Fornell Larcker criterion

These findings indicate that technological capability is a strong catalyst of digital transformation (= 0.818) and concerned with bettering ESG performance (= 0.923). Digital transformation assists firms to build circular supply chain abilities (= 0.563), and organizational agility enhances these abilities (= 0.653) and at the same time increases the impact of digital transformation (= 0.585). Nevertheless, the linear supply chain capability has a minimal negative impact on ESG performance (β = -0.153), and is characterized by short-term difficulties in implementation. In general, the powerful technology and agility connection facilitates improved digital and sustainability results in Table 3.

Table 3. Discriminant Validity (Fornell-Larcker Criterion)

CONSTRUCTS	CSCC	DT	ESG	OA	TOC
CSCC	0.849				
DT	0.213	0.847			
ESG	0.298	-0.011	0.900		
OA	0.483	0.073	0.437	0.818	
TOC	0.309	0.458	0.281	0.373	0.910

Source: Author calculated through Smart PLS

4.1.2. Assessment of Discriminant Validity (HTMT)

Besides the Fornell-Larcker criterion, the Heterotrait-Monotrait ratio of correlations (HTMT) was also evaluated in order to have strong discriminant validity (Henseler et al., 2015). All the HTMT values as shown in Table 4 are well less than the conservative value of 0.85. The value of 0.541 (between Organizational Agility and Supply Chain Capability) is the maximum value, which means that the difference between constructs is effectively identified.

Table 4. HTMT ratio

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CONSTRUCTS	CSCC	DT	ESG	OA	TOC
CSCC					
DT	0.220				
ESG	0.311	0.033			
OA	0.541	0.090	0.470		
TOC	0.333	0.476	0.292	0.403	

Source: Author calculated through Smart PLS

4.1.3. Predictive Power of the Model (R) βR²

Coefficient of determination (R2) was also tested to determine the predictive power of the structural model. As indicated in Table 5, the model has a predictive accuracy of moderate magnitude in terms of explaining a 26.7% of the variance in Supply Chain Capability (R 2 = 0.267) and 21.0% of the variance in Digital Transformation (R 2 = 0.210). It is also the model that considers 12.8 percent of the variance in the ESG Performance (R 2 = 0.128). Although this predictive force is a bit lower, it is regarded as acceptable in exploratory management studies, and it is believed that the specified factors are statistically significant predictors of ESG results, although other unmeasured factors might also contribute to it. Also, the fact that R2 is very close to R2 Adjusted shows that the model is fit.

Table 5. Coefficient of determination (R^2)

Constructs	R Square	R Square Adjusted
CSCC	0.267	0.262
DT	0.210	0.208
ESG	0.128	0.124

Source: Author calculated through Smart PLS

4.2. Hypothesis Testing Results

We have to ensure that our ideas (the paths between the factors) were not mere chance in our data, so we employed a powerful checking technique, referred to as bootstrapping. On our slightly different random versions of our 424 responses we ran the model 5,000 times. This provides us with concrete figures: T-statistics (how strong the connection is indeed) and P-values (how likely it is that the connection happened randomly). When p is less than 0.05 (rare possibility that it is randomly arises), we say that the relationship is real. The entire findings are contained in Table 6 below here is a concise summary:

Table 6. Hypothesis testing results (Bootstrapping @5,000 subsamples)

Relationships	Path Coefficient (β)	Standard Deviation (STDEV)	T Statistics	P Values	Decision
CSCC → ESG	0.233	0.056	4.151	0.000	Supported
DT → CSCC	0.164	0.059	2.773	0.006	Supported
OA → CSCC	0.464	0.048	9.625	0.000	Supported
OA Moderating Effect → CSCC	0.058	0.071	0.816	0.415	Not Supported

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TOC → DT	0.458	0.051	9.058	0.000	Supported
TOC → ESG	0.209	0.056	3.711	0.000	Supported

Source: Author calculated through Smart PLS

The structural model test was used to analyse the hypotheses posed. The Table 6 of the results shows that five out of the six relationships proposed are statistically significant. Technological and Organizational Context (TOC) became an influential force in the model. It has a very high, notable positive impact on the Digital Transformation (DT) (0.458, t = 9.058, p < 0.001) and positive impact on the ESG Performance directly (0.209, t = 3.711, p < 0.001). This implies that both the sustainability outcomes and the digital adoption would be dependent on a favorable organizational environment. Organizational Agility and Digital Transformation (both) are major contributors to Supply Chain Capability. As it has been discovered, Organizational Agility (OA) was the most significant predictor of CSCC (0.464, t = 9.625, p = 0.001), and Digital Transformation (DT) also had the significant positive effect (0.164, t = 2.773, p = 0.006$). The hypothesis that good supply chain capabilities lead to improved environmental, social, and governance findings proved to be true as Supply Chain Capability (CSCC) was found to be a significant contributor to improved ESG Performance (2 = 0.233, t = 4.151, p < 0.001). However, the Organizational Agility shapes the Digital Transformation to Supply Chain Capability relationship in the expected direction, but the result was not statistically significant (0.058 = 0.816 = 0.415). It means that Agility itself enhances the Supply Chain Capability, but does not dramatically enhance the effect of Digital Transformation on the capabilities within this dataset.

4.2.2 Significance Testing

In order to ensure that the connections that we were able to establish are not mere noise in our data, we examined the P-values of the bootstrapping test. These P-values are plotted directly on the same model map as Figure 3, and so you can look at the strength (how large the effect is) and the significance (how real it is) of both side by side.

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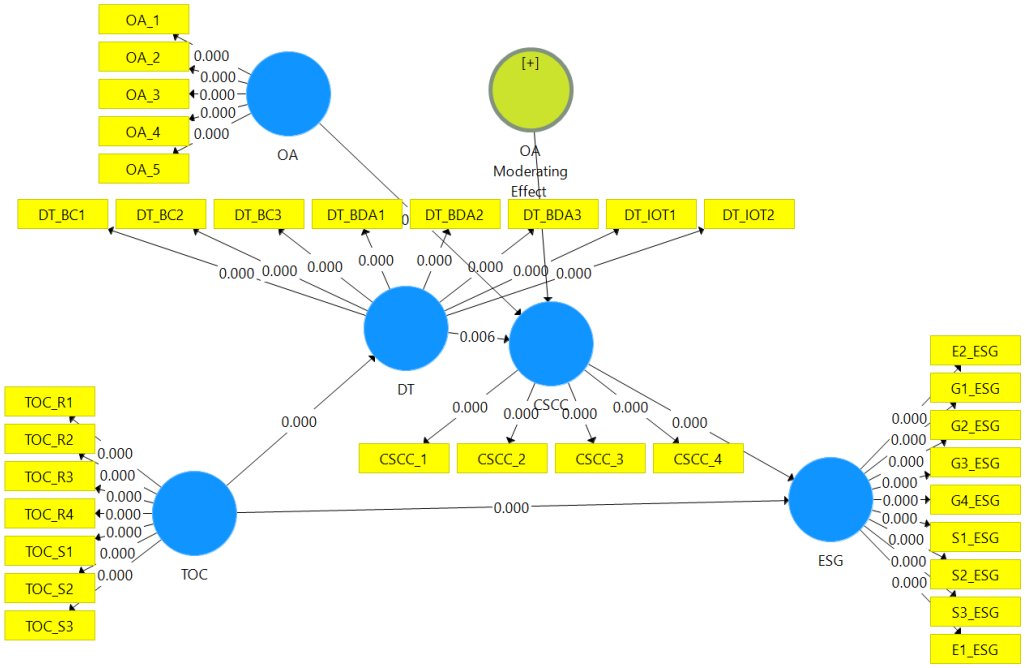

Figure 3. Structural model showing P-values (significance levels).

A bootstrapping was used to determine the statistical significance of the path coefficients. The P-values of the inner and outer measurement models as the result are visualized in Figure 4. The correlation between most of the hypothesized relationships is at the p value of 0.001 as shown by Figure 4. The Technological and Organizational Context (TOC)-Digital Transformation (DT) ($p = 0.000$) path is statistically significant, as well as the Technological and Organizational Context (TOC)-ESG Performance ($p = 0.000$) one. In the same way, Organizational Agility (OA) on Supply Chain Capability ($p = 0.000$) and subsequent effects of CSCC on ESG Performance ($p = 0.000$) are validated with very high level of confidence. Digital Transformation and Supply Chain Capability have a significant relationship ($p = 0.006$). The importance of the measurement model is also exhibited in figure 4. All the arrows connecting the latent constructs to the indicators of the construct (e.g. OA 1 to OA, DT BDA 3 to DT) show all P-values of 0.000, indicating that the indicators are significant measures of their respective constructs. In line with the findings of hypothesis testing, the path of the moderating influence of Organizational Agility does not exhibit significant association with P-value ($p > 0.05$) in comparison to the notable structural paths in the diagram.

5. Conclusion and Discussion

5.1. Overview of Findings

The paper has examined the connections between technological and organizational environment, digital transformation, organizational agility, and supply chain capability in influencing ESG performance. The results are highly beneficial to the proposed framework, and a valid and reliable Structural Equation Model (SEM) was used. The results indicate that the enabling organizational and technological environment is the basis of the digital transformation, which enhances the supply chain capability and ultimately leads to the enhanced environmental, social, and governance (ESG) performance.

5.2. The Pivotal Position of Technological and Organizational Context.

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Among the greatest contributions of this study is that Technological and Organizational Context (TOC) is the phenomenon that prevails in the model. TOC, in its turn, has a powerful and important impact on Digital Transformation (0.458, $p < 0.001$), which proves that successful digital transformation is impossible without the implementation of advanced technologies. The organizations need to create the right infrastructure, leadership support and culture of the organization at hand. Besides, TOC also has a direct effect on ESG performance (0.209, $p < 0.001$), which means that effective internal structures and governance systems produce sustainability results without references to digital transformation efforts.

5.3. Agility in the Organization and Digital Transformation as Twins.

The contribution of Organizational Agility (OA) can be a valuable lesson. Agility is not associated with the correlation between digital transformation and supply chain capability significantly (0.058, $p > 0.05$). Nevertheless, agility comes out as the most powerful direct predictor of the supply chain capability (= 0.464, $p < 0.001$). These findings indicate that organizational agility and digital transformation are parallel and independent sources of supply chain ability. Agility increases supply chain responsiveness by enhancing human and organizational flexibility, whereas digital transformation can do it by technology. They both are important but they work along different lines and not directly complementary to one another.

5.4. Pathways to ESG Performance

This analysis proves that there is a sequential route whereby Digital Transformation enhances Supply Chain Capability (0.164, $p = 0.006$), which subsequently increases ESG performance (0.233, $p < 0.001$). This observation supports the perception that digital transformation is not a goal on its own. Rather, it is valuable because it allows operational abilities to be achieved, including supply chain efficiency, transparency, and coordination that deliver direct sustainability results.

5.5. Managerial Implications

The results may provide some practical implications to the managers:

- Build and Enforce the Context First: Organizations need to consider establishing technological readiness and favorable organizational designs prior to exploring massive initiatives in digital transformation.
- Become an Agile Core Capability: Agility within organizations ought to be regarded as a strategic asset on its own, since it is a capable ability of the supply chain that is highly beneficial even without digital maturity.
- Connect Digital Tools with ESG Skills: In order to contribute to the enhancement of ESGs, managers should focus on how digital technologies provide certain abilities of the supply chain instead of thinking that the implementation of digital technologies can guarantee improvements in sustainability.

5.6. Future Research and Limitations

The model only accounts for a significant portion of the variation in Supply Chain Capability (R^2 = 26.7%) and Digital Transformation (R 2 = 21.0%), the variance in ESG performance is rather small (R 2 = 12.8%). This implies that external environments like regulatory systems, competition, and pressure among stakeholders also affect the ESG performance through not only internal capabilities, but also other external factors. This research ought to be done in future with addition of these external influences as moderating

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or contextual variables so as to give a holistic picture of the determinants of ESG performance.

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