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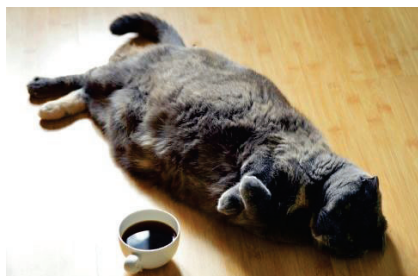
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Research Article

**Determinants of No-Vote Behavior in the European Union Constitution
Referendums: A Post-Functionalist Logistic Regression Analysis^a**

Cansel Sarıcan^b & Burak Samih Gülboy^c

Abstract

Introduction: The idea of drafting a constitution in the European Union (EU) has been regarded as a significant step toward achieving political integration in Europe. However, its rejection in the 2005 referenda in France and the Netherlands revealed the necessity of examining the underlying reasons for these outcomes within the context of European legitimacy.

Method: This study conducts a descriptive analysis of Eurobarometer 63.4 survey data and evaluates factors influencing referendum outcomes through a binary logistic regression analysis using SPSS.

Results or Findings: The findings indicate that individuals who feel unrepresented in the EU, fear the loss of national identity and culture, and are dissatisfied with the functioning of democracy in the Union are significantly more likely to vote against the constitution.

Discussion or Conclusion: Considering contemporary developments such as Brexit and the rise of right-wing populist movements, the slowdown of integration in the early 2000s emerges as a relevant issue. The study suggests that addressing democratic deficits and identity-based concerns is crucial for the future of the European project.

Keywords: European Union, European Constitution, referendum, voter behavior.

JEL Codes: F50, K10, D70, D72

^a This study is derived from the Ph.D. dissertation titled "The securitization trends of the European Union: The effects of 21st century crises on security perception" completed by the first author under the supervision of the second author at the Department of European Union, Institute of Social Sciences, Istanbul University.

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Araştırma Makalesi

**Avrupa Birliği Anayasası Referandumlarında Karşı Oy Davranışının
Belirleyicileri: Post-Fonksiyonalist Bir Lojistik Regresyon Analizi^a**

Cansel Sarıcan^b & Burak Samih Gülboy^c

Öz

Giriş: Avrupa Birliği'nde (AB) bir anayasa taslağı hazırlama fikri, Avrupa'da siyasi entegrasyonun sağlanması yolunda önemli bir adım olarak kabul edilmiştir. Ancak, 2005 yılında Fransa ve Hollanda'da yapılan referandumlarda anayasanın reddedilmesi, bu kararların ardındaki nedenlerin Avrupa meşruiyeti bağlamında incelenmesi gerekliliğini ortaya koymuştur.

Yöntem: Bu çalışma, Eurobarometer 63.4 anket verilerinin betimsel bir analizini yapmakta ve ardından SPSS kullanarak ikili lojistik regresyon analizi yoluyla referandum sonuçlarını etkileyen faktörleri değerlendirmektedir.

Sonuçlar ya da Bulgular: Analiz sonuçları, AB içinde temsil edilmediğini hisseden, ulusal kimlik ve kültür kayıı korkusu yaşayan ve Birlik içindeki demokrasinin işleyişinden memnun olmayan bireylerin anayasaya karşı oy kullanma olasılığının daha yüksek olduğunu göstermektedir.

Tartışma ya da Yapılan Çıkarımlar: Brexit ve sağ popülist hareketlerin yükselişi gibi güncel gelişmeler dikkate alındığında, 2000'li yılların başındaki entegrasyon yavaşlaması önemli bir mesele olarak öne çıkmaktadır. Çalışma, demokratik açıkların ve kimlik temelli kaygıların giderilmesinin Avrupa projesinin geleceği için temel önemde olduğunu göstermektedir.

Anahtar Kelimeler: Avrupa Birliği, Avrupa Anayasası, referandum, seçmen davranışı

JEL Kodlar: F50, K10, D70, D72

^a Bu çalışma İstanbul Üniversitesi Sosyal Bilimler Enstitüsü Avrupa Birliği Anabilim Dalı'nda birinci yazar tarafından ikinci yazarın danışmanlığında tamamlanmış olan "Avrupa Birliği'nin güvenlikleştirme eğilimleri: 21. yüzyıl krizlerinin güvenlik algısı üzerindeki etkileri" başlıklı doktora tezinden üretilmiştir.

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Introduction

The EU is a project regarded as the most successful regional integration to date, aiming to establish lasting peace on the European continent after two world wars, to initiate economic cooperation between Germany and France – two states that caused the wars – and to ensure that this cooperation spreads across the entire continent (Segers & Van Hecke, 2023). The idea of unity in Europe, which argues that lasting peace can be achieved through economic integration, has, through the determined stance of member states, evolved toward achieving political, social, and even military integration. The European integration process, which began with the European Coal and Steel Community, progressed through the Treaties of Rome, Maastricht, and Nice, and efforts were made to ensure more effective use of the EU's decision-making mechanisms by establishing its institutional structure (Bajda, 2025; Nugent & Ripoll Servent, 2026).

In the process of further integration of the EU, it was planned to prepare an EU Constitution in order to strengthen decision-making mechanisms and to create a source of legitimacy (Duff, 2023). This plan was approved at a Summit attended by EU heads of state and government; subsequently, the approval process was completed in the parliaments of some states; however, the draft constitution was rejected in referenda held in France and the Netherlands (Ruiz et al., 2023). The rejection of the draft constitution brought about various debates within the EU. First of all, it became evident during the process that the EU, which had begun as an elite project, could no longer continue in this manner, and that public opinion and voter behavior had gained the power to influence the integration process (Niikawa & Corcaci, 2024). This power held by the public revealed the importance of EU legitimacy and support for integration.

Different perspectives have developed in the literature regarding whether integration in Europe is possible. The early theories developed within these perspectives, functionalism and neo-functionalism, emphasized that economic cooperation and institutional interaction would, over time, direct integration into different paths, deepen it, and create a spill-over effect (Mitrany, 1943; Haas, 1958). Another perspective on integration, the intergovernmentalist approach, argued that the integration process takes place between states and that the main factor is the interests of states (Schimmelfennig, 2021). As EU integration progressed, the insufficiency of these early theories began to emerge. Consequently, especially with the emergence of new situations such as the constitutional crisis that constitutes the subject of this study, it became necessary to reconsider the direction of theories, as EU integration was not merely a process driven by state decisions or spill-over, but rather a model of politicization in which public opinion also played an active role (Schmidt, 2024; Rapp, 2025). At this point, post-functionalism argues that EU integration in the post-Maastricht period has become a political process in which public opinion is active, and that individuals living in the EU, as voters, can develop support or opposition to integration projects based on factors such as identity, representation, and democratic legitimacy (Hooghe & Marks, 2009; Toshkov, 2026).

From a post-functionalist perspective, referenda on the EU Constitution represent an important step in examining the impact of public opinion on EU political processes. When the literature on EU integration is examined, various studies addressing the constitutional crisis and the effects of referenda can be found (Hodson & Puetter, 2025). However, it is observed that the relationship between voters' anti-constitution voting behavior and political and perceptual factors has not been fully examined. The absence of studies specifically investigating the effects of representation perception, trust in EU institutions, and evaluations

of the Union's democratic functioning on referendum outcomes indicates a gap in the literature.

Considering this gap, the study aims to examine the dynamics behind the rejection observed in the referenda. Eurobarometer 63.4 survey data conducted after the referenda were used as data, and voter behavior observed in the referenda in France and the Netherlands was analyzed. Descriptive analysis was applied to the data obtained from survey responses; subsequently, the factors determining voter behavior were examined through logistic regression analysis using SPSS. Various hypotheses were tested in the logistic regression analysis, allowing for the evaluation of the effects of variables such as individuals' perception of representation, trust in the Union, satisfaction with the functioning of democracy at the Union level, and level of knowledge about the Union on voting behavior.

The study contributes to the literature on the EU constitutional crisis in two ways. First, it provides empirical findings for examining public attitudes toward politicization processes through referenda conducted on the constitutional draft. Second, by combining the findings of the logistic regression analysis with post-functionalist theory, it links empirical results on the politicization of public opinion with a theoretical framework and attempts to address the empirical limitations of the theory.

The study is structured in three sections. The first section discusses theoretical approaches explaining European integration, particularly Post-functionalism. The second section presents the process of drafting the EU Constitution and descriptive findings related to the referenda. The third section examines the determinants of no-vote behavior during the referendum process through logistic regression analysis. The final section discusses the findings and provides evaluations regarding the future of European integration.

Post-Functionalist Theory and the Emphasis on Identity

When the idea of forming a union in Europe is examined from a historical perspective, it dates back quite far. However, due to the conditions of the period, the idea of establishing a Union only became possible in the 20th century (Segers, 2023). The conditions under which the Union was formed, the reasons and purposes for its establishment, and how it could be sustained have also become subjects of inquiry for scholars working in the field of International Relations. In general, International Relations theories, which aim to examine relations among actors and developments in the international arena, have also sought to analyze the emerging Union and have developed various arguments (Speyer & Stockmann, 2024). The main theories accepted in the field examining the Union are Federalism (Spinelli & Rossi, 1991), Intergovernmentalism (Schimmelfennig, 2021), Liberal Intergovernmentalism (Lamoso-González, 2025), Functionalism (Mitrany, 1943), Neo-functionalism (Haas, 1958), and finally Post-functionalism (Hooghe & Marks, 2009). While Functionalism, Intergovernmentalism, Liberal Intergovernmentalism, and Neo-functionalism were sufficient to explain the early periods of the Union, as the Union continued to develop, expand its borders, and establish integration in new areas, these theories began to be questioned (Cini et al., 2019; Freudlsperger & Schramm, 2025). Today, due to globalization and technological developments, the scope of studies in the international arena has begun to change. A growing belief has emerged that non-state actors such as individuals, non-governmental organizations, and civil society organizations are also influential in the international arena, and that the concepts used by theories in the field until now should be reconsidered (Eilstrup-Sangiovanni & Westerwinter, 2022). This changing perspective toward the international system has also transformed the way the Union is viewed.

Liesbet Hooghe and Gary Marks, who recognized the inadequacy of other International Relations theories in explaining developments and stagnations in the EU integration process, laid the foundation of Post-functionalism with their article titled “A Postfunctionalist Theory of European Integration: From Permissive Consensus to Constraining Dissensus,” published in the 2000s (Hooghe & Marks, 2009). Post-functionalism presents its arguments with a critical perspective toward the “spill-over” concept and the elitist stance of Functionalist theory (Hooghe & Marks, 2002). First, it emphasizes that it is not possible to explain the European integration process solely at the level of economic cooperation and intergovernmental relations. However, at this point, post-functionalism does not ignore the importance of economic cooperation and intergovernmental relations for the early periods of the EU. On the contrary, while it acknowledges that the EU’s integration process began in this way through elites, it emphasizes the fact that, other factors have emerged and now play a role in the continuity of integration (Genschel & Jachtenfuchs, 2021). Post-functionalism argues that, while tracing the development of the Union, the transformation in the EU after the 2000s-progressing differently from earlier periods-should be monitored, and it divides the European Union’s integration process into two periods. For the initial period of the Union, it uses the concept of “permissive consensus” and defines this period as 1950-1990, during which public interest in integration was low and the integration process, driven by elites, continued without losing momentum (Hooghe & Marks, 2009; Ferrara & Kriesi, 2021). For the period following the signing of the Maastricht Treaty up to the present, it introduces the concept of “constraining dissensus,” emphasizing that, with globalization, the increasing importance of identity has led individuals to question “Who am I?”, that public opinion has become a more active actor in shaping attitudes toward integration, and that decisions made by elites regarding integration can be questioned, slowed down, or even halted by the public (Hooghe & Marks, 2019).

In addition to dividing the institutional history of the Union into two periods, the theory also emphasizes the role of identity in examining later stages of EU integration, noting that political parties and political positions in member states can influence public opinion, and that developments occurring through referendum processes can have a direct impact on integration (Hooghe & Marks, 2019; Malang & Schraff, 2024). The concept of identity emphasized by post-functionalist theory is a concept that holds a highly important place in defining the social structure to which individuals belong (Hooghe & Marks, 2009). The individual defines those outside the social structure to which they belong as the “other” and positions themselves accordingly. Likewise, for those within the other social structure defined as the “other,” the individual is also in the position of the “other.” Such expressions in global society enable individuals to feel that they belong to a community (Subramani, 2024). For individuals living on the European continent, there are two common identity definitions. The first of these is the “European” identity that emerges when the history of the continent and the efforts of the EU are considered together; indeed, during the constitution-making process and referendums, the EU assumed that this identity would be active (Wiesner, 2025). The second identity for individuals living in Europe is the “national” identity belonging to the state of which they are citizens, and this identity came to the forefront in referendums (Hooghe & Marks, 2009). The fact that individuals experience the threat of losing their national identity and culture has manifested itself in referendums as a factor that slows down the EU’s political integration. Naturally, post-functionalist theory also emphasizes the importance of this identity dilemma and states that whichever identity individuals feel closer to, their political tendencies will tend to act in line with the interests of that identity (Hooghe & Marks, 2019).

The Constitution-Making Process in the EU and Descriptive Analysis

Constitutions are documents that determine the form of governance of a society, define the powers of the institutions involved in governance, and protect individuals' rights against the state. Although the EU did not have a constitution prior to the idea of constitution-making, it was able to establish a body of rules through treaties (Craig & de Búrca, 2021). The idea of a constitution has been highly important in Europe in terms of completing the integration process, transforming the ideas that constitute Europe into a written and binding form, and enabling faster decision-making and more decisive implementation of common policies (Walker, 2024). During the process of preparing the constitution, many preparatory conditions were sustained from the Maastricht Treaty to the Nice Treaty (Palmer, 2025). For the direct preparation of the constitution, a Convention was established in 2002 and completed its work in 2003 (Di Caruso, 2025; Hutter, 2025). The process unfolded as envisioned at the Summit that prepared the Nice Treaty, where the "Declaration on the Future of the EU" was published by heads of state, and before 2004, a new structure called the "Convention on the Future of Europe," consisting of 105 members and chaired by former French President Valéry Giscard d'Estaing, was established to carry out the necessary work (Dinan, 2014). The Convention completed three phases: listening, decision-making, and proposal development. Alongside the Convention, a Forum was organized to gather citizens' views, and after a 16-month process, the draft constitution was presented at the Thessaloniki Summit in 2003 (European Parliament Research Service, 2019). No consensus was reached on the draft at the Thessaloniki Summit; therefore, the Brussels Summit held in 2004 became the venue where agreement on the draft constitution was achieved, and it was signed by the heads of state and government of EU member states with pens inscribed with "Europae Rei Publicae Status" (Constitution of the European Republic) (Dinan, 2014). The draft treaty submitted to the European Parliament was approved by 500 members, rejected by 137, and 40 members abstained from voting. The date for the entry into force of the draft adopted by the Parliament in 2005 was set as 1 November 2006 (Silveira et al., 2024).

In the stage following parliamentary approval, each member state was required to submit the EU Constitution draft for approval in accordance with its own constitutional procedures. However, even at the draft stage, certain issues arose that led to complications (Crum, 2024). For example, the Vatican emphasized that religion should be explicitly mentioned in the constitution (Bărbulescu & Andreescu, 2009). Likewise, in France and the Netherlands-the two countries that would hold referenda-Standard Eurobarometer reports from 2004-2005 indicated that support for the constitution was rapidly declining, trust in the EU was decreasing, economic concerns were increasing, Euroscepticism was rising, and concerns over national sovereignty were intensifying (European Commission, 2012; European Commission, 2014).

Various campaigns were conducted by governments in member states to ensure the approval of the draft constitution. However, due to hesitations regarding the transfer of authority, although governments supported the constitution, it was criticized by opposition groups within these countries (Palmer, 2025). The draft constitution was approved by 18 EU member states in their parliaments (European Commission, 2003). In France, one of the countries to hold a referendum, President Jacques Chirac made intense efforts to secure a "yes" vote. However, opposition leader Jean-Marie Le Pen argued that voting "yes" would constitute "treason." Prior to the referendum, divisions within French society became increasingly sharp. In France, which held the second constitutional referendum in the EU, the referendum conducted on 29 May 2005 resulted in a 55% "no" vote (Warlouzot, 2022). Similarly, in the Netherlands, the referendum held on 1 June 2005 resulted in a 61.6% "no"

vote, giving rise to a constitutional crisis (Malet, 2022). This constitutional crisis, which can be considered a typical example of “crises that generate dynamism” within the EU, was attempted to be resolved through intensive negotiations (Gherghina & Qvortrup 2024).

Studies examining the reasons behind the rejection of the constitution by the public in France and the Netherlands indicate that there were multiple causes behind this rejection. Surveys were conducted within the Eurobarometer framework to determine why citizens in France and the Netherlands rejected the draft constitution, why some did not participate in voting, and why those who voted “yes” supported the constitution.

Table 1

Likelihood of Participation in the EU Constitution Referendum in France

	Definitely No	Probably No	Maybe	Probably Yes	Definitely Yes	Total
Number of Respondents	167	28	47	58	670	970
Percentage	17,22%	2,89%	4,84%	5,98%	69,07%	100%

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

The statistical data on the likelihood of participation in the EU Constitution referendum in France are presented in Table 1. When the table is examined, it is observed that those living in France showed interest in the Constitution Referendum. Their interest in the referendum also indicates that the public is engaged in policy-making processes and demands inclusion. According to the results of the survey conducted in France, the proportion of those who did not consider participating in the vote appears to be 20.11%. Based on the survey results, in which a total of 970 individuals participated, it was estimated that public participation in the EU Constitution referendum would be 75.05%. In the referendum held in 2005, these estimates were largely realized, and 69.34% of the public participated in the referendum (European Commission, October 2005).

Table 2*Reasons for Rejection of the EU Constitution in France*

Items	Agreeing %	Disagreeing %	Number of Respondents Participating	Total %
The constitution-making process progressed quickly	10,71%	89,29%	448	100%
Loss of national sovereignty	18,30%	81,70%	448	100%
The constitution does not go far enough	2,46%	97,54%	448	100%
The constitution is too liberal economically	20,76%	79,24%	448	100%
It is insufficient for a social Europe	27,01%	72,99%	448	100%
It contains too many regulations	13,62%	86,38%	448	100%
Lack of information	25,45%	74,55%	448	100%
The constitution is too complex	24,55%	75,45%	448	100%
Absence of reference to Europe's Christian roots	2,90%	97,10%	448	100%
It is not considered sufficiently democratic	9,15%	90,85%	448	100%
Opposition to the national government	4,02%	95,98%	448	100%
Opposition to European integration	8,93%	91,07%	448	100%
No positive aspect is seen in the constitution	22,54%	77,46%	448	100%
Opposition to Turkey's inclusion in EU enlargement	19,42%	80,58%	448	100%
Other	26,79%	73,21%	448	100%

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

The statistical data on the reasons for the rejection of the EU Constitution in France are presented in Table 2. The results of the survey conducted by Eurobarometer 63.4 to determine the reasons of those who voted "no" to the EU Constitution were evaluated. Among the respondents, 27.01% stated that the constitution was insufficient in creating a social Europe, 25.45% indicated that they lacked information about the constitution, 24.55% found the constitution too complex, and 22.54% reported that they did not see any positive aspect in the constitution. Of the participants, 20.76% considered the constitution too liberal economically, 19.42% rejected it because they believed it would accelerate Turkey's full membership in the EU, and 18.30% expressed fear of losing national sovereignty. According to the survey results, the 27.01% group who were able to examine the constitution criticized the absence of provisions that would enable the EU to become a more democratic and more social entity, which was expected to be achieved through the constitution. However, a considerable proportion of respondents stated that they lacked sufficient knowledge about the constitution and found it too complex.

Table 3*Likelihood of Participation in the EU Constitution Referendum in the Netherlands*

	Definitely No	Probably No	Maybe	Probably Yes	Definitely Yes	Total
Number of Respondents	56	33	89	112	668	958
Percentage	5,85%	3,44%	9,29%	11,69%	69,73%	100%

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

The statistical data on the likelihood of participation in the EU Constitution referendum in the Netherlands are presented in Table 3. According to the Eurobarometer 63.4 surveys conducted in the Netherlands, participation of 81.42% of the public in the referendum was expected, and the referendum held in June 2005 resulted in a turnout of 62.8% (European

Commission, July 2005). Both the group that indicated an intention to participate in the Eurobarometer 63.4 survey and the group that actually voted represent a significant portion of society, indicating that the process was also taken seriously in the Netherlands. The rejection of the constitution despite a high level of participation led to curiosity about the dynamics of the referendum process. The statistical data on the reasons for the rejection of the EU Constitution in the Netherlands are presented in Table 4.

Table 4

Reasons for Rejection of the EU Constitution in the Netherlands

Items	Agreeing %	Disagreeing %	Number of Respondents Participating	Total %
The constitution-making process progressed quickly	20,83%	79,17%	432	100%
Loss of national sovereignty	28,01%	71,99%	432	100%
The constitution does not go far enough	1,16%	98,84%	432	100%
The constitution is too liberal economically	5,79%	94,21%	432	100%
It is insufficient for a social Europe	7,64%	92,36%	432	100%
It contains too many regulations	19,91%	80,09%	432	100%
Lack of information	26,39%	73,61%	432	100%
The constitution is too complex	16,20%	83,80%	432	100%
Absence of reference to Europe's Christian roots	13,89%	86,11%	432	100%
It is not considered sufficiently democratic	13,89%	86,11%	432	100%
Opposition to the national government	5,09%	94,91%	432	100%
Opposition to European integration	8,33%	91,67%	432	100%
No positive aspect is seen in the constitution	14,58%	85,42%	432	100%
Opposition to Turkey's inclusion in EU enlargement	6,02%	93,98%	432	100%
Other	32,18%	67,82%	432	100%

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

When the reasons of those who voted “no” in the constitutional referendum are examined based on the Eurobarometer 63.4 survey, 28.01% stated that they were concerned about the loss of national sovereignty, 26.39% indicated that they had a lack of information about the constitution, and 20.83% stated that the constitution-making process progressed too quickly. Among the respondents, 19.91% reported that the constitution was a highly technocratic and legal text containing too many regulations, 16.20% found the constitution too complex, and 14.58% stated that they could not find any positive aspect in the constitution. When the relevant table is examined, it is observed that the fear of loss of sovereignty, which is commonly seen across the EU, is also intense in the Netherlands despite being one of the founding countries. However, further examination of the table shows that, similar to France, the second most important reason for rejecting the constitution was the lack of knowledge about it, and the third group complained that the process progressed so rapidly that it led to insufficient information. Subsequently, the reasons of those who voted “yes” in the referendum were examined, leading first to Table 5 for France and Table 6 for the Netherlands.

Table 5*Reasons for Supporting the EU Constitution in France*

Items	Agreeing %	Disagreeing %	Number of Respondents Participating	Total %
Necessary to continue the construction of the EU	44,75%	55,25%	467	100%
Necessary to manage the integration of new EU member	13,28%	86,72%	467	100%
Necessary for the smooth functioning of EU institutions	30,41%	69,59%	467	100%
First step/symbol toward a social Europe	13,06%	86,94%	467	100%
Strengthening European identity	21,63%	78,37%	467	100%
Creating a real EU citizenship	17,56%	82,44%	467	100%
First step/symbol toward political unity in Europe	14,99%	85,01%	467	100%
Strengthening the EU against the USA	32,98%	67,02%	467	100%
Always being in favor of EU construction	18,84%	81,16%	467	100%
Strengthening democracy in Europe/consulting citizens	17,77%	82,23%	467	100%
Supporting national governments/certain political parties	3,43%	96,57%	467	100%
No negative aspect is seen in the text	6,64%	93,36%	467	100%
Other	18,20%	81,80%	467	100%

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

When those who voted “yes” in the EU Constitution referendum in France were asked about their reasons, 44.75% stated that they considered the constitution necessary to continue the construction of the EU, 32.98% believed that it would strengthen the EU against the USA, and 30.41% indicated that EU institutions would function more smoothly with the constitution.

An examination of the reasons cited by those who voted “yes” in the French referendum on the EU Constitution reveals that participation rates were quite low for some of the points cited as justification. For example, the point about “supporting the national government or specific political parties” was limited to 3.43%, while “necessity to manage the integration of new EU members” received 13.28%, and “A first step towards a social Europe” received 13.06%. In conclusion, it appears that voters who chose “yes” did not share a common core idea. The fact that support rates remained so low across different points demonstrates that the approval of the constitution was based on scattered and weak justifications.

Table 6*Reasons for Supporting the EU Constitution in the Netherlands*

Items	Agreeing %	Disagreeing %	Number of Respondents Participating	Total %
Necessary to continue the construction of the EU	26,32%	73,68%	494	100%
Necessary to manage the integration of new EU member	11,54%	88,46%	494	100%
Necessary for the smooth functioning of EU institutions	23,08%	76,92%	494	100%
First step/symbol toward a social Europe	15,79%	84,21%	494	100%
Strengthening European identity	20,04%	79,96%	494	100%
Creating a real EU citizenship	5,26%	94,74%	494	100%
First step/symbol toward political unity in Europe	20,04%	79,96%	494	100%
Strengthening the EU against the USA	15,18%	84,82%	494	100%
Always being in favor of EU construction	10,53%	89,47%	494	100%
Strengthening democracy in Europe/consulting citizens	27,13%	72,87%	494	100%
Supporting national governments/certain political parties	3,24%	96,76%	494	100%
No negative aspect is seen in the text	6,07%	93,93%	494	100%
Other	27,94%	72,06%	494	100%

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

When those who voted “yes” in the EU Constitution referendum in the Netherlands were asked about their reasons, 27.13% emphasized that they believed it would strengthen democracy in the EU, 26.32% stated that it was necessary for the continuation of EU construction, and 23.08% indicated that it was important for the smooth functioning of EU institutions. When the two tables regarding those who voted “yes” to the constitution are examined, it is observed that 44.75% in France and 26.32% in the Netherlands commonly voted “yes” because they considered the constitution necessary for the EU’s construction process. In addition, when other highly rated items are taken into account, it is seen that those who voted “yes” also did not examine the constitution in terms of its content; rather, they had various formal justifications such as the continuation of the EU, the necessity of a constitution for democracy, and the strengthening of EU institutions.

Multivariate Analysis of No-Vote Behavior in the European Constitution Referendum

The descriptive analysis based on survey data regarding the EU Constitution draft has shown that the reasons for acceptance or rejection of the draft are shaped around different parameters. However, the descriptive analysis did not provide a full statistical evaluation of the reasons for rejection. The necessity of measuring the effect of public opinion in order to fully analyze the progress of integration in Europe, and the argument that the public has the power to halt integration, have also been emphasized in the literature (Hooghe & Marks, 2009; De Vries, 2021). Post-functionalist theory similarly argues that public opinion in EU integration has become politicized and that individuals, as voters, can oppose projects that may deepen integration when they are not included in political processes (Hooghe & Marks, 2009). In post-functionalism, it is observed that voters’ behavior is associated with political attitudes such as perception of representation, democratic satisfaction, and institutional trust (Sczepanski, 2023). In order to test this relationship, the following hypotheses were formulated:

H1: Individuals who believe that they are not represented are more likely to oppose the constitution.

H2: Individuals who are dissatisfied with the functioning of democracy in the EU are more likely to oppose the constitution.

H3: As the level of trust in the EU increases, the likelihood of opposing the constitution decreases.

H4: Individuals with lower levels of knowledge and understanding about the EU are more likely to oppose the constitution.

H5: Individuals whose national identity is stronger than their European identity are more likely to vote against the European Constitution.

The hypotheses were designed to encompass the possible reasons for rejection in constitutional referenda. In order to examine and test the suitability of the hypotheses, binary logistic regression analysis was conducted using the SPSS program. The reason for choosing the logistic regression method is that the dependent variable has a binary structure (1 = against, 0 = in favor) (Zeltermann, 2022; Christensen, 2025). During the analysis, the data used in SPSS were obtained from the dataset of the Eurobarometer 63.4 survey, which includes questions related to the European Constitution. While opposition to the constitution was used as the dependent variable, the independent variables were selected from the relevant questions in the dataset.

Among the independent variables, the perception of representation was derived from the question measuring individuals' evaluations of whether their views are taken into account in EU decision-making processes (QA14B-4). Another independent variable, the perception of understanding how the EU functions, was taken from the question measuring whether individuals understand how the EU works (QA14B-5), while subjective knowledge level was obtained from the question measuring how much individuals believe they know about the EU and its institutions (QA18). Another independent variable, democratic satisfaction, was derived from the question measuring the level of satisfaction with the functioning of democracy in the EU (QA34B). The independent variable related to institutional trust was taken from the question measuring trust in the EU (QA7), and for the identity variable, the question measuring fear that the EU poses a threat to national identity and culture (QA16-6) was used.

In evaluating the hypotheses and examining the dependent and independent variables, the overall significance of the established relationship was first analyzed in the logistic regression analysis. According to the results of the Omnibus Test of Model Coefficients, the obtained chi-square value was found to be significant ($\chi^2(5) = 277.44$, $p < 0.001$). This result indicates that when considered together, the independent variables have a statistically significant relationship with no-vote behavior (Field, 2024; George & Mallery, 2024). The Nagelkerke R^2 value, calculated to evaluate the explanatory power of the analysis, was found to be 0.442. Considering that pseudo- R^2 values in logistic regression analyses are typically lower than those in linear regression models, this value indicates that the variables included in the analysis explain no-vote behavior at a moderate-to-high level (Manly et al., 2024). In addition, the non-significant result of the Hosmer-Lemeshow goodness-of-fit test ($p = 0.789$) indicates that there is no significant difference between predicted and observed values and that the established model fits the data at an acceptable level (Zeltermann, 2022; Christensen, 2025). The correct classification rate of the analysis was calculated as 76.5%. The

classification accuracy indicates the model's success in correctly predicting observations. The result shows that the variables included in the analysis can significantly predict individuals' preferences for voting against or in favor of the constitution (Field, 2024; George & Mallery, 2024). The coefficients of the logistic regression analysis explaining no-vote behavior toward the European Constitution are presented in Table 7.

Table 7

Logistic Regression Model Explaining No-Vote Behavior Toward the European Constitution

Variables	B	SE	Wald	P	OR	95% Confidence Interval	
						(Lower)	Upper
Perception of being represented (QA14B-4)	0,556	0,202	7,564	0,006	1,744	1,173	2,592
Not understanding how the EU functions (QA14B-5)	0,478	0,215	4,958	0,026	1,613	1,059	2,456
Subjective level of knowledge (QA18)	0,013	0,060	0,045	0,832	1,013	0,901	1,139
Dissatisfaction with democracy in the EU (QA34B)	0,783	0,145	29,276	0,001	2,817	1,647	2,904
Trust in the EU (QA7)	1,598	0,204	61,528	0,001	4,941	3,315	7,365
Fear of loss of national identity and culture (QA16-6)	0,809	0,202	15,968	0,001	2,246	1,510	3,339
B = Logistic regression coefficient, SE = Standard Error, P = Significance Level, OR = Odds Ratio							

Note. Created by the author using the Eurobarometer 63.4 (May-June 2005) data set in IBM SPSS Statistics 28.

The significance at the variable level shown in Table 7 was evaluated based on the Wald statistic and the corresponding p-values. The threshold value of $p < 0.05$, which is frequently accepted in studies conducted in the social sciences, was taken as the basis (Starbuck, 2023). Since logistic regression coefficients are expressed in terms of log-odds, their direct interpretation is difficult. Therefore, the interpretation was based on the odds ratios (OR), which are the exponential values of the coefficients (Manly et al., 2024).

The results obtained from the logistic regression analysis and presented in Table 7 show that EU citizens who believe that they were not represented during the preparation and adoption process of the EU Constitution have a significantly higher probability of opposing the constitution (OR = 1.744; $p = 0.006$). This result indicates that the perception of representation is a factor influencing the voting behavior of EU citizens. Regarding another independent variable, satisfaction with the functioning of democracy in the EU, democratic dissatisfaction increased the likelihood of voting against the constitution by approximately 2.8 times (OR = 2.817; $p < 0.001$). This finding shows that the ideal of the EU as a Union with a strong democratic character did not receive support from society during the constitutional crisis.

The independent variable related to trust in the EU produced a more striking result. EU citizens who do not trust the EU were found to be nearly 5 times more likely to reject the constitution draft (OR = 4.941; $p < 0.001$). A similar pattern was observed for the independent variable related to identity. Citizens who believe that the EU poses a threat to national identity and culture were found to be 2.2 times more likely to vote "no" to the constitution draft (OR = 2.246; $p < 0.001$). However, at this point, one of the hypotheses used in the study did not

produce a significant result. It was found that the subjective knowledge level variable did not have a specific role in explaining opposition to the constitution ($p = 0.832$).

In order to evaluate the reliability of the results, 95% confidence intervals were also examined. The fact that the confidence interval of the odds ratio does not include the value of 1 provides an additional indication that the relevant variable is statistically significant (Zelterman, 2022; Christensen, 2025). The confidence interval for the representation perception variable ranges between 1.173 and 2.592 and does not include the value of 1. Similarly, the confidence interval for the democratic dissatisfaction variable ranges between 1.647 and 2.904 and also does not include the value of 1. The confidence interval for the trust in the EU variable ranges between 3.315 and 7.365, entirely above 1. The confidence interval for the identity variable ranges between 1.510 and 3.339, again not including the value of 1. The fact that these confidence intervals are above 1 supports that EU citizens who perceive the EU as a threat to national identity and culture are significantly more likely to reject the constitution. In contrast, the confidence interval for the subjective knowledge level variable ranges between 0.901 and 1.139 and includes the value of 1. This indicates that this variable does not produce a statistically distinguishable effect on no-vote behavior.

Based on the findings obtained, the hypotheses were evaluated. The results support hypothesis H1 related to perception of representation. It is observed that individuals who feel unrepresented during the European Constitution process are more likely to vote against the constitution. Similarly, hypothesis H2, which predicts that dissatisfaction with the functioning of democracy in the EU increases no-vote behavior, is also confirmed. Hypothesis H3 related to institutional trust is also supported by the analysis results. It is observed that individuals who do not trust the EU are more likely to vote against the constitution. However, the level of knowledge that individuals believe they have about the EU does not have a significant effect on no-vote behavior. Therefore, hypothesis H4 related to subjective knowledge level is not supported. Finally, the findings showing that individuals who believe that national identity and culture are threatened by the EU are more likely to vote against the constitution support hypothesis H5.

When the results of the logistic regression analysis are evaluated, it is observed that in the dynamics of rejecting the EU Constitution, individuals' level of knowledge about the constitution, expressed as subjective knowledge, does not play a significant role. During the approval process of the EU Constitution, factors such as whether individuals are satisfied with the democratic functioning of the EU, whether they trust the institutional structure of the EU, and whether the EU would harm their national identity were influential in the referendum process. Individuals' lack of trust in the democratic functioning, institutional structure, and common identity framework of the EU formed the basis of their opposition to the constitution draft.

The reactions of individuals to political behaviors in the EU, represented by the independent variables, indicate that public opinion has become politicized in European integration processes and that voters no longer interpret the Union solely on an economic basis (Kovář, 2026). The results of the logistic regression analysis are consistent with the post-functionalist argument that EU integration has become politicized at the level of public opinion following the Maastricht Treaty (Hooghe & Marks, 2009). At the same time, they align with the concept of "constraining dissensus," which characterizes the post-Maastricht period emphasized in post-functionalist theory (Gruszczak, 2022).

Conclusion

After completing economic integration, the EU turned its direction toward political integration. The EU Constitution was also considered an important step in this direction. Through the constitution, the EU aimed to accelerate decision-making processes and planned to complete its institutional and political integration. The rejection of the constitution in the referenda held in France and the Netherlands demonstrated that the European integration process could not continue in the manner it had been carried out up to that point. It is noteworthy that, as an elite project, EU integration could no longer be sustained solely through elites as of the 2000s. In particular, the fact that the process was halted through referenda made it evident that public opinion and voter behavior play a significant role in political processes.

The study contributes to the literature by demonstrating that voter behavior during the referendum process is shaped by variables such as political representation, trust, and democratic satisfaction. The use of Eurobarometer surveys allows for an empirical testing of the approaches proposed by post-functionalist theory, which constitutes the study's original contribution. In this respect, the study employs descriptive analysis and binary logistic regression analysis using Eurobarometer 63.4 data. During the analyses, the determinants of voter behavior that emerged during the referendum process were examined. Descriptive analysis results showed that factors such as lack of information, the perception of the text as complex, concerns about the weakening of national sovereignty, and the view that the constitution was insufficient in terms of social Europe objectives contributed to the rejection of the constitution in France and the Netherlands. From a comparative perspective, when the reasons of those who supported the constitution are examined, it is observed that political considerations such as continuing the EU integration process, enabling institutions to function more effectively, and strengthening Europe as a global actor were prominent. Descriptive analysis results indicate that both supporters and opponents of the constitution were clustered around certain justifications.

Since descriptive analysis alone did not provide sufficient information, logistic regression analysis was applied in order to fully understand the reasons for rejecting the constitution. The results of the logistic regression analysis revealed that those who voted against the constitution were driven by political considerations. The findings demonstrate that EU citizens who do not feel sufficiently represented no longer support political processes and that this significantly increases the likelihood of voting against in processes such as the constitution. Similarly, dissatisfaction with the functioning of democracy in the EU was also found to increase no-vote behavior. The perception among EU citizens that their national identities and cultures are under threat also contributes to the interpretation of opposition voting behavior. While an increase in trust in the EU reduces the likelihood of opposing the constitution, the level of knowledge about the constitution did not create a statistically significant difference in referendum outcomes. This indicates that the rejection of the constitution was driven more by political factors than by informational ones. Among the variables included in the analysis, "trust in the EU" has the strongest effect. As examined in H3, this indicates that as trust in the EU increases, the likelihood of voting against the constitution decreases. This finding suggests that there was a significant level of distrust toward the Union among voters in France and the Netherlands. Voters did not feel secure about whether EU policies posed a threat to their national identity or interests, and this concern appears to have influenced their voting behavior. Conversely, voters who trust the Union tend to support its political processes, including the constitution. In this context, it is

evident that the EU bears responsibility for fostering trust among its electorate. By strengthening citizens' trust, the EU may facilitate and accelerate the process of integration.

The results of the logistic regression analysis applied to Eurobarometer data demonstrate that the EU must acknowledge the increasing role of public opinion in completing integration and that the public is becoming more involved in political processes. These findings are consistent with the core assumptions of post-functionalism. The emphasis on identity, which lies at the core of post-functionalism, has been tested within the scope of this study, and it has been observed that identity-related fears influence individuals' voting behavior and are reflected in referendum outcomes. While EU integration in its early stages was driven by elites, post-functionalist theory argues that public opinion has become more influential after the Maastricht Treaty. The results obtained from the logistic regression analysis also show that individuals who feel unrepresented by the EU or who do not trust EU institutions can halt the progress of integration. The analysis demonstrates that referenda are important political mechanisms in understanding European integration and measuring its societal legitimacy.

The results of the logistic regression analysis demonstrate the growing importance of political parameters and identity perceptions in the process of completing EU integration. In particular, the findings reveal the limitations of approaches that explain the crisis solely through a lack of information. In order to overcome the crisis and prevent similar outcomes in the future, it becomes essential for the Union to examine societal concerns in a more comprehensive manner. Beyond providing an opportunity to empirically test post-functionalist theory, the findings also offer support for its core assumptions. At the same time, the study diverges from research that attributes referendum outcomes primarily to information deficits. This distinction stems from the fact that the "lack of information" variable does not yield statistically significant results in the analysis. For instance, the approach developed by Zaller (1992) emphasizes a relationship between individuals' levels of information and their political preferences; however, the findings here do not support such a relationship.

The study also produces certain implications for the EU's future integration initiatives. The data analyzed within the scope of the study and the referendum outcomes indicate that public support is necessary for EU integration projects. It can be observed that the EU needs to ensure societal participation in all institutional processes it plans, make these processes transparent so that citizens can follow them, and provide regular information to the public. Aligning integration initiatives with societal expectations and demands will contribute to enhancing the legitimacy of the EU. It is important for EU institutions to adopt measures that enhance public inclusion in political processes. Information campaigns targeting citizens, the active involvement of societal actors, the inclusion of national parliaments in the process, and the establishment of mechanisms that ensure public feedback will facilitate citizens' active participation in such political processes.

There are certain limitations to the study. The analysis was conducted using Eurobarometer 63.4 survey data, and it was not possible to include all political, economic, and cultural factors that may influence voter behavior in the model. Additionally, the study focuses on the referenda in France and the Netherlands, where the constitution was rejected. Future research could contribute to a more comprehensive understanding of the public dimension of European integration by comparatively examining different referendum cases and using broader sets of variables to explain voter behavior.

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Research Article

Provincial Development in Türkiye: A Composite Index Analysis of Çanakkale

Mesut Savrul^a

Abstract

Introduction: This study examines provincial development disparities in Türkiye through a structured assessment of Çanakkale's relative position within the national distribution. Motivated by persistent regional inequalities, the paper develops a clearer empirical hierarchy in which a PCA-based composite development index serves as the primary analytical tool, while clustering and comparative benchmarking are used for interpretation.

Method: Using cross-sectional data for 81 provinces in 2022, the study constructs a composite index from six indicators: per-capita production, start-ups per capita, investment per capita, agricultural production per capita, industrial share, and services share. Variables are standardised and aggregated through principal component analysis, and robustness is assessed through diagnostic tests and comparison with an equal-weight alternative. Provinces are then grouped into high-, medium-, and low-development typologies through k-means clustering, and Çanakkale is evaluated against national averages and a population-based peer group.

Results or Findings: The results show substantial interprovincial heterogeneity. Çanakkale ranks above the national mean and falls within the medium-development group. Its profile combines strong entrepreneurship and high investment per capita with moderate industrialisation and a relatively large agricultural base. This mixed structure helps explain why the province performs better than many peers but does not reach the high-development cluster.

Discussion or Conclusion: The findings suggest that Çanakkale represents a transitional development pattern and that stronger links between investment, entrepreneurship, and higher value-added industry are essential for upward movement.

Keywords: provincial development, composite development index, principal component analysis, structural transformation, Çanakkale Province

JEL Codes: R11, O18, C38, R58

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Araştırma Makalesi

Türkiye’de İl Düzeyinde Kalkınma: Çanakkale’nin Bileşik Endeks Analizi

Mesut Savrul^a

Öz

Giriş: Bu çalışma, Türkiye’deki iller arası gelişmişlik farklılıklarını, Çanakkale’nin ulusal dağılım içindeki göreceli konumunu yapılandırılmış bir çerçevede incelemektedir. Süregelen bölgesel eşitsizliklerden hareketle, çalışmada temel analitik araç olarak PCA tabanlı bileşik gelişmişlik endeksi benimsenmiş; kümeleme ve karşılaştırmalı kıyaslamalar ise yorumlayıcı araçlar olarak kullanılmıştır.

Yöntem: Çalışmada 2022 yılına ait 81 ile ilişkin kesitsel veriler kullanılmıştır. Kişi başına üretim, kişi başına girişim sayısı, kişi başına yatırım, kişi başına tarımsal üretim, sanayi payı ve hizmetler payından oluşan altı göstergeyle bileşik bir endeks oluşturulmuştur. Değişkenler standartlaştırılmış, temel bileşenler analizi ile birleştirilmiş ve sağlamlık, tanısal testler ile eşit ağırlıklı alternatif bir endeksle karşılaştırma yoluyla değerlendirilmiştir. Ardından iller k-ortalamlar kümeleme yöntemiyle yüksek, orta ve düşük gelişmişlik tipolojilerine ayrılmış; Çanakkale hem ulusal ortalamlar hem de nüfus temelli akran il grubu ile karşılaştırılmıştır.

Sonuçlar ya da Bulgular: Bulgular, iller arasında belirgin bir heterojenliğe işaret etmektedir. Çanakkale ulusal ortalamanın üzerinde yer almakta ve orta gelişmişlik grubunda sınıflanmaktadır. İl, güçlü girişimcilik ve yüksek kişi başına yatırım ile orta düzey sanayileşme ve görece büyük bir tarımsal yapı bileşimini birlikte taşımaktadır. Bu karma yapı, ilin birçok akranından daha iyi performans göstermesine rağmen yüksek gelişmişlik kümesine ulaşamamasını açıklamaktadır.

Tartışma ya da Yapılan Çıkarımlar: Sonuçlar, Çanakkale’nin geçiş niteliği taşıyan bir gelişme örüntüsünü temsil ettiğini ve daha yüksek gelişmişlik düzeyine ilerleyebilmesi için yatırım, girişimcilik ve daha yüksek katma değerli sanayi arasındaki bağların güçlendirilmesi gerektiğini göstermektedir.

Anahtar Kelimeler: il kalkınması, bileşik kalkınma endeksi, temel bileşen analizi, yapısal dönüşüm, Çanakkale İli

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Introduction

Balanced regional development has become a major policy objective in Türkiye. Despite decades of growth, regional disparities remain pronounced, and provinces continue to display very different structures, capacities, and investment needs (Ekinci, 2025). These persistent gaps have intensified debate over how public resources can be allocated in ways that balance fairness and efficiency. The challenge is that provinces differ not only in economic size, but also in infrastructure, institutional capacity, service access, and the spatial distribution of opportunities and disadvantages (Çınar, 2023). Development trajectories are therefore shaped by multiple interacting dimensions rather than by income alone, making one-dimensional indicators insufficient for showing how places perform or where policy support is most needed (OECD, 2023; World Bank, 2009). This paper addresses that problem by constructing a composite development index for Türkiye's 81 provinces and using it to analyse structural transformation and relative performance, with particular attention to Çanakkale.

Structural transformation refers to the large-scale reallocation of labour and resources from low-productivity sectors such as agriculture to higher-productivity activities in industry and services. These shifts can generate important gains in aggregate productivity (Hamilton & de Vries, 2023). In Türkiye, major transformation followed the liberalisation reforms of the early 1980s, when production and exports moved away from agriculture toward industrial and service activities, improving competitiveness and integration into global markets. Yet these gains have been unevenly distributed across space. More than half of Türkiye's post-1980 growth has been driven by productivity improvements within sectors, while the contribution of intersectoral structural change has declined (Kaya & Çiçekçi, 2023). At the same time, high-productivity activities have become concentrated in metropolitan areas, leaving many peripheral provinces dependent on agriculture and low-wage services. This pattern suggests that policies focused only on productivity may deepen inequality unless they also address spatial equity (Ekinci, 2025).

Because regional development is multi-dimensional, it requires indicators that combine different types of information into a single measure. Composite indicators serve this purpose by aggregating several variables into an overall assessment. Methodological guidance stresses the importance of a clear theoretical framework, careful variable selection, and transparent weighting and aggregation rules (Nardo et al., 2005). Standardisation through z-scores places indicators on a common scale, although extreme values may still influence results. Other approaches, such as percentile ranking and sign reversal for undesirable indicators, have also been used in recent OECD dashboards (Seunga Ryu et al., 2024). In Türkiye, Ekinci (2025) used 109 indicators for 81 provinces and combined principal component analysis (PCA) with clustering algorithms to derive development profiles. While this demonstrates the value of data-driven classification, it also highlights the need for parsimonious and theoretically grounded indices. Existing studies often rely on ad hoc rankings or emphasise single dimensions such as income or infrastructure, and some blur the hierarchy of methods by presenting cluster results alongside composite scores without clarifying which method drives the central argument (Bulut & Öner, 2017; Gömleksiz et al., 2017).

In response, this study develops a transparent and theoretically grounded framework for assessing provincial development. It compiles a cross-sectional dataset for 2022 covering all 81 provinces and constructs a composite development index using six indicators: per-capita production value, start-ups per capita, investment per capita, agricultural production per capita, and the shares of industry and services in total production. Per-capita production reflects productive capacity, start-ups per capita capture entrepreneurial dynamism, and investment per

capita indicates capital deepening and future potential. Agricultural production per capita receives a negative loading in the PCA and helps identify provinces where dependence on primary production may signal a lower stage of structural transformation. The industry and services shares position provinces along the structural transformation continuum, with higher industrial shares generally associated with greater productivity and development.

The composite development index is placed at the centre of the analysis. After z-score standardisation, the six indicators are entered into PCA to extract the linear combination that captures the greatest share of common variance. Although the Kaiser-Meyer-Olkin statistic is low, the Bartlett test rejects the null of an identity correlation matrix, and the first component explains about one-third of total variance. This component is interpreted as the development index and rescaled to a $[0, 1]$ interval. A robustness check using an equal-weight index shows a high correlation with the PCA-based index, supporting the stability of the rankings. Descriptive comparisons and sectoral breakdowns are then used to interpret the index. K-means clustering is used only as a supplementary classification tool. Unlike factor analysis, which groups variables, k-means groups provinces by similarities across observations, minimising within-cluster differences and maximising between-cluster differences. The algorithm iteratively assigns provinces to the nearest centroid and updates cluster centres until no further reassignment occurs (Hartigan & Wong, 1979; Schreiber, 2021). In this study, $k = 3$ is used to derive high-, medium-, and low-development typologies, but these clusters are treated as interpretative aids rather than primary explanatory devices.

The results reveal marked heterogeneity in provincial development. The composite index ranges from 0 to 1, with a national mean of about 0.35. Zonguldak, Yalova, and Kocaeli rank highest, while Bitlis, Muş, and Kars rank lowest. Clustering identifies three broad typologies: high-development provinces with strong industrialisation and high investment, medium-development provinces with mixed structures and substantial services, and low-development provinces that remain largely agricultural with weak entrepreneurship and investment. Çanakkale records an index of about 0.416, placing it in the medium-development cluster. Its profile combines strong start-up density and considerable investment per capita with a large agricultural sector and an average industrial share, indicating a transitional economic structure. Comparisons with similarly populated provinces show that Çanakkale performs better in entrepreneurship and investment, but lags in per-capita production and industrial share. These findings underline the value of a multi-dimensional approach and caution against one-size-fits-all regional policies.

This study contributes in three ways. First, it provides a concise, transparent, and replicable provincial development index grounded in theory and supported by robustness checks. Second, it establishes a clear methodological hierarchy between the primary index, descriptive interpretation, and supplementary clustering. Third, by focusing on Çanakkale, it shows how the framework can diagnose the structural position of a specific province, highlighting both its strengths and its transitional character. The rest of the paper follows this structure: Section 2 reviews the literature, Section 3 explains the data and methodology, Section 4 presents the empirical results, and Section 5 concludes with policy implications and directions for future research.

Literature Review

This section reorganises the literature review around three strands that inform the empirical strategy: provincial development measurement, structural transformation and sectoral composition, and composite indicators and typologies.

Regional development measurement in Türkiye has long relied on composite indices that integrate multiple socio-economic variables. The influential Socio-Economic Development Index (SEGE) study by Dinçer et al. (2003) used principal component analysis (PCA) on 58 demographic, social, educational and productive indicators to rank all 81 provinces, demonstrating that provincial development is multidimensional and cannot be captured by income alone. Later SEGE updates employed robust PCA and emphasised selecting non-redundant social and economic indicators to ensure that rankings reflect true structural differences rather than noise. Beyond SEGE, researchers construct alternative indices and cluster analyses to explore provincial heterogeneity. Urfalıoğlu and Seyfullahoğulları (2004), Albayrak (2005) and Temurlenk and Abar (2019) apply multivariate methods to socio-economic indicators and report persistent east-west divides in Türkiye. Kılıç et al. (2011) use path analysis, hierarchical clustering and multidimensional scaling on 54 indicators to identify structural similarities and attribute regional disparities to differences in income distribution and investment. Similar index-based approaches in other countries, such as the Philippines and Eastern Uttar Pradesh, show that composite indices and clustering techniques are valuable tools for sub-national development analysis (Pede et al., 2012; Tanwar et al., 2016). Collectively, these studies justify the use of composite indicators and classification methods while underscoring the inherently multidimensional nature of development.

The second strand of literature examines structural transformation—the reallocation of economic activity across agriculture, industry and services—and its implications for regional development. The classical three-sector hypothesis posits that economies evolve from primary to secondary and then to tertiary dominance as productivity and demand patterns change. Fisher (1939) and later empirical work show that agriculture dominates in low-income economies, manufacturing expands during industrialisation and services become predominant at higher income levels. Van Neuss (2019) surveys drivers of structural change and identifies four determinants—income growth, relative sectoral prices, input-output linkages and trade-induced shifts in comparative advantage—that jointly explain how sectoral composition evolves across regions. Recent studies suggest that services often complement rather than substitute manufacturing. Using panel VAR and dynamic panel GMM models, Gaberli (2023) finds that expanding services sectors support rather than crowd out industry; this complementarity arises because producer services and manufacturing activities are interdependent. These insights imply that provincial differences in the balance of agriculture, industry and services can signal distinct stages of structural transformation, making sectoral composition a critical indicator of development stage and trajectory.

The third strand concerns composite indicators and typologies. Composite indices allow researchers to summarise diverse variables into a single measure but must be constructed with care. The OECD's Handbook on Constructing Composite Indicators stresses that correlation among indicators should not be mistaken for causality and that composite indices serve as descriptive synthesis tools rather than causal proofs. It recommends decomposing indices to understand the contributions of individual dimensions and warns against double counting or masking poor performance. Greco et al. (2019) review methodological advances and highlight persistent criticism related to weighting, aggregation and robustness in composite indices. Scholars such as Munda and Nardo (2009) argue for non-compensatory or nonlinear aggregation to prevent high scores in one dimension from offsetting weaknesses in another, while Hauser et al. (2018) and Michener (2015) caution that composite indicators can oversimplify complex realities if not complemented by qualitative evidence and structural analysis. This literature underscores that composite indices should be interpreted prudently and supplemented with sectoral assessments and contextual insights.

Together, these strands inform the empirical strategy of the present study. The provincial development measurement literature validates the use of PCA-based indices and clustering to summarise multidimensional data on Turkish provinces. Structural transformation scholarship explains why the composition of agriculture, industry and services provides critical information about development stage and highlights that services may complement rather than displace manufacturing. Research on composite indicators cautions against over-interpretation of synthetic measures and emphasises transparent construction and decomposition. Accordingly, this study treats the PCA-based composite index as the primary descriptive device for locating Çanakkale within Türkiye's provincial development distribution, while sectoral and peer comparisons are used only to interpret that index.

Data and Methodology

This section presents the data sources, details the construction of the six development indicators used in the composite index, explains how the variables were standardised and aggregated, reports diagnostic tests for the principal-component analysis (PCA) and outlines the analytic hierarchy adopted in the study. The approach follows best practice for composite indicator construction suggested by the OECD–JRC handbook (Nardo et al., 2005) and by Kaiser and Rice's (1974) guidelines for factorability.

Data Source, Scope and Indicator Selection

The study uses a cross-sectional dataset compiled from Turkish Statistical Institute Geographic Statistics Portal for 81 provinces in Türkiye in 2022, supplemented with investment data from the Ministry of Industry and Technology (2025) for 2001–2023. The raw dataset contains 21 candidate variables capturing sectoral outputs, population, employment, investment and entrepreneurship. Guided by the relevant literature on regional development and composite index construction, six variables were retained because they collectively reflect productive capacity, structural transformation, and future growth potential:

1. Per-capita sectoral production value (thousand TL). This is calculated by dividing the total combined production value of agriculture, industry and services by provincial population. It proxies overall productive capacity. Higher values indicate stronger provincial output per resident.
2. Start-ups per capita (number of start-ups per person). Entrepreneurial density indicates the dynamism of the local business environment. Previous studies associate start-up density with innovation and growth.
3. Investment with incentive certificate per capita (million TL). Certified investments capture capital deepening and future productive potential. The variable is normalised by population to make provinces comparable.
4. Agricultural production per capita (thousand TL). This measures dependence on primary-sector output. Because agriculture typically dominates at early stages of structural transformation, high values are expected to correlate negatively with development.
5. Industrial sector share (share of industrial output in total production). This indicator signals the degree of industrialisation; higher shares are associated with higher development levels in the literature on structural transformation.
6. Services sector share (share of services output in total production). A large services share may indicate a more advanced economy, although at intermediate stages services often remain underdeveloped. Provincial services output is divided by total production to derive this share.

These six indicators were chosen because they are theoretically linked to the stages of structural change and were available for all 81 provinces. Variables with high redundancy or missing values were excluded. The agricultural production indicator is retained even though it is expected to be negatively related to development, because its inclusion allows the index to capture the relative weight of the primary sector.

Table 1

The Variables and Their Anticipated Relationship with Provincial Development

Indicator	Unit	Conceptual rationale	Expected sign
Per-capita sectoral production value	Thousand TL per person	Overall productive capacity; higher output per resident implies more developed economy	Positive
Start-ups per capita	Start-ups per person	Entrepreneurial dynamism reflects innovation and adaptation	Positive
Investment with incentive certificate per capita	Million TL per person	Capital deepening and future productive potential	Positive
Agricultural production per capita	Thousand TL per person	Reliance on primary sector; large values indicate early stage of structural transformation	Negative
Industrial sector share	Share (0–1)	Degree of industrialisation; higher shares associated with higher development	Positive
Services sector share	Share (0–1)	Development of services; high services share indicates shift towards tertiary activities	Positive

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

Variable Construction and Descriptive Overview

All monetary variables were converted to per-capita terms by dividing them by provincial population. Sectoral shares were calculated as the ratio of each sector's output to the combined output of agriculture, industry, and services. The indicators were checked for plausibility, and the resulting sectoral shares are bounded between zero and one and sum to one for each province by construction.

To facilitate comparability across indicators, each variable was standardised using z-scores. Standardisation converts variables to a common scale with mean 0 and standard deviation 1, ensuring that indicators with large absolute values do not dominate the composite indicator (Moeller, 2025). The transformed variables are denoted $Z_1, \dots, Z_6$.

Table 2 reports descriptive statistics for the key variables used in the analysis and reveals substantial heterogeneity across Türkiye's provinces. Per-capita sectoral production ranges from 49 thousand TL to 268 thousand TL, indicating wide variation in output per resident. Start-up density ranges from 0.019 to 0.078 start-ups per person, reflecting meaningful differences in entrepreneurial activity. Investment per capita also varies considerably, from 0.030 million TL to 0.860 million TL, pointing to uneven patterns of certified investment across provinces. Agricultural production per capita ranges from 0.3 thousand TL to 49.9 thousand TL, indicating marked differences in agricultural output per resident. The sectoral shares are calculated using total agricultural, industrial, and services production as a common denominator. Accordingly, the three shares are bounded between zero and one and sum to one for each province. The industrial sector share has a mean of 0.512 and ranges from 0.089 to 0.846. The corresponding

mean shares are 0.224 for agriculture and 0.264 for services. These distributions indicate considerable cross-provincial variation in sectoral composition, particularly in the relative importance of industry and agriculture.

Table 2

Key Variables

Variable	Mean	SD	Min	25 %	Median	75 %	Max
Per-capita sectoral production value (k TL)	117.63	44.32	49.00	84.00	108.00	140.00	268.00
Start-ups per capita	0.047	0.012	0.019	0.040	0.047	0.053	0.078
Investment per capita (m TL)	0.148	0.124	0.030	0.070	0.120	0.190	0.860
Agricultural production per capita (k TL)	17.17	9.38	0.30	10.10	15.40	22.30	49.90
Industrial sector share	0.512	0.198	0.089	0.374	0.522	0.683	0.846
Agriculture sector share	0.224	0.155	0.001	0.104	0.204	0.306	0.726
Services sector share	0.264	0.115	0.106	0.189	0.238	0.303	0.727

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

Construction of the PCA-Based Composite Development Index

Principal-component analysis was used to construct a single composite indicator from the six standardised variables. PCA reduces the dimensionality of multivariate data by creating new uncorrelated variables (principal components) that successively maximise the variance (Jolliffe & Cadima, 2016). The first principal component captures the largest share of common variance and is therefore suited for synthesising the underlying development pattern.

Let $Z_{i1}, \dots, Z_{i6}$ denote the z-scores for province i . Denote by $\alpha = (\alpha_1, \dots, \alpha_6)$ the vector of loadings for the first principal component (PC1). The PCA-based composite development index for province i is defined as

$$\text{Index}_i = \alpha_1 Z_{i1} + \alpha_2 Z_{i2} + \alpha_3 Z_{i3} + \alpha_4 Z_{i4} + \alpha_5 Z_{i5} + \alpha_6 Z_{i6}. \quad (1)$$

The resulting scores are then rescaled to the interval [0,1] using a min–max transformation to facilitate interpretation. Higher values indicate higher levels of relative development.

PCA Suitability, Extraction and Robustness Checks

Before applying PCA, the data must satisfy factorability requirements. Kaiser–Meyer–Olkin (KMO) test. The KMO statistic measures sampling adequacy and ranges from 0 to 1; values above 0.60 indicate that correlations are sufficiently compact to justify factor analysis, whereas values below 0.50 are deemed unacceptable (Kaiser & Rice, 1974; Everitt & Howell, 2005). Bartlett’s test of sphericity examines the null hypothesis that the correlation matrix is an identity matrix; if the p-value is less than 0.05, the variables are sufficiently correlated for PCA (Bartlett, 1951).

Table 3*PCA Suitability Diagnostics*

Diagnostic	Statistic	Interpretation
Overall KMO	0.403	Below conventional adequacy threshold
Bartlett's test	$\chi^2 = 85.388$; $df = 15$; $p < 0.001$	Correlation matrix differs from identity

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

The KMO test for the six-variable specification yields an overall value of 0.403, indicating weak sampling adequacy and showing that the variables do not form a strong latent-factor structure in the strict factor-analytic sense. Variable-specific results suggest that agricultural production per capita contributes to this weakness; when this variable is excluded as a sensitivity check, the overall KMO rises to 0.584. This improvement confirms that the agricultural indicator reduces the compactness of the common variance structure. Nevertheless, the variable is retained in the baseline index because the purpose of the study is not to estimate a purely statistical latent factor, but to construct a theoretically grounded descriptive composite index that captures the broader interaction between productive capacity, entrepreneurship, investment, industrialisation, services, and primary-sector dependence. Therefore, the PCA-based index is interpreted cautiously as a descriptive measure of provincial development rather than as a strong latent-factor measurement model. Bartlett's test produces a chi-square of 85.39 ($df = 15$, $p < 0.001$), indicating that the correlation structure differs from the identity matrix and that PCA is still warranted. Table 4 reports the KMO values for each variable.

Table 4*Variable-Specific KMO Statistics*

Indicator	KMO
Per-capita sectoral production value	0.662
Start-ups per capita	0.345
Investment per capita	0.662
Agricultural production per capita	0.253
Industrial sector share	0.469
Services sector share	0.254

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

The variable-specific KMO values were 0.662 for per-capita sectoral production, 0.345 for start-ups per capita, 0.662 for investment per capita, 0.253 for agricultural production per capita, 0.469 for industrial share, and 0.254 for services share. These values suggest that per-capita production and investment contribute most to common variance, while agricultural and services indicators have relatively low sampling adequacy. Even though the overall KMO is low, the significant Bartlett test and the exploratory nature of this study justify proceeding with

PCA. The low KMO implies that the composite index should be interpreted as a descriptive summary rather than a strong latent-factor measurement model.

Extraction and Retention of Components

The eigenvalues associated with each principal component are shown in Table 5. The first component has an eigenvalue of 1.95, explaining 32.1 % of the total variance. The second and third components explain 20.7 % and 19.5 %, respectively. Although the Kaiser criterion (eigenvalues > 1) would suggest retaining the first three components, only the first component is retained to construct a single development index, in line with the analytical objective of summarising provincial development.

Table 5

Eigenvalues and Explained Variance

Component	Eigenvalue	Explained variance (%)	Cumulative variance (%)
PC1	1.951	32.117	32.1
PC2	1.259	20.729	52.8
PC3	1.186	19.522	72.3
PC4	0.921	15.161	87.5
PC5	0.482	7.941	95.4
PC6	0.275	4.530	100.0

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

Interpretation of Loadings and Robustness Check

Table 6 presents the loadings of the first principal component. Positive loadings imply that higher indicator values increase the composite index, while negative loadings reduce it. The negative loading of agricultural production per capita indicates that, within the structure of the index, stronger dependence on agricultural production is associated with lower composite development scores because it reflects a weaker transition toward industrialisation and higher value-added economic activities. In this application, the first component loads positively on per-capita production (0.245), start-ups per capita (0.421), investment per capita (0.569), industrial sector share (0.598) and services sector share (0.178). Agricultural production per capita has a negative loading (−0.225), implying that provinces with a large primary sector receive lower development scores—consistent with the expected sign specified in Table 1. This does not imply that agriculture is undesirable; it merely reflects the structural pattern that agricultural dominance is characteristic of less developed provinces.

Table 6*PC1 Loading Matrix*

Indicator	PC1 loading
Per-capita sectoral production value	0.245
Start-ups per capita	0.421
Investment per capita	0.569
Agricultural production per capita	-0.225
Industrial sector share	0.598
Services sector share	0.178

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

To assess the robustness of the PCA-based index to the weighting scheme, an equal-weight index was computed by averaging the standardised indicators, reversing the sign of agricultural production to align with the PCA loading. The correlation between the PCA-based index and the equal-weight index is 0.95, indicating that provincial rankings are largely insensitive to the choice of weights. Nevertheless, the PCA approach is preferred because it accounts for the actual covariance structure of the data.

Analytical Use of the Index in the Empirical Assessment

The composite development index serves as the primary analytical tool in the empirical assessment. Provinces are ranked according to their index scores, and descriptive comparisons across high, medium and low development clusters are subsequently undertaken. Sectoral shares and per-capita values are used to interpret the index scores rather than to construct an alternative measure. A k-means clustering of the index scores is implemented as a supplementary classification device, yielding high, medium and low development typologies that aid interpretation but do not alter the ranking. Throughout the analysis, caution is exercised due to the low KMO statistic; the index is interpreted as a pragmatic descriptive summary of correlated provincial indicators rather than a latent-factor measurement model.

Empirical Results: Provincial Development Patterns and Çanakkale's Relative Position

This section interprets the composite development index derived in the previous section. It first examines the overall distribution of provincial development scores in Türkiye and then classifies provinces into high-, medium- and low-development typologies using a k-means clustering. The final subsections benchmark Çanakkale against both the national distribution and a population-based peer group and synthesize what these comparisons reveal about Çanakkale's structural position.

National Distribution of the Composite Development Index

The composite development index ranges from 0 (least developed) to 1 (most developed), with a national mean of 0.35 and median of 0.34. The index is moderately right-skewed—its skewness is about 0.57, indicating that a small number of provinces achieve very high scores while the majority cluster around the middle. The lower quartile, median and upper

quartile of the distribution are approximately 0.23, 0.34 and 0.48, respectively. A few provinces approach the theoretical maximum of 1, while the lowest province scores 0.

Provincial rankings based on the index reveal substantial disparities. Table 7 lists the five highest- and five lowest-scoring provinces. Zonguldak, Yalova, Kocaeli, Kırklareli and Tekirdağ occupy the top positions, with index values between 0.66 and 1.00. At the bottom of the distribution are Bitlis, Muş, Kars, Hakkâri and Bayburt, all scoring below 0.05. Çanakkale's development index is 0.416, placing it 28th among 81 provinces and slightly above the national mean.

Table 7

Selected Provincial Rankings Based on the Composite Development Index

Province (Top)	Development index	Rank	Province (Bottom)	Development index	Rank
Zonguldak	1.000	1	Bitlis	0.047	77
Yalova	0.913	2	Muş	0.045	78
Kocaeli	0.750	3	Kars	0.032	79
Kırklareli	0.687	4	Hakkâri	0.002	80
Tekirdağ	0.660	5	Bayburt	0.000	81

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

Development Typologies as a Supplementary Classification

To make the continuous index easier to interpret, provinces were classified into high, medium, and low development typologies using k-means clustering based on the six standardised indicators. Cluster analysis groups observations by minimising differences within clusters while maximising differences between clusters. In this framework, the k-means algorithm iteratively assigns each province to the nearest cluster centroid and then recalculates the centroids until a stable solution is reached (Templ et al., 2008; Jolliffe & Cadima, 2016). In the study, clustering functions as a complementary interpretative device and does not affect the underlying index values or provincial ranking.

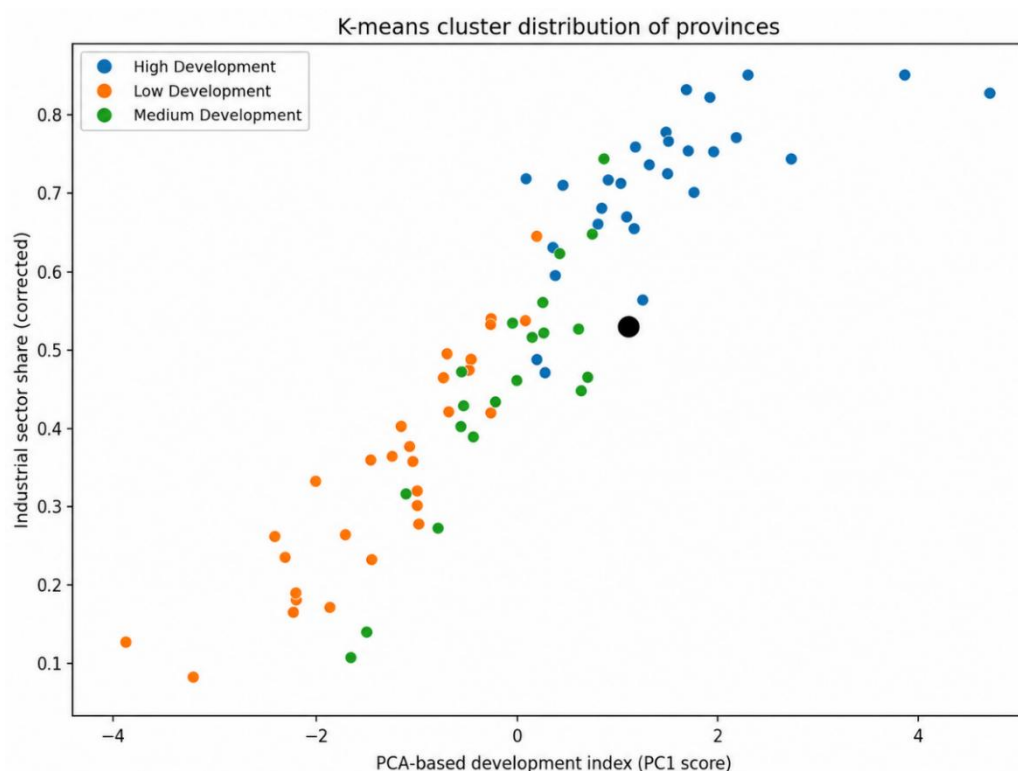
The algorithm identified three clusters: 27 provinces in the high-development group, 28 provinces in the medium group and 26 provinces in the low group. The clusters are ordered by the mean development index and labelled accordingly. Their index ranges, mean scores and some representative provinces are summarised in Table 8. High-development provinces have index values between 0.38 and 1.00 (mean $\approx$ 0.55). They include industrial powerhouses such as Zonguldak, Yalova and Kocaeli. Medium-development provinces have scores between 0.07 and 0.53 (mean $\approx$ 0.33) and include provinces such as Antalya, Adana and Afyonkarahisar. Low-development provinces score below 0.34 (mean $\approx$ 0.15) and encompass provinces like Bayburt, Hakkâri and Kars.

Table 8*Development Typologies from K-Means Clustering (Ordered by Mean Index)*

Development typology	Number of provinces	Index range	Mean index	Example provinces
High development	27	0.38–1.00	0.553	Zonguldak, Yalova, Kocaeli
Medium development	28	0.07–0.53	0.331	Antalya, Adana, Afyonkarahisar
Low development	26	0.00–0.33	0.154	Bayburt, Hakkâri, Kars

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

To visualise the three-group typology, Figure 1 plots provinces' first principal-component (PC1) scores against their industrial sector shares, with colours denoting the k-means clusters derived from the six standardised indicators.

Figure 1*K-Means Cluster Distribution of Provinces by Composite Development Index and Industrial Sector Share*

Note. Provinces are classified using k-means clustering based on six standardised development indicators: per-capita production, start-ups per capita, investment per capita, agricultural production per capita, industrial-sector share, and services-sector share. The horizontal axis plots the PCA-based composite development score (PC1), while the vertical axis plots the industrial-sector share. Colours denote cluster membership, and the larger black marker identifies Çanakkale. Prepared by the author using Python where, Arial font customisation is not supported.

The figure shows that high-development provinces are generally concentrated at higher levels of both the development index and industrial sector share, while low-development provinces are positioned toward the lower end of the distribution. Çanakkale, shown as the larger black point, appears within the medium-development group. This confirms its transitional position: the province performs above the lower-development cluster but remains distinct from the more industrialised high-development provinces.

Sectoral Structure by Development Typology

The typologies differ markedly in their sectoral composition and per-capita economic values. Table 9 reports the mean values of the six indicators for each cluster. High-development provinces have the strongest per-capita production (approximately 139.1 k TL), substantial investment per capita (approximately 0.228 M TL), and the highest industrial share (approximately 71.3%). Their start-up density averages 0.0481 per person, while agriculture and services account for approximately 9.5% and 19.3% of total production, respectively. This profile reflects a strongly industrialised development pattern.

Medium-development provinces record per-capita production of approximately 118.0 k TL and investment per capita of approximately 0.120 M TL, but they have the highest start-up density (approximately 0.0541). Their sectoral structure is more mixed: industry accounts for approximately 46.5% of output, agriculture for 30.4%, and services for 23.1%. Agricultural production per capita is also highest in this group (approximately 28.74 k TL), indicating a transitional profile in which entrepreneurial dynamism coexists with a substantial primary-sector base.

Low-development provinces exhibit the weakest per-capita production (approximately 98.0 k TL), lowest start-up density (approximately 0.0404), and lowest investment per capita (approximately 0.096 M TL). Their industrial, agricultural, and services shares average approximately 36.5%, 28.3%, and 35.2%, respectively. Rather than being dominated by a single sector, this group combines relatively weak productive capacity and capital deepening with a less industrially concentrated economic structure.

Table 9

Mean Indicator Values by Development Typology

Development typology	Per-capita production (k TL)	Start-ups per capita	Investment per capita (M TL)	Agricultural production per capita (k TL)	Industrial share	Services share	Mean index
High	139.1	0.0481	0.228	11.69	0.713	0.193	0.553
Medium	118.0	0.0541	0.120	28.74	0.465	0.231	0.331
Low	98.0	0.0404	0.096	13.90	0.365	0.352	0.154

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data, sectoral shares were calculated as fractions of total provincial production; by construction, the agriculture, industry, and services shares sum to one for each province.

The patterns in Table 9 underscore the strong association between industrialisation and development noted in the literature. High-development provinces have nearly quadruple the industrial share of low-development provinces. The services share, however, does not increase monotonically with development; it remains around 22 % across all clusters, suggesting that

the services sector does not differentiate provincial development as strongly as industry or investment. Agricultural production per capita declines in the high-development cluster but rises again in the medium cluster, reflecting regions where agriculture remains important yet is complemented by growing industrial and entrepreneurial activity.

Çanakkale's Relative Development Position

Çanakkale's composite development index of 0.416 places it in the medium-development typology. Its score exceeds the national mean of 0.35 and lies between the national median and upper quartile of the distribution. Although Çanakkale performs above the average provincial level, its index remains below the mean score of the high-development cluster (0.553). Ranked 28th among 81 provinces, it falls within the upper third of the national distribution. Its indicator profile helps explain this intermediate position:

- Per-capita production: Çanakkale produces 90 k TL per person, well below the national mean of 117.6 k TL. This gap reflects lower overall output despite a reasonably diversified economy.
- Start-ups per capita: The province boasts 0.064 start-ups per person, higher than the national average (0.0468) and signalling strong entrepreneurial activity.
- Investment per capita: At 0.300 M TL, Çanakkale's investment per capita more than doubles the national mean (0.148 M TL), indicating robust capital deepening and future productive potential.
- Agricultural production per capita: Çanakkale's 40.6 k TL far exceeds the national average (17.17 k TL). Because this indicator carries a negative loading in the PCA, the large agricultural sector pulls the development index downward.
- Industrial and services shares: Çanakkale's industrial share (0.480) is modestly below the national average (0.512), while its services share (0.170) is substantially below the national mean (0.264). This indicates that the province's sectoral composition is less industrial- and services-intensive than the average provincial structure.

These figures are summarised in Table 10. They reveal a mixed structural profile: Çanakkale combines high investment and entrepreneurial density with moderate industrialisation and a very large agricultural base. The mixture of modernising and traditional elements explains why the province does not reach the high-development cluster despite its strong capital inflow.

Table 10*Çanakkale's Indicator Values Compared with National Averages*

Indicator	Çanakkale	Türkiye average	Interpretation
Per-capita production (k TL)	90.0	117.6	Below national mean
Start-ups per capita	0.064	0.0468	Above national mean
Investment per capita (M TL)	0.300	0.148	More than double national mean
Agricultural production per capita (k TL)	40.6	17.17	More than double national mean; negative loading
Industrial share	0.48	0.512	Near national mean
Services share	0.17	0.264	Below national mean
Development index	0.416	0.348	Above national average

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

Çanakkale in Peer Perspective

Given the substantial variation in provincial population size, the empirical analysis also compares Çanakkale with a population-based peer group. Peer provinces are identified as those whose 2022 population lies within $\pm 20\%$ of Çanakkale's population. On this basis, six provinces are included: Antalya, Balıkesir, Batman, Çankırı, Kastamonu, and Kırıkkale. This comparison is intended as a descriptive benchmark rather than a full control for underlying structural differences.

Table 11 compares Çanakkale's indicators with the peer mean and the national mean. Peers have higher per-capita production (126.8 k TL) than both Çanakkale and the national average, reflecting more efficient production. They also have lower start-up density (0.049) and investment per capita (0.133 M TL) than Çanakkale, suggesting that Çanakkale is unusually entrepreneurial and capital intensive for its population size. Peers' agricultural production per capita (16.62 k TL) is far lower than Çanakkale's, and their industrial share (0.593) is higher. This comparison underscores that Çanakkale's medium-development status stems from its high investment and entrepreneurial activity being offset by a large agricultural base and moderate industrialisation.

Table 11*Çanakkale, Peer Mean, and National Mean*

Indicator	Çanakkale	Peer mean	National mean
Per-capita production (k TL)	90.0	126.8	117.6
Start-ups per capita	0.064	0.049	0.0468
Investment per capita (M TL)	0.300	0.133	0.148
Agricultural production per capita (k TL)	40.6	16.62	17.17
Industrial share	0.48	0.593	0.512
Services share	0.17	0.217	0.264
Development index	0.416	0.393	0.348

Note. Prepared by the author in Python using Geographic Statistics Portal of Turkish Statistical Institute data.

Interpreting Çanakkale's Development Pattern

The empirical results suggest that Çanakkale occupies a nuanced position within the provincial development structure. It cannot be classified either as a low-development, agriculture-dominated province or as a high-development industrial hub. Rather, it stands in a transitional middle position. Its strong investment performance and relatively dynamic start-up activity indicate a modernising economy with significant growth potential; however, its substantial agricultural base and only average industrial share constrain its composite development performance. In this sense, Çanakkale reflects a mixed structural pattern, combining features associated with both lower- and higher-development provincial profiles.

Looking forward, Çanakkale's upward movement in the national development ranking will depend on whether its substantial investment and entrepreneurial activity translate into higher industrial output and more diversified services. If investment continues to flow into productive sectors and start-ups scale up, Çanakkale could shift into the high-development group. Conversely, if the agricultural sector remains dominant and services lag, the province may experience persistent medium-level development. Policymakers should therefore focus on strengthening linkages between investment, entrepreneurship and industrial output while facilitating the transition of labour and resources from agriculture to higher value-added activities.

Conclusion and Policy Implications

This study assesses provincial development differences in Türkiye and positions Çanakkale within that wider distribution through a more coherent and methodologically disciplined framework. In this study, the PCA-based composite development index serves as the primary analytical measure. Descriptive comparisons, k-means clustering, and peer benchmarking are used to contextualise and interpret provincial differences without altering the underlying index-based assessment. Rather than deploying multiple parallel techniques without a clear analytical centre, the study advances a focused argument: a compact composite index, constructed from indicators of productive capacity, entrepreneurship, investment, and sectoral

structure, provides a transparent basis for assessing provincial development and locating Çanakkale within the national distribution.

The results reveal substantial heterogeneity across Türkiye's 81 provinces. The national distribution of the development index is uneven, with only a small number of provinces in the upper tail and a broad concentration in the middle range. High-development provinces are characterised by strong per-capita production, greater investment intensity, and higher industrial shares. Low-development provinces show weaker productive capacity, lower entrepreneurial density, lower investment per capita, and more fragile structural profiles. Medium-development provinces occupy an intermediate position, but they are not simply average cases. They often combine elements of dynamism with structural incompleteness, suggesting that development is better understood as a transitional process than as a fixed label.

Within this national pattern, Çanakkale emerges as a medium-development province with a distinct mixed structure. Its development index places it above the national mean but below the threshold of the high-development group. This is important because it shows that Çanakkale is neither a lagging, agriculture-dominated province nor a mature industrial-service pole. Instead, it appears as a transitional province in which strengths and weaknesses coexist in a balanced but incomplete configuration. On the positive side, Çanakkale displays strong entrepreneurial activity and very high investment per capita, both of which point to development potential, adaptability, and future productive capacity. At the same time, these advantages are offset by lower per-capita production than the national average, only moderate industrialisation, and a relatively large agricultural base. Within the structure of the composite index, this combination constrains the province's upward movement.

The typology analysis reinforces this interpretation. High-development provinces are defined by much stronger industrial profiles, whereas low-development provinces tend to combine weaker productive performance with limited investment and entrepreneurship. Çanakkale's position in the medium cluster reflects a more mixed economic composition. The province has clearly moved beyond a purely primary-sector structure, but it has not yet developed the industrial depth and higher-value service base needed to join the upper tier. Peer comparison confirms this pattern. Relative to similarly populated provinces, Çanakkale performs well in entrepreneurship and investment, but remains weaker in per-capita production and industrial share. In other words, the province has momentum, but that momentum has not yet been fully translated into a stronger production structure.

These findings support a broader policy lesson: regional development policy should not rely on single indicators such as income, total production, or population size. Provinces may appear similar on one dimension while differing sharply on others. The case of Çanakkale demonstrates why multi-dimensional assessment is necessary. A province can attract investment and generate entrepreneurial activity, yet still remain structurally constrained by insufficient industrial upgrading and an underdeveloped service base. For this reason, place-based policy should be designed around the structural profile of each province rather than uniform national formulas.

For Çanakkale, the main policy priority is to strengthen the link between existing investment flows and higher value-added production. Investment alone is insufficient if it does not generate durable gains in industrial productivity, technological capability, and sectoral upgrading. Provincial and regional policy should therefore direct investment toward activities that deepen industrial capacity, improve processing and transformation within existing sectors, and create stronger forward and backward linkages. This is especially relevant in a province

where agriculture remains important. The goal should not be to reduce agriculture, but to raise its productivity and integration with industry through agro-processing, logistics, branding, and export-oriented value chains.

A second implication concerns entrepreneurship. Çanakkale's strong start-up performance is one of its clearest advantages, but start-up density contributes to long-term development only if new firms survive, scale, and connect to broader production networks. Policy should therefore move beyond simple business creation incentives and place greater emphasis on firm growth, innovation support, managerial capability, digitalisation, and market access. Entrepreneurship should be treated not as an isolated sign of local vitality, but as a mechanism for accelerating structural transformation.

A third implication relates to services. The results suggest that services do not currently differentiate higher development as strongly as industry, yet a weak service base can still limit development quality. For Çanakkale, the challenge is not the expansion of low-productivity services, but the strengthening of services that complement production, investment, tourism, logistics, and knowledge diffusion.

At the same time, the results warrant methodological caution. The low KMO statistic indicates that the composite index should be interpreted as a theory-informed descriptive measure rather than as evidence of a single, strongly defined latent dimension of provincial development. Accordingly, the index is most useful for disciplined comparison of provinces' relative economic structures and development profiles, not as a definitive measure of their absolute level of development. This interpretation is consistent with the study's analytical purpose: to integrate productive capacity, entrepreneurship, investment, and sectoral composition into a transparent framework for evaluating Çanakkale's relative position within Türkiye.

Overall, the evidence indicates that Çanakkale is a transitional provincial economy with meaningful strengths but incomplete structural upgrading. Its current position is promising rather than fully mature. If investment, entrepreneurship, and sectoral policy are aligned more effectively with industrial upgrading and value-added diversification, the province has the capacity to move upward within the national development distribution. In that sense, the case of Çanakkale illustrates a broader lesson for Türkiye: regional development policy is most effective when it identifies not only where provinces stand, but also what kind of structural transformation is required for them to advance.

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Research Article

**Two Approaches to Sustainability Reporting: A Comparative Analysis of TSRS
and CSRD/ESRS Frameworks in the Banking Sector**

Elçin Dalkılıç^a & Murat Kesebir^b

Abstract

Introduction: This study aims to conduct a comparative analysis of the Türkiye Sustainability Reporting Standards (TSRS) and the European Union Corporate Sustainability Reporting Directive (CSRD) and its associated European Sustainability Reporting Standards (ESRS) frameworks, specifically within the banking sector.

Method: The research was conducted using the document analysis method within the framework of a qualitative research approach. In this context, the 2024 sustainability reports of the Turkish subsidiaries of the BBVA and ING groups, as well as their European parent companies, were analyzed.

Results or Findings: The findings reveal a structural difference between the TSRS's single-materiality approach and the ESRS's dual-materiality approach, which decisively shapes the scope, depth, and stakeholder orientation of reporting. CSRD/ESRS reports exhibited higher evaluation scores (average difference: 1.0/5), with divergence most pronounced in materiality assessment and scenario analysis depth.

Discussion or Conclusion: The findings show that some Turkish banks exceed TSRS minimum requirements through group-level influences, demonstrating that reporting quality depends on institutional context as well as regulatory design. This empirical comparison fills a gap in the literature by showing how different regulatory approaches shape banking sector sustainability reporting practices.

Keywords: TSRS, CSRD, ESRS, sustainability reporting, banking sector

JEL Codes: M41, M48, G21

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Araştırma Makalesi

**Sürdürülebilirlik Raporlamasında İki Yaklaşım: TSRS ve CSRD/ESRS Çerçevesinin
Bankacılık Sektöründe Karşılaştırmalı Analizi**

Elçin Dalkılıç^a & Murat Kesebir^b

Öz

Giriş: Bu çalışma, Türkiye Sürdürülebilirlik Raporlama Standartları (TSRS) ile Avrupa Birliği Kurumsal Sürdürülebilirlik Raporlama Direktifi (CSRD) ve buna bağlı Avrupa Sürdürülebilirlik Raporlama Standartları (ESRS) çerçevelerini bankacılık sektörü özelinde karşılaştırmalı olarak incelemeyi amaçlamaktadır.

Yöntem: Araştırma, nitel araştırma yaklaşımı çerçevesinde doküman analizi yöntemi kullanılarak gerçekleştirilmiştir. Bu kapsamda BBVA ve ING gruplarının Türkiye iştirakleri ile Avrupa ana ortaklıklarına ait 2024 yılı sürdürülebilirlik raporları analiz edilmiştir.

Sonuçlar ya da Bulgular: Bulgular, TSRS'nin tek önemlilik yaklaşımı ile ESRS'nin çift önemlilik yaklaşımı arasında, raporlamanın kapsamını, derinliğini ve paydaş yönelimini belirleyen yapısal bir farklılık olduğunu ortaya koymaktadır. CSRD/ESRS raporları daha yüksek değerlendirme puanı almış (ortalama fark: 1,0/5) ve bu farklılık özellikle önemlilik değerlendirmesi ve senaryo analizi derinliğinde belirginleşmiştir.

Tartışma ya da Yapılan Çıkarımlar: Bulgular, bazı Türk bankalarının grup düzeyindeki etkilerle TSRS'nin asgari gerekliliklerini aştığını ve raporlama kalitesinin yalnızca düzenleyici tasarıma değil, kurumsal bağlama da bağlı olduğunu göstermektedir. Bu ampirik karşılaştırma, farklı düzenleyici yaklaşımların bankacılık sektöründe sürdürülebilirlik raporlama uygulamalarını nasıl şekillendirdiğini ortaya koyarak literatürdeki bir boşluğu doldurmaktadır.

Anahtar Kelimeler: TSRS, CSRD, ESRS, sürdürülebilirlik raporlaması, bankacılık sektörü

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Introduction

As global challenges such as climate change, the depletion of natural resources, and social inequality have intensified, sustainability reporting has evolved from being merely a tool for corporate transparency into a fundamental component of financial markets. The most evident manifestation of this transformation is the accelerating adoption of mandatory reporting frameworks implemented in recent years at both the international and national levels. Indeed, as of 2024, the shift from voluntary to mandatory reporting has emerged as a defining trend in the global sustainability reporting landscape, with the International Sustainability Standards Board (ISSB) framework and the EU's Corporate Sustainability Reporting Directive (CSRD) playing a pivotal role in shaping global standards (Amesheva & Shukla, 2025). Both sets of standards aim to ensure that sustainability information is reported in a systematic, comparable, and reliable manner; however, they differ in terms of their development processes, scopes, and implementation approaches.

International organizations play a significant role in the development of sustainability reporting. In particular, the International Sustainability Standards Board (ISSB) and the European Financial Reporting Advisory Group (EFRAG) have developed their own sets of standards to address the growing demand for transparency in sustainability disclosures. While the IFRS S1 and IFRS S2 standards developed by the ISSB establish general provisions for disclosing sustainability-related financial information required by financial markets, the ESRS prepared by EFRAG offers a framework that addresses both financial and non-financial materiality, catering to a much broader stakeholder audience under the European Union's Corporate Sustainability Reporting Directive (CSRD) (Baumüller & Sopp, 2022). In this context, TSRS is based on Türkiye's adoption of the ISSB's IFRS S1 and IFRS S2 standards as TSRS 1 and TSRS 2, whereas ESRS has been developed within the EU's CSRD framework through EFRAG's technical standard-setting work for the European Commission.

The International Sustainability Standards Board (ISSB) published the IFRS S1 and IFRS S2 standards in June 2023. Effective as of January 1, 2024, these standards require that all sustainability-related risks and opportunities be presented in an integrated manner with financial reports under IFRS S1, and that climate-related disclosures be integrated under IFRS S2 (IFRS Foundation, 2023). de Villiers et al. (2024) argue that the ISSB's framework represents a significant step toward global convergence in sustainability disclosure by building on the TCFD's four-pillar structure, while simultaneously raising concerns about implementation challenges across jurisdictions with different institutional capacities. Global adoption is accelerating: As of July 1, 2025, 16 jurisdictions have adopted ISSB standards on a voluntary or mandatory basis, while 20 jurisdictions are in the process of adoption. According to the IFRS Foundation (2025), as of June 2025, 36 jurisdictions have adopted or are otherwise using ISSB Standards, or are in the process of finalising steps to introduce them into their regulatory frameworks, with 17 jurisdictions — including Türkiye — having already finalised their approach.

On the European Union front, the CSRD entered into force on January 5, 2023, and has imposed a reporting requirement on all covered companies under the European Sustainability Reporting Standards (ESRS). Unlike the ISSB's investor-focused single materiality approach, the CSRD mandates a dual materiality approach, requiring companies to assess both the financial impacts on them from external sources and the environmental and social impacts of their own operations (Mezzanotte, 2024; Baumüller & Sopp, 2022). This distinction is not merely technical: Mezzanotte (2024) demonstrates that the impact materiality requirement introduces novel legal and reporting risks that go well beyond traditional financial disclosure

obligations. However, as part of the EU's 2025 Omnibus simplification package, the scope of the CSRD's application has been narrowed, and the deadlines for compliance have been postponed.

Türkiye has closely followed this global transformation by incorporating the ISSB standards into its national sustainability reporting framework. Published in the Official Gazette on 29 December 2023 by the Public Oversight, Accounting and Auditing Standards Authority (KGK), the Türkiye Sustainability Reporting Standards (TSRS) became mandatory for fiscal periods beginning on or after 1 January 2024 for entities within the defined scope and fully incorporate the ISSB's IFRS S1 and IFRS S2 standards. As de Villiers et al. (2024) observe, such jurisdiction-level adoption of ISSB Standards—whether through direct incorporation or functionally aligned domestic standards—is central to the ISSB's aim of establishing a global baseline for investor-focused sustainability disclosure, and Türkiye's early alignment places it among the first wave of adopting jurisdictions. The banking sector holds a particularly critical position under this regulation, and all banks subject to BDDK supervision have been included in the mandatory reporting scope without any size threshold. On the other hand, it is assessed that Turkish banks with EU-based parent companies may be indirectly exposed to the implications of CSRD obligations through such parent companies.

Today, discussions on sustainability are framed within the concept of a “polycrisis,” in which environmental, economic, and geopolitical crises emerge simultaneously and are interlinked. Accordingly, sustainability has evolved from being merely an environmental issue into a multidimensional transformation process that encompasses economic and social systems. The European Union has positioned corporate sustainability reporting as a central tool in this transformation and, through the CSRD regulation, has made it mandatory for companies to provide comprehensive ESG disclosures. In this context, sustainability reporting is viewed not merely as a tool for providing information, but also as a strategic mechanism that fosters transparency, accountability, and a competitive advantage (Calvo & Alpi, 2025).

One of the major challenges in international sustainability reporting is the coexistence of multiple reporting frameworks, which creates difficulties in comparability, consistency, and standardization. Although recent regulatory developments such as the ISSB Standards and the CSRD/ESRS have accelerated the shift toward mandatory sustainability reporting, prior research shows that sustainability reporting has historically evolved within a fragmented landscape of voluntary frameworks and standards (Du Toit, 2024; Hummel & Jobst, 2024). Such fragmentation leads to variations in the content and scope of reports, thereby reinforcing the need for more standardized, transparent, and comparable sustainability reporting frameworks. In this context, the compliance requirements and potential tensions arising from the concurrent application of the TSRS and CSRD/ESRS frameworks in the banking sector have emerged as a significant research issue.

However, the vast majority of existing studies either focus on a single regulatory framework or address sustainability reporting at a general conceptual level. Despite the findings of Sebastião et al. (2024), which reveal that the number of academic publications on sustainability reporting in the banking sector has grown by 29.68% annually, it is evident that studies in the Turkish literature comparing the TSRS and CSRD/ESRS frameworks specifically within the banking sector and empirically examining the reporting practices of Turkish banks subject to both systems simultaneously remain limited.

This study examines the TSRS, the CSRD, and the associated ESRS specifically within the banking sector using a comparative document analysis method, with the aim of filling this

gap. In this regard, the study aims to identify the key differences and similarities between the two frameworks in terms of legal basis, scope of application, materiality approach, disclosure requirements, and assurance obligations. Additionally, assessing the position of Turkish banks (which are indirectly exposed to the impact of the CSRD through EU subsidiaries) under the dual-framework pressure and sharing some evaluations regarding the Turkish banking sector in light of the findings are among the study's primary objectives.

The originality of this study lies in three interconnected aspects. First, it provides one of the first empirical comparisons of the TSRS and CSRD/ESRS frameworks specifically within the banking sector, drawing on actual 2024 sustainability reports rather than a purely conceptual analysis. Second, by selecting banking groups whose Turkish subsidiaries report under TSRS while their European parent companies operate under CSRD/ESRS, the study directly observes how the same institutional group navigates two structurally different reporting frameworks. Third, the study introduces an analytical scoring rubric that operationalizes key framework differences across four dimensions, enabling a structured and replicable comparison at the report level. Together, these features distinguish the study from prior work that either examines a single framework or remains at a general conceptual level.

The remaining sections of the study are organized as follows: The first section provides a comparative analysis of the TSRS and CSRD/ESRS frameworks at a conceptual level; the second section reviews the relevant literature. The third chapter explains the research methodology, while the fourth chapter presents findings derived from sustainability reports of selected Turkish and European banks. The fifth chapter discusses the findings, and the sixth chapter presents the conclusions and recommendations for future research.

TSRS and CSRD/ESRS: Conceptual Framework

This section provides a comparative analysis of the TSRS and CSRD/ESRS frameworks in terms of legal basis and organizational structure, scope of application, materiality approach, scope of reporting standards, and assurance obligations. At their core, the two frameworks reflect fundamentally different accountability philosophies: TSRS adopts a single materiality approach built on the ISSB's investor-focused architecture, whereas CSRD/ESRS operates through a double materiality logic that extends reporting obligations to a much broader stakeholder base. This distinction shapes not only what companies are required to disclose, but also whose information needs are prioritized and how sustainability is integrated into corporate decision-making. The following sub-sections examine these differences in detail, providing the conceptual foundation for the empirical findings presented later in the study.

Legal Basis and Institutional Structure

TSRS and CSRD/ESRS are based on different legal frameworks. TSRS was prepared by the Public Oversight, Accounting, and Auditing Standards Authority (KGK) based on Article 88 of the Turkish Commercial Code No. 6102, published in the Official Gazette dated December 29, 2023, and entered into force as of January 1, 2024 (Resmî Gazete, 2023). The standards are structured in two sets, fully aligned with IFRS S1 and IFRS S2: TSRS 1 covers general provisions regarding the disclosure of sustainability-related financial information, while TSRS 2 addresses climate-related disclosures.

The CSRD, on the other hand, is an EU directive published in the Official Journal of the European Union on January 5, 2023, and entered into force. The directive imposes an obligation on companies of a certain size operating in the EU to identify, report on, and have their social and environmental impacts audited. The European Sustainability Reporting Standards (ESRS),

which all companies covered by the directive are required to implement, were adopted by the European Commission on July 31, 2023 (European Commission, 2023).

Another key difference between TSRS and ESRS lies in the role of regulatory bodies and the processes for updating standards. The European Commission plays an active role alongside EFRAG in the development of ESRS, whereas the TSRS process is led by the KGK. Both organizations place importance on stakeholder participation; however, in the European Union, stakeholder participation is much more extensive, and standards can be amended in line with public opinion (Tarakcioğlu Altınay & Sardoğan, 2025).

Scope of Application

One of the most fundamental differences between the two frameworks lies in the scope of application. While the TSRS establishes a criteria-based scope, it provides for a critical exception for the banking sector: all banks subject to BDDK supervision are included in the mandatory reporting scope without any size threshold. For other companies, however, the condition is that they must meet at least two of the following criteria (number of employees: 250; total assets: 500 million TL; annual net sales revenue: 1 billion TL) in two consecutive reporting periods (Resmî Gazete, 2023).

The scope of the CSRD, however, is both broader and constantly evolving. Under the original CSRD, Wave 1 companies (large public-interest entities with more than 500 employees) began reporting in 2025 for financial year 2024, with Wave 2 companies initially scheduled to report in 2026 (European Commission, 2023). In February 2025, the European Commission proposed the Omnibus simplification package, aiming to remove approximately 80% of companies from the CSRD scope (European Commission, 2025). Following the political agreement reached between the European Parliament and the Council in December 2025, Directive (EU) 2026/470 was adopted on 24 February 2026 and entered into force on 18 March 2026, limiting the CSRD scope to EU undertakings exceeding both 1,000 employees and €450 million net turnover, and postponing reporting requirements for Wave 2 and Wave 3 entities by two years (Directive (EU) 2026/470, 2026). While both sets of standards aim to enhance transparency, accountability, and stakeholder communication, it can be stated that the ESRS, thanks to its dual materiality approach, is designed to address the information needs of a much broader stakeholder base (Baumüller & Sopp, 2022).

Materiality Approach

The concept of materiality plays a central role in sustainability reporting within both the TSRS and ESRS frameworks. However, these two sets of standards exhibit significant differences in their approaches to materiality (de Villiers et al., 2024; Mezzanotte, 2024). Materiality represents the most fundamental conceptual difference between the two frameworks. TSRS adopts the single materiality (financial materiality) principle in alignment with IFRS S1 and S2. Under this approach, reporting on a sustainability issue is mandatory only if it has the potential to affect the company's financial position, performance, or access to capital. The primary focus is on investor information. CSRD/ESRS, however, mandates the principle of double materiality. ESRS requires companies to disclose both their material impacts on people and the environment, as well as their material sustainability-related risks and opportunities (EFRAG, 2025). Consequently, the company's external impacts are assessed alongside the financial impacts on the company from external sources (financial materiality). Materiality assessment forms the starting point for sustainability reporting under the ESRS (EFRAG, 2023). This distinction emerges as a critical element in enhancing transparency and comparability in sustainability disclosures.

The impact of this difference on the banking sector can be illustrated in concrete terms. Under the TSRS, a Turkish bank assesses climate risk solely in terms of its loan portfolio and financial stability, whereas under the CSRD, a European bank is also required to report on the environmental impact of the activities it finances.

Scope and Structure of Reporting Standards

TSRS is based on the four pillars of the TCFD framework—governance, strategy, risk management, and metrics and targets. IFRS S1 covers general sustainability disclosures, while IFRS S2 addresses climate-related risks and opportunities. As de Villiers et al. (2024) note, this four-pillar architecture represents a deliberate design choice by the ISSB to build upon the widely adopted TCFD framework and ensure interoperability with existing climate reporting practices. Tumewang et al. (2025), in their systematic review of 230 TCFD-related studies, similarly emphasize that the transfer of this four-pillar structure into IFRS S2 provides continuity for companies already reporting under TCFD recommendations. This two-standard structure provides a relatively narrow yet focused framework. The ISSB Standards aim to establish a global foundation for sustainability disclosures by synthesizing the TCFD recommendations, the CDSB's climate-related disclosure standards, and the SASB's sector-specific guidance, thereby consolidating multiple pre-existing voluntary frameworks into a single investor-focused baseline (de Villiers et al., 2024).

The ESRS, on the other hand, is based on a much broader framework. Consisting of a total of 12 standards—two cross-cutting standards (ESRS 1 and ESRS 2) and ten thematic standards—the ESRS encompasses five environmental standards covering climate change, pollution, water and marine resources, biodiversity, and the circular economy, as well as four social standards addressing own workforce, workers in the value chain, affected communities, and consumers (EFRAG, 2023). The TSRS, by contrast, follows the ISSB's investor-oriented approach by requiring entities to disclose material information about sustainability-related risks and opportunities that could reasonably be expected to affect cash flows, access to finance, or the cost of capital over the short, medium, or long term. Although this approach is centred on sustainability-related financial information, IFRS S1 also requires entities to consider sustainability-related risks and opportunities beyond climate, including topics identified through industry-based guidance such as the SASB Standards. While ESRS 1 establishes the general principles to be applied in reporting, ESRS 2 sets out the mandatory requirements that all companies must disclose, regardless of sector (EFRAG, 2023). Dragomir et al. (2024) emphasize that ESRS 2's cross-cutting disclosure architecture operationalizes the double materiality principle by requiring entities to systematically document both their impact on stakeholders and the financial implications of sustainability matters. This structure creates a broader disclosure architecture than the TSRS framework, not merely because ESRS contains more standards, but because it combines cross-cutting requirements with detailed environmental, social, and governance-related topical disclosures under a double materiality logic.

Assurance Requirements

In terms of assurance requirements, both frameworks require mandatory audits, but the standards and processes they apply differ from one another. All companies covered by the CSRD must obtain limited assurance from a third-party assurance provider starting from the first year their reporting obligations begin. According to the Institute of Chartered Accountants in England and Wales (ICAEW, 2024), the European Commission is expected to adopt a common limited assurance standard at the EU level by October 1, 2026; until that date, member

states may apply their own national standards. To guide implementation during this transition period, the Committee of European Auditing Oversight Boards (CEAOB) has published non-binding guidance principles on limited assurance (CEAOB, 2024).

Türkiye has adopted a similar approach in this area. Pursuant to the decision of the Public Oversight, Accounting, and Auditing Standards Board dated September 2, 2024, it has been decided that sustainability reports prepared in accordance with TSRS for financial periods beginning on or after January 1, 2024, shall be subject to assurance audits starting from the first year they are issued (Resmî Gazete, 2024). Assurance audits will be conducted in accordance with GDS 3000 and GDS 3410 standards until SGDS 5000 is published, and a limited assurance level will be applied. As Venter and Krasodomska (2024) document, ISAE 3000 and ISAE 3410—on which the Turkish GDS 3000 and GDS 3410 are modelled—have historically served as the main international standards for sustainability assurance engagements, although the IAASB's newly approved ISSA 5000 is expected to replace ISAE 3000 as the overarching framework for sustainability assurance going forward.

Literature

Sustainability reporting has evolved substantially over the past three decades, transforming from narrowly focused environmental disclosures into a multidimensional practice that integrates environmental, social, and governance considerations. Drawing on a PRISMA-based bibliometric review of 1,957 peer-reviewed articles from 1994 to 2024, Du Toit (2024) documents this evolutionary trajectory and identifies persistent gaps in the field, notably the lack of standardized reporting frameworks, challenges in data comparability, and limited evidence on the relationship between sustainability disclosure and corporate financial performance. These persistent gaps provide the broader context in which current mandatory frameworks—ISSB Standards and the CSRD/ESRS—have emerged as structural responses.

Building on this broader trajectory, the literature on sustainability reporting reveals a clear shift in recent years from voluntary disclosure practices toward mandatory and standardized reporting frameworks. While key drivers of this shift include company size, sector dynamics, and increasing regulatory pressures, the impact of legal requirements has become particularly pronounced in recent years (Hahn & Kühnen, 2013; Hummel & Jobst, 2024). Hummel and Jobst (2024) systematically document how the European Union has moved from the voluntary guidance of the Non-Financial Reporting Directive toward a comprehensive set of mandatory and interconnected sustainability disclosure requirements—including the CSRD, the Taxonomy Regulation, the SFDR, and the Pillar 3 ESG disclosures for credit institutions—marking a decisive regulatory turning point for corporate reporting practices.

One of the most significant debates regarding sustainability reporting during this transformation process is the issue of incompatibility and comparability among different reporting frameworks. Particularly in the banking sector, the significant divergence of ESG indicators across different frameworks such as ESRS, SFDR, and SASB complicates both materiality assessments and the comparability of reports (Sikacz et al., 2025). This situation has further highlighted the need for a single, integrated reporting framework on a global scale. Indeed, the literature emphasizes that the binding nature of reporting frameworks has evolved over time from voluntary to mandatory, and that during this process, interconnected mandates and standard-setting initiatives have converged toward more institutional sustainability reporting regimes (Hummel & Jobst, 2024).

The most significant response to this need at the international level is the IFRS S1 and S2 standards developed by the ISSB, along with the CSRD and the associated ESRS framework

implemented by the European Union. While ISSB standards adopt an investor-focused single-materiality approach, focusing on financial risks and opportunities relevant to enterprise value creation (de Villiers et al., 2024), the ESRS offers a broader stakeholder perspective that encompasses both financial materiality and the company's impacts on people and the environment, in line with the dual-materiality principle (Baumüller & Sopp, 2022; Mezzanotte, 2024). This distinction demonstrates that sustainability reporting is not merely a technical application, but also a structural choice reflecting different understandings of accountability. In this regard, IFRS S2 reflects the ISSB's investor-oriented reporting logic by requiring disclosures on climate-related risks and opportunities, including both physical risks arising from climate change and transition risks associated with the move toward a lower-carbon economy. The development of IFRS S1 and IFRS S2 through exposure drafts and stakeholder feedback further indicates that these standards were shaped through an international due-process mechanism rather than a purely technical standard-setting exercise. In this context, the sustainability reporting literature shows that the concept of materiality is being reconsidered within the framework of double materiality, which incorporates both financial materiality and social and environmental impacts, as well as regulatory and standard-setting developments (Jørgensen et al., 2022).

Tekin (2025) shows that sustainability- and climate-related issues are increasingly integrated into the strategies of Turkish banks through green financing products, disclosure and reporting practices, greenhouse gas emissions monitoring, and energy-efficiency measures. This finding suggests that sustainability reporting in the banking sector should not be viewed as an isolated disclosure activity, but rather as part of a broader strategic response to climate-related risks, transition finance, and stakeholder expectations. Studies on European banks, meanwhile, reveal that during the initial phase of ESRS implementation, climate change and governance issues were prioritized; however, significant shortcomings persist regarding the application of dual materiality, data integrity, and reporting consistency (Dragomir et al., 2024; Fedele et al., 2025). Dragomir et al. (2024), in their empirical examination of 20 large Romanian companies, found that most firms disclose information about their materiality assessment process and inside-out impacts, while disclosures on financial materiality and stakeholder engagement with financial capital providers remain notably limited—suggesting that the operationalization of double materiality is still an emerging and uneven practice among first-wave reporters. Additionally, it is shown that banks' environmental disclosures remain limited, particularly in areas such as biodiversity, and that reporting gaps persist (Broniewicz et al., 2024; Brescia et al., 2026). However, it is emphasized that ESG regulations are transforming banking business models, sustainable financing tools are becoming more widespread, and ESG is increasingly becoming a mandatory strategic component (Kosztowniak, 2023; Menicucci & Paolucci, 2023). Indeed, Menicucci and Paolucci (2023), in their empirical investigation of 105 Italian banks over 2016–2020, demonstrate that banks' commitment to ESG activities significantly affects financial performance, underscoring that ESG practices have moved from discretionary initiatives to a structural component of banking strategy.

With the introduction of mandatory sustainability reporting, another prominent debate in the literature concerns the quality and reliability of reporting. Studies indicate that an increase in reporting does not always correspond to structural performance improvements and that sustainability disclosures may, in some cases, be associated with symbolic compliance behaviors (Tarakcıoğlu Altınay & Sardoğan, 2025; Gündüz & Gündüz, 2025). Similarly, recent research suggests that the relationship between sustainability or ESG performance and financial performance is not automatic, but varies depending on contextual, methodological, and measurement-related factors (Bahadır & Akarsu, 2024; Shrestha et al., 2025). This suggests

that sustainability reporting practices, sustainability-oriented actions, and measurable financial outcomes may not always move in parallel.

On the other hand, the increasing technical complexity and standardization of sustainability reporting also bring new challenges. In the case of Türkiye, while the first reports published under IFRS S2 demonstrate a high level of technical compliance, their low readability indicates a tension between the informational value and accessibility of the reports (Erdoğan et al., 2026). Furthermore, firms' tendency to adopt similar reporting templates reinforces the impact of corporate isomorphism pressures on reporting practices.

The sustainability reporting landscape in Türkiye is undergoing a significant regulatory transformation following the mandatory implementation of the Türkiye Sustainability Reporting Standards (TSRS), which incorporate the ISSB Standards into the national reporting framework for entities within the defined scope. This development positions Türkiye within the broader global movement toward standardized sustainability-related financial disclosures. At the same time, the international literature emphasizes that sustainability reporting frameworks are not fully homogeneous, particularly due to the conceptual differences between the ISSB's financial materiality-oriented approach and the EU's broader double materiality perspective. Within the Turkish banking sector, recent evidence shows that major banks increasingly adopt green banking strategies through green financing products, disclosure and reporting practices, greenhouse gas emissions monitoring, and energy-efficiency measures (Tekin, 2025). This transformation is particularly relevant for banks, as prior research shows that climate-related risks are closely associated with climate disclosure quality, credit risk exposures, and loan quality, making their integration into risk management and reporting practices increasingly important (Caby et al., 2020; Di Febo et al., 2026).

Different regulatory approaches to sustainability reporting differ not only in terms of technical reporting requirements but also in terms of companies' understandings of accountability and their stakeholder orientations. In this respect, the distinction between the TSRS, which adopts an investor-focused single-materiality approach, and the CSRD/ESRS framework, which mandates a dual-materiality approach based on a broader stakeholder perspective, is decisive in determining the scope and depth of sustainability reporting. Consequently, how different regulatory frameworks shape companies' reporting practices can be viewed not merely as a matter of technical compliance, but also as a reflection of corporate orientations and strategic choices.

However, it is evident that the vast majority of existing studies either focus on a single regulatory framework or address sustainability reporting at a general conceptual level. Despite the findings of Sebastião et al. (2024), which reveal that the number of academic publications on sustainability reporting in the banking sector has grown by 29.68% annually, it is understood that there are limited studies comparing the TSRS and CSRD/ESRS frameworks specifically within the banking sector and empirically examining the reporting practices of Turkish banks subject to both systems simultaneously. This study aims to fill this gap by presenting a comparative analysis of the TSRS and CSRD/ESRS frameworks based on bank reports.

Against this backdrop, the present study is motivated by two interconnected observations. First, despite the rapid growth of sustainability reporting research in the banking sector, comparative empirical studies that simultaneously examine institutions subject to both TSRS and CSRD/ESRS remain scarce in the Turkish literature. Second, the structural differences between the two frameworks—particularly regarding materiality approach, disclosure depth, and stakeholder orientation—have not yet been empirically tested at the report

level within the banking sector. This study addresses both gaps and can be said to contribute to the literature in the following respects:

- It provides one of the first empirical comparisons of TSRS and CSRD/ESRS frameworks in the banking sector, grounded in actual 2024 sustainability reports.
- It demonstrates how the single materiality versus double materiality distinction translates into measurable differences in reporting scope, depth, and stakeholder orientation.
- It shows that reporting quality within the same regulatory framework can vary substantially depending on parent-group influence and institutional capacity.
- It introduces a four-dimensional analytical scoring rubric that can serve as a replicable tool for future comparative studies in sustainability reporting.

Method

This section provides a detailed explanation of the research methodology. It systematically outlines the research design, sample selection, data sources, and analysis process.

Research Design

This study was conducted using the document analysis method, which is rooted in the tradition of qualitative research. Document analysis is a research technique in which existing written materials are systematically examined to identify meaning, patterns, and relationships (Bowen, 2009). Document analysis is not merely a data collection method but is also considered a systematic analytical process, requiring the researcher to examine texts in a structured manner according to specific themes and categories. This method offers a particularly valuable option in situations where researchers cannot conduct direct field research or where certain ethical constraints apply (Morgan, 2022). Document analysis is a methodologically appropriate choice for the research question of this study for several reasons. The primary research objective, which is to compare how two regulatory frameworks are reflected in actual reporting practices, requires a close and systematic reading of the reports themselves rather than survey-based or quantitative approaches. Furthermore, since the TSRS reporting obligation began only in 2024, the number of available reports is limited, making in-depth qualitative analysis more suitable than large-sample statistical methods. This approach is consistent with the broader methodological tradition in sustainability reporting research, where qualitative and comparative methods are commonly employed in the literature (Tolani et al., 2025).

The study is based on a two-phase design. In the first phase, the TSRS and CSRD/ESRS frameworks were analyzed comparatively across four dimensions. In the second phase, the study examined how these framework differences are reflected in bank reporting. This design makes it possible to reveal how differences at the framework level manifest at the application level.

Sample and Data Sources

Purposive sampling was adopted in this study. Purposive sampling is an approach based on the deliberate selection of cases that are directly relevant to the research question and rich in information, and is consistent with the fundamental logic of qualitative research (Campbell et al., 2020). Three criteria were considered in the selection of the sample: (1) the bank group under examination must operate in both Türkiye and the European Union, (2) the Turkish

subsidiary must have published a TSRS-compliant report for the 2024 fiscal year, and (3) the parent company must have published a sustainability statement under the CSRD.

Based on these criteria, two banking groups were selected: the BBVA Group (parent company: Spain) and the ING Group (parent company: the Netherlands). These two groups represent the only banking groups in Türkiye that met all three criteria simultaneously as of the 2024 reporting period, as other foreign-owned banks operating in Türkiye either lack a CSRD-reporting parent company or had not yet published a TSRS-compliant report at the time of data collection. The 2024 reports of both groups' Turkish subsidiaries and their European parent companies were included in the analysis, and the study's dataset consists of four reports (see Table 1).

Table 1

Reports Included in the Analysis

Report	Framework	Publisher	Period
Garanti BBVA 2024 Integrated Annual Report	TSRS	Garanti BBVA A.Ş.	Jan 1–Dec 31, 2024
ING Bank A.Ş. 2024 TSRS-Compliant Sustainability Report	TSRS	ING Bank A.Ş.	Jan 1–Dec 31, 2024
BBVA Group 2024 Annual Report	CSRD/ESRS	BBVA S.A.	Jan 1–Dec 31, 2024
ING Group 2024 Annual Report	CSRD/ESRS	ING Groep N.V.	Jan 1–Dec 31, 2024

Note. Created by the authors based on the publicly available reports of the selected banks for the 2024 reporting period. Reports were classified according to the reporting frameworks explicitly adopted by each institution, namely TSRS and CSRD/ESRS.

All reports were obtained from the publicly available digital sources of the relevant institutions. The reports on Türkiye were accessed via the official portal of the Public Oversight, Accounting, and Auditing Standards Authority (KGK), while the reports on Europe were accessed via the investor relations pages of the relevant companies.

Analytical Framework and Scoring

The reports were evaluated using a four-dimensional analytical framework derived from the research question. The selection of these four dimensions was guided by two considerations. First, each dimension corresponds directly to a core disclosure area required under both the TSRS and CSRD/ESRS frameworks, ensuring that the analytical framework captures the most structurally significant points of comparison between the two regulatory approaches. Second, the dimensions reflect key determinants of sustainability reporting quality identified in the literature, thereby grounding the framework in the core disclosure requirements shared across both regulatory approaches. Accordingly, the four dimensions are: (1) materiality approach, (2) climate risk management, (3) reporting depth, and (4) governance structure. A five-point scale was adopted because it provides sufficient granularity to distinguish between meaningfully different levels of disclosure quality, ranging from the complete absence of a practice to its exemplary implementation, while remaining practical for application to qualitative document analysis.

Each dimension was scored on a scale ranging from 1 to 5: 1 = None/Very inadequate; 2 = Superficial/Partial; 3 = Standard level; 4 = Comprehensive; 5 = Aligned with international best practices, exemplary level. Each dimension was evaluated based on multiple sub-criteria, and the dimension score was calculated as the arithmetic mean of the relevant sub-criteria. The

overall evaluation score reflects the average of the four dimensions. Reference indicators for each score are presented in Table 2.

During the scoring process, the relevant sections of each report were read holistically and systematically compared against the framework requirements. To enhance reliability, the scoring criteria were operationally defined in advance, and the analysis process strictly adhered to these criteria (Morgan, 2022). The rubric and criteria developed to enhance the reliability of the scoring process were reviewed by the study's second author; the criteria were finalized based on feedback regarding the evaluation process. In this study, which is primarily based on qualitative content analysis, the scoring approach was evaluated as an analytical tool that supports the systematic comparison of relative differences between reports rather than as a quantitative measurement.

Table 2

Analytical Evaluation Rubric

Score	Materiality (Approach/Stakeholder Engagement)	Climate Risk (Risk Management/Scenario Analysis)	Reporting Depth (Data/Framework/Assurance)	Governance (Board Role/Strategy Integration)
1	No assessment / Stakeholder engagement not defined	Climate risk not addressed / No scenario	No data / No framework disclosure / No assurance	Structure not defined / No strategy linkage
2	Superficial reference / Internal stakeholders only	General description, no quantitative data / Limited scenario	Partial data / Single framework / No assurance	General responsibility attribution / Weak integration
3	Single materiality with defined thresholds / Limited external stakeholders	Physical/transition risks distinguished / Single scenario	Basic ESG metrics / At least one framework / Limited assurance	Committee structure and board role defined / Partial integration
4	Dual prioritization / Multi-stakeholder engagement with surveys	Portfolio alignment methodology / Multi- dimensional scenarios	Comprehensive data / Multiple frameworks / Independent assurance	Multi-layered hierarchy with defined roles / Clear strategy linkage
5	EFRAG-aligned double materiality with strategic integration / Systematic inclusion of all stakeholders	Terra/PCAF methods, IEA/NGFS scenarios / Sector-based stress testing	Systematic dataset / Extensive framework disclosure / Detailed assurance report	Integration into remuneration / Three lines of defense, full institutional integration

Note. Developed by the authors based on document analysis, the rubric assesses reporting alignment on a scale from 1 (limited) to 5 (advanced) across four dimensions. EFRAG: European Financial Reporting Advisory Group; PCAF: Partnership for Carbon Accounting Financials; IEA: International Energy Agency; NGFS: Network for Greening the Financial System; Terra: ING Group's portfolio climate alignment methodology; PACTA: Paris Agreement Capital Transition Assessment; Board: Board of Directors.

Limitations of the Study

This study has several limitations. First, the analysis is limited to publicly available sustainability reports; therefore, it is not possible to directly assess corporate processes and

internal decision-making mechanisms that are not included in the reports (Bowen, 2009). Second, the study covers a limited number of banking groups and is based on an in-depth comparative analysis of four reports. While this limits the generalizability of the findings, examining banking groups subject to different regulatory frameworks simultaneously allows for a clearer illustration of how these framework differences manifest at the implementation level. Third, since the reporting obligation under the TSRS for Turkish banks began in 2024, it was not possible to conduct a time-series analysis. This situation limits the ability to assess the evolution of reporting practices over time. Finally, the analytical framework and evaluation process used in the study incorporate a certain degree of researcher interpretation. However, the fact that the scoring criteria were predefined and applied systematically contributes to ensuring consistency in the evaluation process (Morgan, 2022).

Findings

In this section, the findings derived from the evaluation of the four reports within the analytical framework are presented under four subheadings: materiality approach, climate risk management, reporting depth, and governance structure. Under each subheading, TSRS and CSRD/ESRS reports are examined in a comparative manner, highlighting how differences in the frameworks translate into practice.

Materiality Approach

The most notable difference in terms of the materiality approach among the four reports covered by the analysis directly reflects the fundamental design choices of the TSRS and CSRD/ESRS frameworks.

Table 3

Comparison of Materiality Approach under TSRS and CSRD/ESRS

Dimension / Criteria	Garanti BBVA TR (TSRS)	ING Bank TR (TSRS)	BBVA Group (CSRD/ESRS)	ING Group (CSRD/ESRS)
Materiality Approach	4/5 Based on ESRS, ISSB, and GRI. A dual prioritization model is applied, going beyond TSRS requirements.	3/5 Single materiality with clearly defined thresholds. No risks identified as material—consistent with TSRS, yet open to interpretation.	5/5 Double materiality in line with EFRAG guidelines. Climate change, natural capital, and business ethics identified as material topics.	5/5 Double materiality required under CSRD. Transition from GRI to ESRS is documented. Climate and biodiversity identified as material.
Stakeholder Engagement	4/5 Stakeholder surveys including employees, customers, NGOs, and investors. UNEP FI Portfolio Impact Analysis applied.	2/5 Engagement limited to internal stakeholders. External stakeholder involvement is not systematically defined within the sustainability context.	4/5 Multi-stakeholder process aligned with ESRS. Includes customers, regulators, and civil society.	5/5 Most comprehensive stakeholder engagement. Employees, customers, NGOs, regulators, and suppliers are addressed separately.

Note. Created by the authors based on document analysis of publicly available sustainability and integrated reports for the 2024 reporting period. Scores (1–5) reflect the level of alignment with the analytical evaluation rubric developed in this study.

Both group reports under the CSRD/ESRS framework fully apply the principle of double materiality within the scope of the reports under review. In its 2024 report, the BBVA Group conducted its materiality assessment process in accordance with the EFRAG guidance and identified climate change, natural capital, and business ethics as material topics. ING Group, on the other hand, clearly documented its transition from a previous GRI-based approach to ESRS, declaring both climate and biodiversity as material issues. Neither report treats dual materiality merely as a compliance requirement. Rather, it is evident that this approach has been integrated into strategic decision-making processes.

Reports under the TSRS framework, however, present a divergent picture. ING Bank Türkiye has applied the single materiality approach prescribed by TSRS and did not identify any climate risks or opportunities as material during the 2024 reporting period. While this outcome is technically compliant with the fundamental requirements of the TSRS framework, it can be considered a notable finding regarding the extent to which the de-materialization of climate risks is contextually justifiable. Garanti BBVA, however, took a different approach by going beyond the single materiality framework required by the TSRS and implemented a two-way prioritization model based on ESRS, ISSB, and GRI standards. This indicates that the regulatory obligations of its parent company, BBVA, under the CSRD have shaped reporting practices at the subsidiary level.

A clear divergence is also observed among the frameworks in terms of stakeholder engagement. Based on the reports reviewed, ING Group has implemented the most comprehensive stakeholder engagement process. In this context, the company has engaged separately with employees, customers, civil society organizations, regulatory authorities, and suppliers. BBVA Group and Garanti BBVA have also conducted comprehensive stakeholder surveys. In contrast, external stakeholder engagement is not systematically defined within the context of sustainability in ING Bank Türkiye's report.

Climate Risk Management

The structural differences between the two frameworks in terms of climate risk become particularly evident in the depth of scenario analysis.

Table 4

Comparison of Climate Risk Management and Scenario Analysis under TSRS and CSRD/ESRS

Dimension / Criteria	Garanti BBVA TR (TSRS)	ING Bank TR (TSRS)	BBVA Group (CSRD/ESRS)	ING Group (CSRD/ESRS)
Climate Risk	4/5 Physical and transition risks addressed. PACTA methodology applied. RCP 8.5 scenario and sector-specific impact analyses (tourism and agriculture) included.	4/5 Five transition and three physical risks analyzed in detail. ESR scoring system integrated into lending processes. Terra methodology applied.	5/5 Full alignment with ESRS E1. Includes sector-based emission targets, financed emissions, and a decarbonization plan. Integrated into remuneration systems.	5/5 ESRS E1 and E4 (biodiversity) identified as material. Terra methodology and PCAF data applied. Double materiality fully integrated.
Scenario Analysis	3/5 RCP 8.5 and climate comfort scenarios applied.	4/5 Oxford Economics "Delayed Transition" and	5/5 IEA 1.5°C, NZE, and STEPS scenarios applied.	5/5 NGFS scenarios applied. Transition and physical risk

Financial impacts are partially undisclosed due to TSRS transitional exemptions.	“Net Zero” scenarios applied. Stress tests for credit, liquidity, and operational risks presented with quantitative results.	Differentiated by country and sector. Includes portfolio alignment analysis.	stress tests conducted. Terra-based portfolio alignment analysis across 12 sectors.
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Note. Created by the authors based on document analysis of publicly available sustainability and integrated reports for the 2024 reporting period. Scores (1–5) reflect the level of alignment with the analytical evaluation rubric developed in this study.

CSRD/ESRS reports address climate risk through both portfolio alignment analysis and multi-dimensional scenario frameworks. BBVA Group applied the IEA’s 1.5°C, Net Zero, and STEPS scenarios by breaking them down by country and sector; it conducted its portfolio alignment analysis within this framework and integrated sustainability targets into its executive compensation system. ING Group, on the other hand, utilized NGFS scenarios and conducted stress tests for transition and physical risks across 12 sectors under the Terra methodology. Additionally, it developed a specialized physical risk measurement tool covering 4 chronic and 9 acute physical risks.

There is also a notable difference among the TSRS reports. ING Bank Türkiye used the “Delayed Transition” and “Net Zero” scenarios developed by Oxford Economics; it presented stress tests related to credit, liquidity, and operational risk along with their numerical results. While Garanti BBVA applied the RCP 8.5 and climate comfort scenarios, its use of the TSRS transition exemption to omit certain financial impacts could be seen as a factor limiting the report’s analytical depth. This situation highlights a significant difference in the depth of scenario analysis even between two Turkish banks operating under the same framework; it demonstrates that differences in institutional capacity at the implementation level under the TSRS directly affect the quality of reporting.

From a climate risk management perspective, both TSRS reports systematically address physical and transition risks. While Garanti BBVA applies the PACTA methodology, ING Bank Türkiye has integrated the ING Group’s Terra methodology and ESR scoring system into its lending processes. This finding demonstrates that in sustainability reporting, it is not only regulatory frameworks but also risk management tools developed at the group level that play a decisive role.

Reporting Depth

The depth of reporting was assessed based on three sub-criteria: data and metric quality, framework compliance, and assurance level.

Table 5

Comparison of Reporting Depth under TSRS and CSRD/ESRS

Dimension / Criteria	Garanti BBVA TR (TSRS)	ING Bank TR (TSRS)	BBVA Group (CSRD/ESRS)	ING Group (CSRD/ESRS)
Data & Metrics	4/5 Greenhouse gas metrics reported. TRY 291 billion in sustainable finance. Financial data (FO) audited by EY,	4/5 Scope 1 and 2 emissions (502 tCO ₂ e) disclosed. €3,983 million in sustainable finance. Full alignment with	5/5 €304 billion in sustainable finance mobilization. Comprehensive dataset including financed emissions,	5/5 €130 billion in sustainable finance. Financed emissions calculated using the PCAF methodology.

	with audited figures clearly indicated in the report.	SASB Commercial Banks metrics..	biodiversity, and social indicators.	Extensive ESG metrics provided.
Framework Alignment	5/5 Aligned with TSRS 1&2, GRI, UNEP FI, UNGC, WEPs, Integrated Reporting Framework, and SASB—broadest framework alignment among the four reports.	3/5 Aligned with TSRS 1&2, SASB Commercial Banks Standard, ISO 14001, and ISO 50001. No formal alignment with additional international frameworks.	5/5 Aligned with CSRD/ESRS, TCFD, GRI, PRB, UNGC, and the Dow Jones Sustainability Index.	5/5 Aligned with CSRD/ESRS, PRB, TCFD, Terra, PCAF, NGFS, and the Poseidon Principles (shipping sector).
Assurance	4/5 Limited assurance by EY under ISAE 3000 and ISAE 3410. Audited financial data explicitly identified in the report.	4/5 Limited assurance by EY under ISAE 3000 and ISAE 3410. Scope and limitations of assurance clearly defined.	4/5 Limited assurance by Deloitte. Separate independent assurance report provided for non-financial information (NFIS).	4/5 Limited assurance by KPMG. Separate assurance report provided for selected financial indicators.

Note. Created by the authors based on document analysis of publicly available sustainability and integrated reports for the 2024 reporting period. Scores (1–5) reflect the level of alignment with the analytical evaluation rubric developed in this study.

In terms of data and metrics, CSRD/ESRS reports provide clearly systematic and comparable datasets. The BBVA Group has reported on its mobilization of 304 billion euros in sustainable finance, alongside financed emissions, biodiversity metrics, and social indicators. ING Group, meanwhile, has supported its 130 billion euro in sustainable finance data with financed emissions calculations based on the PCAF methodology. While TSRS reports meet a standard level of data quality, their scope is narrower; both Turkish banks have taken advantage of the transition exemptions offered in the first reporting year and have not disclosed Scope 3 emissions data.

A notable finding regarding framework alignment is that Garanti BBVA TR achieved a framework alignment score equivalent to that of CSRD/ESRS reports. The report references the GRI, UNEP FI, UNGC, WEPs, IR Framework, and SASB frameworks in addition to TSRS 1 and 2, and it can be stated that it has the highest number of referenced frameworks among the four reports. This reflects Garanti BBVA’s concrete effort to incorporate the BBVA Group’s global sustainability approach into its Turkish reporting. On the other hand, ING Bank Türkiye received the lowest score in this category; its report is limited solely to the TSRS and SASB Commercial Banks guidelines.

There is no significant difference among the four reports in terms of assurance. All reports were audited at a limited assurance level; Turkish banks covered by the TSRS were audited by EY in accordance with GDS 3000 and GDS 3410 standards, while group reports covered by the CSRD were audited by Deloitte and KPMG, respectively. This finding demonstrates that the structure of TSRS, which mandates assurance audits from its first year, has been effectively implemented in practice and that the assurance requirements of the TSRS and CSRD frameworks have converged to a significant extent.

Governance Structure

In terms of governance, both reports under the CSRD/ESRS framework share the highest score for both sub-criteria. Among the TSRS reports, ING Bank Türkiye stands out with a score of 5/5 for the Board of Directors role sub-criterion; it has detailed the multi-layered governance hierarchy extending from the Board of Directors to the Sustainability Department through job descriptions, authority limits, and competency criteria, and has stated that it reports to the Board of Directors at least four times a year. However, in the strategy integration dimension, both TSRS reports received a score of 4/5, falling short of the CSRD/ESRS reports.

Table 6

Comparison of Governance Structure under TSRS and CSRD/ESRS

Dimension / Criteria	Garanti BBVA TR (TSRS)	ING Bank TR (TSRS)	BBVA Group (CSRD/ESRS)	ING Group (CSRD/ESRS)
Board Role	4/5 The Sustainability and Responsible Banking Committee is linked to the Board of Directors. The board's oversight role is clearly defined, with meetings held twice per year.	5/5 A clearly structured hierarchy: Board of Directors – Corporate Governance Committee – Risk Committee – Sustainability Committee – Sustainability Department. Roles and responsibilities are formally documented. Reporting to the Board occurs at least four times annually.	5/5 ESG responsibility established at board level. Remuneration is linked to sustainability targets, including both annual and long-term variable components.	5/5 SB-ESG Committee (established as permanent in 2024), Risk Committee, and fully documented three lines of defense model.
Strategy Integration	4/5 A 15-year strategic framework focusing on climate action and inclusive growth. Includes coal phase-out commitment and net-zero target for 2050.	4/5 ING Group's net-zero targets (2035 for operations, 2050 for portfolio) are integrated into Turkish operations. Terra-based sectoral targets are embedded in lending processes.	5/5 Sustainability is one of six strategic priorities. Decarbonization strategy is fully integrated across all business lines.	5/5 Sustainability is one of two core strategic priorities. Net-zero banking is fully integrated into the portfolio and linked to remuneration.

Note. Created by the authors based on document analysis of publicly available sustainability and integrated reports for the 2024 reporting period. Scores (1–5) reflect the level of alignment with the analytical evaluation rubric developed in this study.

The CSRD/ESRS reports share the highest score for both sub-criteria under the governance dimension. At BBVA Group, sustainability is managed within the framework of the General Sustainability Policy, which is approved at the Board of Directors level; ESG responsibility is carried out across the entire corporate structure through the Executive Committee, Risk and Compliance Committee, Audit Committee, and Remuneration Committee. Remuneration integration covers both annual and long-term variable pay

components, and sustainability has been integrated into all business lines as one of six strategic priorities alongside the decarbonization strategy. At ING Group, sustainability is managed through a separate ESG Committee, which was transitioned from a temporary to a permanent status in 2024. The three lines of defense model is comprehensively documented, and the net-zero banking target has been integrated into the entire portfolio and reflected in the compensation system. While both models demonstrate comparable depth in terms of governance maturity, their structural preferences differ: BBVA Group integrates ESG responsibility into all existing committees, whereas ING Group has opted to establish a separate committee dedicated to this purpose.

Under the TSRS framework, Garanti BBVA has established a Sustainability and Responsible Banking Committee reporting to the Board of Directors; within the framework of its 15-year strategic plan, priorities such as combating the climate crisis and promoting inclusive growth are maintained, and the commitment to phase out coal and the 2050 net-zero target are upheld. At ING Bank Türkiye, the ING Group's net-zero targets have been integrated into Turkish operations, and Terra's sectoral targets have been reflected in credit approval processes. These findings demonstrate that sustainability governance differs not merely by the existence of organizational structures, but by the degree to which these structures are integrated into decision-making and performance management processes. In this context, it is assessed that the governance structures under the ESRS demonstrate a more holistic and performance-oriented integration, whereas under the TSRS (excluding ING Bank Türkiye's high documentation quality) governance remains largely at the structural level.

Overall Evaluation

When the findings across the four dimensions are evaluated together, a significant difference of 1.0 points on average is observed between reports prepared under the CSRD/ESRS and those under the TSRS (CSRD average: 4.85/5; TSRS average: 3.85/5). It is noteworthy that this difference is particularly pronounced in the dimensions of materiality approach and scenario analysis. This divergence stems largely from the TSRS's reliance on a single materiality principle and the transition exemptions specific to the first reporting year.

Table 7

Overall Comparison Scores of Banks under TSRS and CSRD/ESRS

Dimension / Criteria	Garanti BBVA TR (TSRS)	ING Bank TR (TSRS)	BBVA Group (CSRD/ESRS)	ING Group (CSRD/ESRS)
Average Score	4.0 / 5	3.7 / 5	4.8 / 5	4.9 / 5

Note. The dataset was constructed by the authors based on document analysis of publicly available sustainability and integrated reports. The reported averages were calculated by aggregating the scores across dimensions using standard statistical procedures.

However, the findings reveal two significant exceptions that demonstrate that framework-based differentiation is not absolute. First, it is observed that Garanti BBVA, through its two-way prioritization model and multi-framework alignment, has gone beyond the minimum requirements under the TSRS and achieved a framework alignment score equivalent to that of CSRD/ESRS reports in terms of reporting depth. Second, it was determined that ING Bank Türkiye stands out among TSRS reports, particularly in terms of the quality of documentation regarding its governance structure and the depth of its scenario analysis; this

performance is largely attributed to the transfer of the ING Group's methodologies and tools to its Turkish operations.

These findings clearly demonstrate that sustainability reporting is not determined solely by regulatory frameworks; it is also shaped by group-level corporate influences and methodological transfer mechanisms. This situation indicates that sustainability reporting within international banking groups can go beyond the minimum requirements set by standards, and that corporate structures play a decisive role in this process.

Discussion

The findings of this study indicate that the differences between the TSRS and CSRD/ESRS frameworks are reflected not only at the conceptual level but also in reporting practices in the banking sector. In particular, the distinction between single materiality and double materiality appears to shape the scope, depth, and stakeholder orientation of sustainability disclosures. This result is consistent with the literature emphasizing that ISSB-based standards are primarily built around an investor-oriented financial materiality logic, whereas the ESRS adopts a broader stakeholder-oriented perspective through double materiality (Baumüller & Sopp, 2022; Mezzanotte, 2024; de Villiers et al., 2024). In this sense, the study supports the argument that materiality is not simply a technical reporting criterion, but one of the main factors determining what is disclosed and how it is prioritized.

The findings also show that the ESRS framework leads to broader and more detailed reporting than ISSB-aligned standards. In the reports examined, the banks reporting under the CSRD/ESRS framework addressed climate change, biodiversity, natural capital, and business ethics within a wider materiality perimeter, whereas the TSRS reports remained more closely tied to financially relevant risks and opportunities. This pattern is in line with de Villiers et al. (2024) and Mezzanotte (2024), who highlight the conceptual divergence between IFRS Sustainability Disclosure Standards and European Sustainability Reporting Standards, and with Jørgensen et al. (2022), who discuss the tensions between financial materiality and broader stakeholder-oriented materiality in sustainability reporting and point to the growing relevance of double materiality. The present study therefore extends these conceptual discussions by showing how this divergence becomes visible in bank-level reporting practices.

Regarding climate risk reporting and scenario analysis, the results show that reports prepared under the ESRS make use of more comprehensive and multi-layered scenario frameworks, whereas TSRS reports, although technically compliant, remain relatively narrower in analytical depth, partly because of transitional exemptions. Unlike the European banks examined, which applied IEA, NGFS, and Terra-based scenarios in a systematic and sector-differentiated manner, the Turkish banks in the sample either relied on single-scenario approaches or omitted certain financial impact disclosures under transitional provisions. This contrast directly reflects the structural difference between a framework that mandates double materiality from the outset and one that permits a more gradual implementation pathway. This is broadly consistent with studies showing that European sustainability reporting has moved toward more structured and comprehensive disclosure requirements (Hummel & Jobst, 2024; Dragomir et al., 2024), and aligns with Dragomir et al. (2024) and Fedeale et al. (2025), who highlight the difficulties associated with implementing double materiality during the early phase of CSRD adoption. The findings are also in line with Broniewicz et al. (2024) and Brescia et al. (2026), who show that climate-related disclosures in the European banking sector are becoming more systematic, although important limitations remain in some thematic areas.

Beyond framework-level differences, the findings point to an important institutional dimension. The variation observed between Garanti BBVA and ING Bank Türkiye, despite both operating under the TSRS framework, indicates that institutional capacity, internal methodological tools, and parent-group influence also play an important role in shaping reporting quality. Garanti BBVA voluntarily adopted a dual materiality model and referenced multiple international frameworks, while ING Bank Türkiye applied group-level tools such as Terra and Oxford Economics scenarios that go well beyond what TSRS formally requires. This result can be read together with studies emphasizing that sustainability reporting is shaped not only by regulation but also by organizational capabilities and strategic orientation (Menicucci & Paolucci, 2023; Kosztowniak, 2023). In this respect, the study adds an important nuance to the literature by showing that even within the same national reporting framework, reporting practices may differ substantially depending on corporate structure and international group integration.

These observations connect to a broader debate on the limits of standardization. Jørgensen et al. (2022) emphasize that sustainability reporting involves tensions between different understandings of materiality, particularly financial materiality and broader stakeholder-oriented materiality. In the present study, this tension is reflected in the relatively high level of formal TSRS compliance among Turkish banks, alongside more limited disclosure depth in areas such as materiality assessment and climate scenario analysis. This is particularly important in the banking sector, where climate-related risks are closely associated with credit risk exposures, loan quality, and disclosure practices (Caby et al., 2020; Di Febo et al., 2026). In this sense, the first year of TSRS implementation appears to represent a transition phase in which formal compliance has been achieved to a considerable extent, but full reporting maturity has not yet been reached.

The findings can also be discussed in relation to Tekin (2025), who shows that major Turkish banks increasingly adopt green banking strategies, particularly through green financing products, disclosure and reporting practices, greenhouse gas emissions monitoring, and energy-efficiency measures. In this respect, the relatively strong governance-related disclosures observed in the present study suggest that Turkish banks have begun to integrate sustainability into their strategic and organizational structures. However, the limitations identified in the breadth of materiality assessments and the depth of climate scenario analysis indicate that the transition from sustainability-oriented strategies to analytically comprehensive TSRS reporting remains incomplete. In other words, while sustainability and climate-related issues are increasingly reflected in Turkish banks' strategic practices, their translation into comprehensive, comparable, and analytically detailed sustainability reporting remains uneven.

At a broader level, the findings also speak to the literature on symbolic versus substantive reporting. Tarakcıoğlu Altınay and Sardoğan (2025) and Gündüz and Gündüz (2025) suggest that sustainability reporting may, in some cases, function more as a symbolic compliance practice than as an indicator of deeper structural transformation. Although the present study does not directly test symbolic disclosure, the results partially support this line of discussion: under the TSRS framework, the coexistence of formal compliance and relatively limited analytical depth suggests that regulatory alignment and substantive reporting quality should not automatically be treated as the same thing.

Finally, the study supports the broader literature suggesting that sustainability reporting in banking is increasingly becoming a strategic issue rather than merely a disclosure exercise. The influence of group-level methodologies such as Terra, PACTA, and portfolio alignment tools on reporting practices is consistent with studies showing that ESG regulation is reshaping

banking business models and risk management structures (Kosztowniak, 2023; Menicucci & Paolucci, 2023). In this sense, the findings suggest that sustainability reporting in the banking sector is evolving into an area where regulatory compliance, strategic governance, and institutional capacity intersect.

Overall, the discussion of the findings in relation to the literature suggests that this study confirms the main distinction drawn in prior research between investor-oriented and stakeholder-oriented sustainability reporting frameworks. At the same time, it also provides an important implementation-level insight: in the banking sector, reporting outcomes are shaped not only by the formal logic of the regulatory framework, but also by the organizational context in which that framework is applied.

Conclusion

This study comparatively examined the TSRS and CSRD/ESRS frameworks in the banking sector and showed that the differences between the two frameworks do not stem solely from technical reporting requirements, but also reflect different understandings of accountability and stakeholder priorities. The findings indicate that the main divergence lies in the materiality approach, and that this divergence directly affects the scope, depth, and orientation of sustainability reporting.

One of the main conclusions of the study is that the single materiality structure adopted under TSRS, with its focus on financial materiality, produces a narrower reporting framework, particularly for climate-related disclosures. In contrast, the double materiality approach under CSRD/ESRS supports a broader and more integrated disclosure structure. This difference is especially visible in the dimensions of materiality assessment and scenario analysis, where ESRS-based reports performed more strongly. This suggests that the choice of reporting framework shapes not only how information is presented, but also which issues become visible and to what extent sustainability is integrated into decision-making processes.

At the same time, the study shows that differences between reporting frameworks do not fully explain reporting outcomes on their own. Some banks reporting under TSRS were able to go beyond minimum requirements through parent-group influence, methodological transfer, and stronger institutional capacity. This is an important finding, as it suggests that reporting quality depends not only on the formal structure of standards, but also on the organizational context in which they are implemented.

When considered in relation to the literature, the results show that the conceptual distinction between investor-oriented and stakeholder-oriented sustainability reporting is also reflected in banking practice. In this sense, the study demonstrates how differences that have mostly been discussed at a conceptual level in the literature can now be observed more clearly in actual reporting practices. It also shows that the effects of regulatory differences may be reinforced or partly moderated by institutional and group-level dynamics.

For Türkiye, the findings suggest that TSRS has initiated an important transformation in sustainability reporting, but that this transformation is still at an early stage. Although the first reporting year reflects a relatively strong level of formal compliance, differences remain in terms of disclosure depth, scenario analysis capacity, and data completeness. This points to the need for more detailed implementation guidance, stronger data infrastructure, and more sector-specific direction, particularly for the banking sector.

The study has certain limitations that should be acknowledged. First, the analysis is confined to publicly available sustainability reports, which means that internal processes and decision-making mechanisms not reflected in the reports cannot be directly assessed. Second, the study covers only two banking groups and four reports, which limits the generalizability of the findings, though this design choice enables a more in-depth comparison across regulatory frameworks. Third, as the TSRS reporting obligation began in 2024, a time-series analysis was not possible, limiting the assessment of how reporting practices evolve over time. Finally, the analytical framework and scoring process involve a degree of researcher interpretation; however, the use of predefined and systematically applied criteria contributes to consistency in the evaluation process.

Future research could expand the sample and time period in order to assess whether the differences observed here persist over time. Longitudinal studies tracking TSRS reporting beyond the first year would be particularly valuable in assessing whether disclosure depth improves as institutional capacity develops. Additionally, comparative research extending the analysis to other financial sectors or employing quantitative disclosure metrics could further test the generalizability of the observed patterns.

This study makes several contributions to the existing literature. By comparing the actual 2024 sustainability reports of banking groups that simultaneously operate under both TSRS and CSRD/ESRS, it has shown empirically how two structurally different regulatory frameworks translate into different reporting outcomes at the institutional level. The analysis has demonstrated that the single versus double materiality distinction is not merely a conceptual difference but produces measurable divergence in disclosure scope, stakeholder orientation, and the depth of climate scenario analysis. At the same time, the study has revealed that reporting quality is not determined by regulatory design alone: even within the same national framework, institutional capacity and parent-group influence can lead to substantially different reporting practices. Together, these findings advance the literature by moving beyond framework-level comparisons and offering an implementation-level perspective on how sustainability reporting standards operate in practice within the banking sector.

Overall, the distinction between single materiality and double materiality should be understood not simply as a technical reporting difference, but as part of a broader difference in how sustainability is defined, whose information needs are prioritized, and how sustainability is linked to corporate decision-making. In this respect, the banking sector offers a particularly useful setting for observing how different regulatory frameworks translate into reporting practice.

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Research Article

**Analysis of the Relationship Between Foreign Direct Investment and Corruption in
BSEC Countries Using the Granger Causality Test by Xiao et al. (2023)**

Muharrem Akın Doğanay ^a

Abstract

Introduction: This study examines the relationship between foreign direct investment (FDI) and the control of corruption in Black Sea Economic Cooperation (BSEC) member countries during the 2002-2023 period.

Method: The empirical analysis uses the control of corruption index as the dependent variable and foreign direct investment as the primary explanatory variable. Economic growth and trade openness serve as control variables. To address cross-sectional dependence and cross-country heterogeneity, the panel Granger non-causality framework of Xiao et al. (2023) is applied. In addition, robustness analysis was performed using the Westerlund (2007) panel cointegration test.

Results or Findings: The baseline level specification suggests bidirectional predictive relationships between FDI and control of corruption, indicating that each variable can predict changes in the other. The findings also indicate a strong association between economic growth and control of corruption, whereas the effect of trade openness on control of corruption is not statistically significant. Multivariate cointegration results provide only limited evidence of a long-run equilibrium among the variables studied.

Discussion or Conclusion: The study contributes to the literature by examining the FDI-corruption nexus for BSEC countries using a panel causality method that allows for dependence and heterogeneity across countries. The findings suggest that improvements in control of corruption are more robustly associated with changes in FDI than the reverse channel, implying that institutional reform remains an important component of investment and development strategy in the region.

Keywords: foreign direct investment, control of corruption, Granger causality, Black Sea Economic Cooperation

JEL Codes: F21, D73, C23

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Araştırma Makalesi

**KEİ Ülkelerinde Doğrudan Yabancı Yatırımlar ile Yolsuzluk İlişkisinin Xiao vd. (2023)
Granger Nedensellik Testi ile Analizi**

Muharrem Akın Doğanay^a

Öz

Giriş: Bu çalışma, Karadeniz Ekonomik İşbirliği Örgütü (KEİ) üyesi ülkelerde doğrudan yabancı yatırımlar (DYY) ile yolsuzluğun kontrolü arasındaki ilişkiyi 2002-2023 dönemi için incelemektedir.

Yöntem: Analizde yolsuzluğun kontrolü endeksi bağımlı değişken olarak ele alınmış, DYY temel açıklayıcı değişken olarak modele dâhil edilmiştir. Ekonomik büyüme ve ticari açıklık değişkenleri kontrol değişkenleri olarak kullanılmıştır. Ülkeler arası yatay kesit bağımlılığı ve heterojenliği dikkate alan Xiao vd. (2023) Panel Granger Nedensellik Testi uygulanmıştır. Ayrıca Westerlund (2007) panel eşbütünleşme testi ile sağlamlık analizi yapılmıştır.

Sonuçlar ya da Bulgular: Temel analiz, DYY ve yolsuzluğun kontrolü arasında önemli çift yönlü tahmin ilişkileri belirleyerek, her bir değişkenin diğerindeki değişiklikleri tahmin edebileceğini göstermektedir. Bulgular ayrıca ekonomik büyüme ve yolsuzluğun kontrolü arasında güçlü bir ilişki olduğunu, buna karşılık ticaret açıklığının yolsuzluğun kontrolü üzerindeki etkisinin istatistiksel olarak anlamlı olmadığını göstermektedir. Çok değişkenli eşbütünleşme sonuçları, incelenen değişkenler arasında uzun vadeli bir dengeye dair yalnızca sınırlı kanıt sunmaktadır.

Tartışma ya da Yapılan Çıkarımlar: Çalışma, KEİ ülkelerine özgü bu ilişkiyi yatay kesit bağımlılığı ve heterojenliği dikkate alan bir panel nedensellik yöntemiyle incelemektedir. Bulgular, yolsuzluğun kontrolündeki iyileşmelerin DYY üzerindeki etkisinin ters yöne kıyasla daha sağlam olduğunu göstermekte; bu da kurumsal reformların bölgedeki yatırım ve kalkınma stratejilerinin önemli unsurlarından biri olduğunu düşündürmektedir.

Anahtar Kelimeler: doğrudan yabancı yatırım, yolsuzluğun kontrolü, Granger nedensellik, Karadeniz Ekonomik İşbirliği Örgütü

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Introduction

The dissolution of the Bretton Woods System in the early 1970s marked a fundamental transformation in the international monetary framework. It replaced administratively controlled exchange rate regimes with market-oriented systems (Bordo, 1992). This structural shift removed many constraints on international financial transactions. In later decades, especially from the 1980s onward, information and communication technologies advanced rapidly. These developments further accelerated international capital movements, commonly described as financial globalization (Bekaert et al., 2011; Zheng et al., 2023; Azmeh, 2025). This process expanded financing opportunities for developing economies. At the same time, it increased their vulnerability to external shocks and financial volatility (Ali et al., 2023; Jarret et al., 2023; Novak et al., 2025).

Emerging market economies are increasingly integrated into global financial markets. Foreign direct investment (FDI) became a key channel for easing domestic savings and foreign exchange constraints. However, premature or weakly regulated financial liberalization showed that not all capital inflows bring positive outcomes. In several cases, increased exposure to volatile capital movements intensified macroeconomic fragilities and contributed toward financial crises (Fratzscher, 2012; Kiley, 2021; Aydın & Büyükoğlu, 2025). These mixed results have prompted more research into the economic effects of FDI and the factors controlling its cross-country distribution.

In the literature, the FDI literature is usually organized around two main questions. The first strand focuses on the macroeconomic and microeconomic consequences of FDI (Jansen, 1995; Lederman et al., 2013; Ciani & Imbruno, 2017; Santos, 2023), such as its effects on growth, employment, productivity, and technological diffusion. The second strand focuses on identifying the determinants of FDI by examining the motivations and strategic considerations shaping multinational firms' investment decisions (Antras et al., 2009; Xie et al., 2024).

Within this latter strand, multinational enterprises are generally assumed to undertake FDI for market-seeking, resource-seeking, efficiency-seeking, or strategic asset-seeking purposes (Wadhwa & Reddy, 2011). Accordingly, characteristics of host countries - including market size, population structure, labor costs and skills, natural resource endowments, institutional capacity, regulatory quality, and incentive schemes - are widely regarded as essential factors controlling FDI inflows. Alongside these structural and economic determinants, the quality of governance and institutional integrity has gained increasing prominence in empirical research (Kuzmina et al., 2014; Bhat et al., 2024; Gyimah et al., 2025). In this context, control of corruption (CCE) has emerged as an important institutional factor shaping the attractiveness of host economies for foreign investors.

From a theoretical perspective, the relationship between FDI and corruption may operate in both directions (Ndjokou et al., 2025). Corruption may discourage foreign investment by increasing transaction costs and uncertainty, while FDI may influence institutional quality through governance spillovers and monitoring pressures (Antonietti & Mondolo, 2023; Brazys & Kotsadam, 2020; Bussy & Zheng, 2023). This suggests a potentially two-way relationship in the BSEC context.

Although a substantial number of empirical studies have examined this relationship across several countries and regions, the existing literature does not provide evidence specific to the BSEC country group. Given that Turkey and several transition economies are members of this organization, the absence of a region-specific analysis represents an important gap in the literature.

These competing perspectives motivate the following hypotheses. The effect of corruption on FDI can be considered from two contrasting perspectives. The “grabbing hand” hypothesis, where corruption acts as a distortionary tax that discourages foreign capital by increasing transaction costs and uncertainty (Shleifer & Vishny, 1993; Busse & Hefeker, 2007; Wei, 2000), versus the “helping hand” hypothesis, where bribery might paradoxically facilitate investment by bypassing rigid administrative bureaucracies.

By contrast, the reverse channel suggests that FDI may influence CCE by improving institutional quality through governance spillovers, monitoring mechanisms, and increased competitive pressures (Javorcik & Wei, 2009; Brazys & Kotsadam, 2020; Saha et al., 2022). The analysis therefore studies whether the relationship between FDI and CCE in BSEC countries is one-way or two-way. The study tests the following hypotheses:

H₁: There is a significant causal relationship from CCE to FDI inflows, indicating whether the “grabbing hand” or “helping hand” effect empirically dominates in the BSEC region.

H₂: There is a significant causal relationship from FDI inflows to CCE, reflecting the presence of institutional spillovers and governance improvements driven by foreign capital.

The multivariate specification also includes economic growth and trade openness as additional explanatory variables affecting CCE dynamics (Ay et al., 2016; Shaari et al., 2022).

The study is structured as follows. The next section reviews the empirical literature on the relationship between corruption and FDI. Based on the insights derived from this literature, the following section introduces the data and the econometric methodology. Before turning to the causality analysis, the cross-sectional dependence (CD), slope heterogeneity, and unit root properties of the variables are examined, followed by a panel cointegration analysis to evaluate the long-run dimension of the system. The empirical findings from both the baseline level specification and the first-differenced robustness analysis are then presented and discussed.

Theoretical Framework and Literature Review

The relationship between FDI and corruption can be interpreted within the frameworks of institutional economics and political economy. From an institutional economics perspective, heavily influenced by North (2010), institutions define the formal and informal rules that influence transaction costs and uncertainty. Within this framework, corruption can be seen either as a symptom of institutional weakness or as an informal practice that distorts economic incentives.

Two main perspectives are commonly used to explain how corruption affects foreign investment: the “sand in the wheels” and the “grease the wheels” hypotheses. In the public choice and rent-seeking tradition (Shleifer & Vishny, 1993), the sand-in-the-wheels perspective holds that corruption imposes an additional, uncertain cost on investors. It increases transaction costs, exacerbates information asymmetries, and creates severe regulatory uncertainty, thereby deterring efficiency-seeking foreign capital. By contrast, the grease-the-wheels argument, associated with Leff (1964), suggests that, in heavily bureaucratized and inefficient regulatory systems, bribery may function as a second-best solution to bypass rigid administrative barriers, consequently facilitating investment that would otherwise be stifled. These theoretical perspectives help explain why empirical findings differ across countries with different institutional and political settings.

The relationship between corruption and FDI has been widely examined in the international economics literature; however, the empirical findings remain far from uniform (Zeneli, 2016; Abdella et al., 2018; Spyromitros & Panagiotidis, 2022; Bokayev et al., 2024; Patel et al., 2025). The lack of a clear consensus suggests that the relationship between corruption and FDI depends heavily on country-specific conditions, institutional environments, and the larger macroeconomic context. For this reason, broad generalizations based on a single perspective should be avoided.

A dominant line of research argues that corruption functions as an important deterrent to FDI by increasing transaction costs and amplifying uncertainty in the business environment. Empirical studies adopting this perspective emphasize that corruption undermines contract enforcement, weakens institutional credibility, and exposes investors to discretionary administrative practices (Teksöz, 2006; Zeneli, 2016; Karim et al., 2018; Topal, 2024). Improvements in governance quality and anti-corruption measures are often seen as important for attracting foreign investors (Ay et al., 2016; Bhavan, 2020; Shaari et al., 2022; Köstekçi et al., 2023).

An alternative strand of the literature maintains that the relationship between corruption and FDI is neither strictly negative nor unidirectional. From this perspective, the relationship between FDI and corruption may be more complex than a simple one-way effect. Some studies suggest that FDI inflows can, under certain conditions, support existing corrupt practices, specifically in environments characterized by weak regulatory control (Gök et al., 2018; Rizqa & Wibowo, 2024). Others argue that foreign investment, especially from countries with relatively higher corruption levels, may help reduce corruption in host economies by altering local norms, strengthening monitoring mechanisms, or increasing competitive pressures (Brazys & Kotsadam, 2020). These conclusions stress the importance of evaluating not only how corruption influences FDI, but also how FDI reshapes corruption dynamics over time.

A third group of empirical contributions emphasizes the contextual and nonlinear nature of the corruption-FDI nexus. Findings from several country groups indicate that the strength and direction of this relationship may vary depending on factors including economic development, institutional capacity, and the prevailing governance regime (Gezikol & Tunahan, 2018; Krifa-Schneider et al., 2022). In some cases, no statistically significant relationship is detected (Abdella et al., 2018; Bokayev et al., 2024), while in others, unexpected positive associations emerge (Camacho Murcia & Uysal, 2022). Moreover, several studies demonstrate that global economic conditions-such as financial crises or times of increased uncertainty-can modify the impact of corruption on foreign investment decisions (Padmanabhan et al., 2020; Cruz et al., 2023).

Overall, these outcomes justify a closer look at the BSEC region, where institutional diversity, transition changes, and geopolitical risk may shape the corruption-FDI nexus in distinctive ways.

Table 1*Selected Literature Review*

Author, Year	Period	Countries Covered	Method	Findings
Teksöz (2006)	1995-2000	83 Selected Countries	Pooled OLS	Negative and significant relationship between CCE and FDI inflows.
Zeneli (2016)	1992-2012	7 Western Balkan Countries	GMM Panel Data Analysis	CCE adversely affects FDI to Western Balkan countries and per capita income.
Ay et al. (2016)	1995-2013	10 Developing Countries	FMOLS Cointegration and Panel VEC Causality Analysis	Reduction in CCE and an increase in the level of democracy positively affect FDI in the long term.
Karim et al. (2018)	1995-2014	ASEAN-5 Countries	Pooled OLS	Countries with lower CCE levels and larger market size attract more FDI.
Gök et al. (2018)	1996-2016	17 MENA Region Countries	System GMM Panel Data Analysis	Foreign direct capital inflows make it more difficult to control CCE.
Abdella et al. (2018)	2002-2016	BRIC Countries	FM-OLS Panel Data Analysis & Pedroni Cointegration Test	No relationship was found between the extent of CCE and FDI.
Gezikol & Tunahan (2018)	1995-2015	124 Selected Countries	Prais-Winsten Robust Estimator Model	It has been determined that an increase in exports leads to greater CCE in low-income countries, an increase in imports raises CCE in lower-middle-income countries, and increased exports contribute to higher CCE in upper-middle-income countries.
Brazys & Kotsadam (2020)	2003-2017	56 African Countries	Pooled OLS	FDI was found to have a mitigating effect on CCE in regions where CCE levels are high; however, this effect is primarily attributable to investments originating from relatively corrupt countries.
Bhavan (2020)	2002-2018	5 South Asian Countries	Random Effects Model	An improvement in investors' CCE perception increases FDI inflows to these countries.
Padmanabhan et al. (2020)	2002-2016	95 Selected Countries	Smooth Transition Panel Regression Model	The 2008 crisis altered the relationship between CCE and FDI, and that this change depends on the host country's level of development and CCE regime.
Dilaveroğlu & Ersin (2021)	2002-2018	7 Emerging Market Countries	Pedroni Cointegration Test	A long-term relationship has been identified between control of CCE and FDI.
Krifa-Schneider et al. (2022)	2003-2019	80 Developed and Developing Countries	GMM Panel Data Analysis	The relationship between CCE and FDI is not linear depending on the host country's level of financial development; in advanced economies, a reduction of CCE below a certain threshold increases FDI, whereas in developing economies, this effect is less pronounced.
Camacho Murcia & Uysal (2022)	2005-2014	14 American Countries and Turkey	Random Effects Model	An increase in CCE index leads to a 41% increase in FDI.
Shaari et al. (2022)	1995-2020	9 ASEAN+3 Countries	Panel ARDL method	Reducing CCE increases FDI in the long term; however, environmental degradation in the region functions as a factor that enhances FDI.
Cruz et al. (2023)	1995-2020	20 Latin American	GMM Panel Data Analysis	While CCE generally has a deterrent effect on FDI, during periods of economic crisis and stagnation,

		and Caribbean Countries		this negative effect of CCE is significantly diminished.
Köstekçi et al. (2023)	2004-2020	5 Central Asian Turkic states & Turkey	Banerjee and Carrion-i-Silvestre Cointegration Test	CCE has a significantly positive impact on FDI in Uzbekistan and Tajikistan.
Bokayev et al. (2024)	2013-2022	15 Post-Soviet Countries	Pearson Correlation Coefficient Method	No relationship was found between CCE and FDI.
Topal (2024)	2002-2022	The 20 Countries Receiving the Most FDI	Driscoll-Kraay Estimation Method	The control of CCE variable and FDI are inversely and significantly correlated.
Rizqa & Wibowo (2024)	2017-2022	D-8 Countries	Random Effects Model	CCE weakens the effect of GRW and exports on FDI but strengthens the relationship between the exchange rate and FDI.
Ndjokou et al. (2025)	1980-2018	Sub-Saharan Countries	GMM Panel Data Analysis	Primary sector FDI enhances public sector CCE and reduce judicial CCE.
Linhartova (2025)	1995-2022	28 Selected Countries	OLS, FE, RE Panel Data Analysis	The effect of corruption on FDI is related to the level of CCE.
Küçükçolak et al. (2025)	2002-2021	G7 and E7 Countries	Pedroni, Kao, and Westerlund tests	E7 countries experience more pronounced effects of CCE control on FDI.

Note. Created by the author

The mixed findings in the literature provide a clear rationale for examining the BSEC countries separately. The BSEC region is characterized by its diversity: it encompasses countries integrated with both Europe and Asia, includes transition economies, and consists of states with governance structures exhibiting distinct dynamics.

Such diversity indicates that the relationship between corruption and FDI may differ from one country to another, even within the region. Accordingly, empirically testing this relationship over a period such as 2002-2023, which encompasses global financial crises, global political tensions, and structural transformations, will not only fill the gap in the literature but also help derive policy implications that better reflect the region's institutional differences.

Data Set and Methodology

Data Set

The empirical analysis of this study is based on a balanced panel data set obtained from 12 member countries of the BSEC (Albania, Azerbaijan, Bulgaria, Armenia, Georgia, Moldova, North Macedonia, Romania, Russian Federation, Turkey, Ukraine, and Greece). The selection of BSEC member countries is motivated by both regional relevance and analytical diversity. The BSEC region comprises economies that are geographically connected, increasingly integrated through trade and investment linkages, and exposed to similar regional shocks and international risks. At the same time, the member countries differ substantially in terms of economic development levels, institutional capacity, governance quality, and transition processes.

This combination makes the BSEC region a useful setting for examining the FDI-CCE relationship. In other words, the sample is not treated as homogeneous; rather, it consists of economies that share a regional setting and differ in their institutional and economic structures.

These distributional features support the use of methods that are robust to heterogeneity and extreme observations. However, Serbia, one of the member countries, was excluded from the analysis due to the absence of the Control of Corruption Index data in the World Bank's Worldwide Governance Indicators (WGI) database system prior to 2006. This data gap, which is inconsistent with the 2002-2023 period covered by the study, prevented Serbia from being included due to concerns about data integrity. The data sources, definitions, and symbols of the variables used are presented in detail in Table 2.

Table 2

Variables Used in the Study

Symbol	Definition	Unit	Source
CCE	Control of Corruption Index	Standard normal distribution between -2.5 and 2.5	World Bank - WGI (2025a)
FDI	Foreign direct investment	Foreign direct investment, net inflows (% of GDP)	World Bank - WDI (2025b)
TRD	Trade openness	Share of total exports and imports in GDP	World Bank - WDI (2025b)
GRW	Economic growth	Annual GDP growth rate (%)	World Bank - WDI (2025b)

Note. Created by the author

In the study, CCE denotes the dependent variable, FDI as the main explanatory variable, and TRD and GRW as controls. TRD is included as a control variable to account for the potential role of external integration in affecting both foreign investment flows and institutional quality. GRW is controlled to account for macroeconomic conditions that may jointly affect FDI and corruption dynamics. Descriptive statistics for all variables employed are summarized in Table 3.

Table 3

Basic Statistical Indicators

Statistic	CCE	FDI	GRW	TRD
Mean	-0.448	5.114	3.840	83.664
Median	-0.464	3.517	4.079	81.020
Maximum	0.828	55.073	34.466	166.147
Minimum	-1.264	-5.678	-28.759	40.834
Std. Dev.	0.459	6.444	5.845	25.329
Skew.	0.428	4.552	-0.161	0.516
Kurt.	2.755	31.308	10.519	2.795
J-B	8.719	9726.920	623.023	12.174
Prob.	0.013	0.000	0.000	0.002
Total	-118.334	1350.029	1013.879	22087.220
Num. of Obs.	264	264	264	264

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using EViews 12 for Windows statistical software

The primary statistical indicator values for the countries included in the study are presented in Table 3. According to the results, the mean CCE value of -0.448 indicates a weak level of CCE across the sample countries. The mean FDI value is 5.114, and its relatively high standard deviation of 6.444 indicates that FDI inflows are unevenly distributed and highly volatile across the sample.

Because FDI series contains substantial volatility and extreme observations, as indicated by the descriptive statistics, an additional robustness check was conducted. Since FDI is expressed as a percentage of GDP and includes negative values for some observations, a logarithmic transformation is unlikely to be suitable. For this reason, FDI variable was winsorized at the 1st and 99th percentiles to reduce the influence of extreme observations. The panel Granger causality tests were subsequently re-estimated using the winsorized series. The results based on the winsorized series remain similar to the baseline estimates, suggesting that the main findings are not driven only by extreme values.

The Jarque-Bera results show that the variables are not normally distributed and should therefore be interpreted with caution (Khan et al., 2025; Xuan, 2025). Overall, the data show volatility, non-normality, and heterogeneity in the economic variables of the BSEC region; therefore, these distributional features should be taken into account in the design of policies targeting the region.

Methodology

The empirical strategy consists of diagnostic tests, panel cointegration analysis, and panel causality analysis. Prior to the causality stage, it is necessary to determine whether cross-sectional units are interdependent and whether slope parameters are homogeneous across countries (Camarero et al., 2025; Chanda et al., 2025). These preliminary tests help determine the appropriate econometric framework and the panel's time-series properties.

After examining cross-sectional dependence, slope heterogeneity, and unit root characteristics, the long-run dimension of the relationship is assessed through panel cointegration analysis. The causal structure is then evaluated using the panel Granger non-causality approach proposed by Xiao et al. (2023), supported by a robustness analysis based on first-differenced series.

Cross-Sectional Dependence Test

In panel data settings involving economically and geographically interconnected countries, the assumption of cross-sectional independence is often unrealistic (Shinwari et al., 2024; Sobirov et al., 2025). Macroeconomic shocks, financial disturbances, or governmental change originating in one country may easily transmit to others through trade, financial, or institutional channels.

To examine the presence of such interdependencies among the BSEC member countries, several complementary CD tests are implemented. Specifically, the Breusch-Pagan LM test is applied alongside the Pesaran scaled LM and bias-corrected scaled LM tests, which are suitable for panels with relatively small cross-sectional dimensions. In addition, the Pesaran (2004) CD test is employed due to its robustness under large N and T conditions. Using these tests together provides a more extensive assessment of CD by capturing different panel characteristics (Uçan et al., 2024; Wang et al., 2025).

Table 4*Panel Cross-Sectional Dependence Test Results*

Test	Statistic	d.f.	p-value
Breusch-Pagan LM	276.714	66	0.000
Pesaran scaled LM	18.340	—	0.000
Bias-corrected scaled LM	18.054	—	0.000
Pesaran CD	2.149	—	0.031

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using EViews 12 for Windows statistical software.

The CD test results display significant cross-sectional dependence in the panel. All the CD tests reject the null hypothesis of “no cross-sectional dependence” at the 5% significance level. This result suggests that shocks in one country are likely to be associated with developments in others. This result indicates that shocks are not confined to individual countries but are transmitted across the panel.

Homogeneity Test

After assessing CD, the homogeneity of slope coefficients across panel units is evaluated. In heterogeneous panels, assuming identical parameter values for all countries may lead to misleading inferences (Ayla, 2024). Accordingly, the Delta homogeneity test proposed by Pesaran et al. (2008) is utilized to determine whether the long-run parameters vary across countries. Parameter heterogeneity suggests that the relationships differ across countries.

Table 5*Delta Homogeneity Test Results*

Test Statistic	Value	p-value
Δ Test	18.726	0.000
Adjusted Δ Test	21.459	0.000

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using GAUSS 10 for Windows statistical software.

The findings obtained are presented in Table 5. According to this evidence, both test statistics reject the null hypothesis of slope homogeneity at the 1% significance level, indicating parameter heterogeneity. This finding indicates that the relationships among CCE, FDI, TRD, and GRW variables differ substantially across the 12 BSEC countries examined. In other words, each country in the panel shows distinct economic characteristics, and it does not appear feasible to explain the relationship between the series using a single model.

These results suggest that first-generation panel methods are not appropriate for the present dataset (Poor et al., 2025). Therefore, it is necessary to apply second-generation unit root tests, such as Pesaran’s CIPS test.

Unit Root Test

CD, which is occasionally observed in panel data sets, poses significant challenges to the validity of econometric analyses. A review of the relevant literature on this issue indicates that, for first-generation unit root tests (Levin et al., 2002; Im et al., 2003) to yield valid results, it is necessary to assume the absence of any CD (Chang et al., 2023; Husein, 2024; Anavatan & İspir, 2025). However, if a CD is present in the series, the literature widely accepts that the reliability of first-generation tests is compromised. Those methodological limitations demand the use of second-generation unit root tests that account for cross-sectional dependence

(Baltagi, 2005; Breitung & Pesaran, 2008). In this context, this study uses the CIPS (Cross-sectionally Augmented IPS) unit root test developed by Pesaran (2007), which models CD through common factors.

The CIPS test controls for cross-sectional correlation by including common factors in the panel via principal components and cross-sectional averages, thereby increasing the validity of unit root tests. The CIPS test is calculated using the following formula:

$$CIPS = \bar{t} = \frac{1}{N} \sum_i^N t_i(N, T) \quad (1)$$

The results obtained from the applied CIPS unit root test are presented in Table 6.

Table 6

CIPS Unit Root Test Results

Variable	CIPS Statistic	Variable	CIPS Statistic	Critical Values		
				1%	5%	10%
CCE	-2.029	ΔCCE	-4.062*	-2.96	-2.76	-2.66
FDI	-2.616	ΔFDI	-4.982*	-2.96	-2.76	-2.66
TRD	-2.097	ΔTRD	-4.152*	-2.96	-2.76	-2.66
GRW	-1.822	ΔGRW	-4.759*	-2.96	-2.76	-2.66

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using EViews 12 for Windows statistical software

The test was estimated under the constant + trend specification. The null hypothesis H_0 indicates that the series are not stationary (contain a unit root). Significance stars (*, **, ***) indicate significance levels of 1%, 5%, and 10%, respectively. Critical values for the constant + trend model were determined as -2.96 for 1%, -2.76 for 5%, and -2.66 for 10%, based on $N=12$, $T=21-22$.

According to the analysis results presented in Table 6, all variables (CCE, FDI, TRD, and GRW) exhibit a unit root at their level values. The CIPS statistics for the variables (-2.029, -2.616, -2.097, and -1.822) indicate that the series are not stationary at the $I(0)$ level, as they exceed the critical value (-2.66) at the 10% significance level. However, when the first differences of the variables are taken, the calculated CIPS statistics for all series (-4.062, -4.982, -4.152, and -4.759) are more negative than the 1% critical value (-2.96), leading to the rejection of the null hypothesis and indicating that the series become stationary at their first differences. These results suggest that the variables follow an $I(1)$ process.

Since the CIPS results show that all variables are non-stationary in levels but become stationary after first differencing, these properties need to be considered in the causality analysis that follows. Although the panel Granger non-causality test of Xiao et al. (2023) is formulated within a panel VAR framework and does not require cointegration as a formal precondition, the presence of $I(1)$ series still makes it useful to evaluate the long-run dimension of the system.

Accordingly, before proceeding to the panel Granger causality analysis, the existence of a long-run equilibrium relationship among the variables is examined using the Westerlund (2007) panel cointegration test. This allows the causality findings to be interpreted together with the evidence on long-run comovement among the variables.

Cointegration Test

Having identified the variables as integrated of order one, the analysis next turns to the long-run dimension of their relationship. To determine whether CCE, FDI, GRW, and TRD share a common long-run equilibrium path, the panel cointegration test developed by Westerlund (2007) is employed. This approach is based on an error-correction framework and is particularly useful in heterogeneous panels where cross-sectional dependence may affect conventional inference. The results of the Westerlund panel cointegration test are presented in Table 7.

Table 7

Westerlund (2007) Panel Cointegration Test Results

Statistic	Value	Z-Value	P-Value	Robust P-Value
Gt	-2.616	0.350	0.637	0.188
Ga	-9.539	2.581	0.995	0.043
Pt	-7.135	1.485	0.931	0.323
Pa	-7.565	2.094	0.982	0.105

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using Stata 14 for Windows statistical software

The results are based on Westerlund's (2007) error-correction-based panel cointegration test estimated under the constant + trend specification with one lag, zero leads, lrwindow (1), and 400 bootstrap replications. The null hypothesis is that there is no cointegration.

When the bootstrap p-values are considered, the multivariate specification provides only partial support for cointegration. In particular, the Ga statistic rejects the null hypothesis of no cointegration at the 5% level, whereas the Gt, Pt, and Pa statistics do not provide equally strong support. The results do not point to a uniformly robust long-run equilibrium relationship across all test statistics.

Overall, the cointegration results suggest that the multivariate system provides only limited evidence of long-run comovement among CCE, FDI, GRW, and TRD in the BSEC panel. This finding does not invalidate the subsequent causality analysis, but it does imply that the baseline level causality results should be interpreted primarily as predictive associations within the panel framework.

Causality Test

The causality concept builds on the predictive causality framework introduced by Granger (1969). In the next stage of the analysis, the causal relationships among the variables are examined using the panel Granger non-causality test developed by Xiao et al. (2023). The method employed in this study, proposed by Xiao et al. (2023), extends the Granger non-causality framework of Juodis et al. (2021) by improving finite-sample inference. This test presents the Wald test statistic and p-value, along with the null and alternative hypotheses, within the framework of regression results based on the bias-corrected pooled estimator utilizing the half-panel jackknife (HPJ) method developed by Dhaene and Jochmans (2015). The method allows both manual and automatic lag length selection using the Bayesian Information Criterion (BIC). It also accounts for the presence of CD and cross-sectional heteroskedasticity in the error terms of the series included in the study. Another feature of the test is its ability to perform Granger causality analysis in models that include multiple dependent variables. This feature allows control variables to be incorporated into the causality framework.

For this test to be valid, the panel data set must be balanced (Xiao et al., 2023). For these reasons, the Xiao et al. (2023) procedure is selected in this study. The panel Granger non-causality test of Xiao et al. (2023) can be represented as follows:

$$y_{i,t} = \phi_{0,i} + \sum_{p=1}^p \phi_{p,i} y_{i,t-p} + \sum_{p=1}^p \beta_{p,i} x_{i,t-p} + \varepsilon_{i,t} \quad (2)$$

Among the parameters in the equation are $\phi_{0,i}$ cross-section-specific effects, $\varepsilon_{i,t}$ errors, $\phi_{p,i}$ heterogeneous autoregressive coefficients, $p = 1, \dots, P$ and $\beta_{p,i}$ heterogeneous feedback coefficients (Xiao et al., 2023). The hypotheses of the test are as follows:

$$H_0: \beta_{p,i} = 0 \text{ (for all } i \text{ and } p\text{'s)}$$

$$H_1: \beta_{p,i} \neq 0 \text{ (for some } i \text{ and } p\text{'s)}$$

The findings obtained from Xiao et al. (2023) Granger causality test are presented in Table 8. During the test, cross-sections were adjusted for heteroskedasticity, 5,000 bootstrap replications were used, and the optimal lag length was selected using the Bayesian Information Criterion (BIC), with a maximum lag order of three.

Table 8

Multivariate Causality Test Results

Dependent Variable	Independent Variable	Optimal Lag (BIC)	HPJ Wald Test	p-value
CCE	FDI, TRD, GRW	1	97.693	0.000
Univariate Causality Test Results				
	FDI	1	4.674	0.030
CCE	TRD	1	1.918	0.159
	GRW	1	6.931	0.008
FDI		2	12.326	0.002
TRD	CCE	3	0.535	0.911
GRW		1	4.845	0.027

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using Stata 14 for Windows statistical software

Based on the bootstrap multivariate causality test, conducted using the HPJ estimator and heteroskedasticity-robust variance, the joint null hypothesis of non-causality is rejected (Wald = 97.693, $p < 0.01$). The results show that at least one of the independent or control variables (FDI, TRD, GRW) Granger-causes CCE.

An examination of the univariate causality test results from the baseline level specification suggests two-way Granger causality between CCE and both FDI and GRW. While the causal effect of FDI on CCE is significant at the 5% level, the effect of CCE on FDI is stronger, being significant at the 1% level. A similar two-way pattern is also observed between GRW and CCE in the baseline level specification. However, no causality in either direction was identified between CCE and TRD.

While these results are informative about the predictive structure of the baseline-level specification, they should also be considered alongside the evidence on the long-run dimension of the system. Given that the panel cointegration results provide only limited evidence of a stable long-run equilibrium relationship, these baseline level findings should be interpreted as

predictive associations within the panel framework rather than as evidence of a strong long-run causal structure.

In light of the limited multivariate cointegration evidence and the non-stationary nature of the variables in levels, it is also useful to examine whether the main causal patterns stay broadly similar after first differencing. As an additional robustness check, the panel Granger non-causality test developed by Xiao et al. (2023) is re-estimated using the first-differenced series (ΔCCE , ΔFDI , ΔTRD , and ΔGRW).

The differenced specification shows that the baseline causal structure is only partially preserved, especially for the FDI–CCE nexus, and therefore provides a more conservative basis for evaluating short-run directional effects.

Table 9

Robustness Check: Causality Analysis in First Differences

Dependent Variable	Independent Variable	Optimal Lag (BIC)	HPJ Wald Test	p-value
ΔCCE	ΔFDI , ΔTRD , ΔGRW	1	11.1981	0.010
Univariate Causality Test Results				
ΔCCE	ΔFDI	1	3.2526	0.071
ΔCCE	ΔTRD	1	2.1252	0.144
ΔCCE	ΔGRW	1	3.3428	0.067
ΔFDI	ΔCCE	3	4.6890	0.000
ΔTRD	ΔCCE	3	1.2618	0.738
ΔGRW	ΔCCE	3	5.3565	0.000

Note. The dataset was derived from the official World Bank WGI and WDI and calculated by the author using Stata 14 for Windows statistical software

As shown in Table 9, the causal effect from changes in CCE to changes in FDI remains strongly significant, while the inverse effect from changes in FDI to changes in CCE becomes weaker and is only marginally significant. A similar asymmetry is observed in the relationship between GRW and CCE. The effect from changes in CCE to changes in GRW is still significant, while the reverse effect from changes in GRW to changes in CCE is weaker and only marginally significant. In contrast, the absence of a significant causal relationship between TRD and CCE is preserved in the differenced specification. These results show that the most robust finding of the study is the effect of CCE on FDI, while the inverse channel from FDI to CCE is more sensitive to non-stationarity.

The stronger effect of CCE on FDI suggests that institutional reliability is a more immediate determinant of investment decisions in the BSEC region. Although weaker, the reverse effect suggests that foreign capital may still support improvements in governance by strengthening compliance and monitoring practices.

Conclusion and Evaluation

This study examined the relationship between FDI and CCE in BSEC member states, excluding Serbia, over the period 2002-2023 by using the panel Granger non-causality framework proposed by Xiao et al. (2023). The empirical results from the baseline level specification suggest bidirectional predictive linkages between FDI and CCE. However, the additional first-differenced robustness analysis shows that the effect running from CCE to FDI is more stable than the reverse direction. Moreover, the Westerlund panel cointegration results provide only limited rather than conclusive evidence of a stable long-run equilibrium

relationship in the multivariate specification. Overall, these results suggest that the most robust result of the study is the effect of CCE on FDI, while the reverse channel from FDI to CCE appears more sensitive to model specification and the treatment of non-stationarity.

From an economic perspective, the stronger and more stable effect of CCE on FDI suggests that institutional reliability is a key determinant of investment decisions in the BSEC region. Improvements in CCE are likely to reduce uncertainty, limit bureaucratic discretion, and strengthen the predictability of the regulatory environment, thereby making host economies more attractive to foreign investors. This interpretation is consistent with studies showing that corruption acts as a deterrent to investment by raising transaction costs, increasing opacity, and weakening investor confidence (Teksöz, 2006; Zeneli, 2016; Karim et al., 2018; Topal, 2024). At the same time, the weaker but still observable reverse effect from FDI to CCE suggests that foreign capital inflows may contribute to better governance through stronger transparency standards, compliance requirements, and monitoring practices, in line with earlier findings in the literature (Ay et al., 2016; Bhavan, 2020; Köstekçi et al., 2023; Brazys & Kotsadam, 2020).

These results are also compatible with the structural features of the BSEC region. Many member countries combine development dynamics, uneven institutional development, and varying degrees of integration into global markets. In such a setting, CCE is likely to function as an important signal of institutional reliability for external investors. Also, foreign firms operating under international reporting and compliance standards may create pressures for more transparent and predictable governance practices. This may help explain why the baseline level results point to reciprocal predictive linkages, even though the differenced specification suggests that the direction from CCE to FDI is more robust than the reverse channel. This interpretation is also consistent with studies showing that the strength of the FDI-CCE relationship may vary during periods of macroeconomic instability, crisis, and uncertainty (Padmanabhan et al., 2020; Cruz et al., 2023).

The analysis also points to a close relationship between GRW and CCE. In the baseline level specification, the results suggest bidirectional predictive linkages between GRW and CCE. The first-differenced robustness analysis continues to support the effect from changes in CCE to changes in GRW, while the reverse direction becomes weaker and only marginally significant. This pattern suggests that governance quality and macroeconomic performance are interconnected, but the effect of institutional improvement on growth appears more stable than the reverse. No significant causal relationship is found between TRD and CCE in either the baseline or differenced specification. This suggests that changes in TRD alone do not directly shape corruption trends in a stable, systematic way, consistent with studies reporting heterogeneous or statistically weak effects across countries and regions (Gezikol & Tunahan, 2018; Abdella et al., 2018).

The findings have three policy implications for the region. Anti-corruption reform should be treated not only as a governance objective but also as a central part of investment and development strategy in the BSEC region. Measures that improve judicial effectiveness, reduce bureaucratic opacity, simplify administrative procedures, and expand digital public services may strengthen institutional reliability and support long-term, efficiency-seeking FDI. The results further suggest that governance reform and growth-driven development policy should be designed in a complementary way rather than as separate agendas. In particular, if improvements in CCE are more robustly associated with changes in FDI and GRW than the

reverse effects, then institutional reform may reasonably be regarded as a primary policy priority in the regional context.

Several limitations should be noted. First, the Xiao et al. (2023) framework primarily provides information about predictive causal linkages and does not directly estimate long-run equilibrium coefficients. Second, the panel cointegration results provide only limited evidence of a stable long-run relationship in the multivariate system, suggesting caution in interpreting the baseline level causality results. Third, the sample period from 2002 to 2023 includes major global and regional disruptions, including the 2008 global financial crisis, global political tensions, and the COVID-19 pandemic. Although the empirical framework accounts for cross-sectional dependence and heterogeneity, it does not explicitly model endogenous structural breaks. Further investigations could therefore extend the analysis by using alternative long-run specifications, break-sensitive panel cointegration procedures, or regime-dependent causality frameworks to examine how the FDI-CCE nexus evolves across different institutional and macroeconomic phases.

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Research Article

**Linking Influencers' Legitimacy and Authenticity: Focusing on Legitimacy for
Greater Authenticity, Engagement and Purchase Intention**

Mehmet Ali Paylan ^a & Buket Bora Semiz ^b

Abstract

Introduction: Influencer marketing lies at the heart of companies' and brands' digital marketing strategies. However, the extent to which consumers' perceptions of influencers' legitimacy and authenticity influence consumer behaviour has not yet been sufficiently explored. This study investigates what an influencer's unique characteristics signify in terms of cognitive, moral and pragmatic legitimacy, and how the relationship between legitimacy and authenticity translates into consumer engagement and purchase intent

Method: Data were gathered in 2024 using an online survey of 402 social media users aged 18 and older in Turkey, selected from the population using a convenience sampling method. Hypotheses regarding the research model were tested using PLS-SEM.

Results or Findings: While moral and pragmatic legitimacy were found to influence the factors of originality, no effect of cognitive legitimacy was observed. As for the factors of authenticity, it was found that the factors of truthfulness and uniqueness influence consumer engagement and, indirectly, purchase intention.

Discussion or Conclusion: Although the results cannot be generalised due to the use of a convenience sample, it has been concluded that influencers must ground their authenticity in both ethical and pragmatic principles.

Keywords: perceived legitimacy of influencer, influencer authenticity, consumer engagement, purchase intention

JEL Codes: M30, M31, M37, M39

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Araştırma Makalesi

Etkileyici Kişilerin (Influencers) Meşruiyeti ve Özgünlüğü Arasındaki Bağ: Daha Yüksek Özgünlük, Etkileşim ve Satın Alma Niyeti için Meşruiyete Odaklanmak

Mehmet Ali Paylan ^a & Buket Bora Semiz ^b

Öz

Giriş: Influencer pazarlaması, markaların dijital iletişim stratejilerinin merkezine yerleşmiştir; ancak, algılanan meşruiyet ve özgünlüğün tüketici tepkileri üzerindeki ortak etkisi yeterince araştırılmamıştır. Bu çalışma, bilişsel, ahlaki ve pragmatik meşruiyetin influencer özgünlüğüne, tüketici katılımına ve satın alma niyetine nasıl dönüştüğünü araştırmaktadır.

Yöntem: Veriler, kolay örneklem yöntemiyle seçilen, Türkiye'de 18 yaş ve üzeri 402 sosyal medya kullanıcısından 2024 yılında çevrimiçi bir anket aracılığıyla toplanmıştır. Veriler ve önerilen model (PLS-SEM) kullanılarak analiz ve test edilmiştir.

Sonuçlar ya da Bulgular: Ahlaki ve pragmatik meşruiyet, özgünlük özelliklerini önemli ölçüde etkilerken, bilişsel meşruiyet etkilememektedir. Özgünlük özelliklerinden yalnızca dürüstlük ve benzersizlik, tüketici katılımını olumlu yönde etkilemekte ve bu da satın alma niyetini önemli ölçüde artırmaktadır. Tüketici katılımı ayrıca özgünlük özellikleri ile satın alma niyeti arasındaki ilişkiye aracılık etmektedir.

Tartışma ya da Yapılan Çıkarımlar: Araştırma bulguları, etkileyici kişilerin özgünlüğünü ahlaki ve pratik temellere dayalı meşruiyetle uyumlu hale getirmenin, tüketici katılımını artırmak ve satın alımları teşvik etmek için kritik önem taşıdığını göstermektedir.

Anahtar Kelimeler: influencer'ın algılanan meşruiyeti, influencer'ın özgünlüğü, tüketici katılımı, satın alma niyeti

JEL Kodlar: M30, M31, M37, M39

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Introduction¹

Social media platforms are indispensable to companies in today's world (Agnihotri et al., 2023). Brands have changed their marketing communication strategies and increasingly rely on social media to engage consumers. The value of social media advertisement spending is projected to exceed \$345 billion by 2029 (Statista, 2024). This underlines the significance of social media and influencer marketing for companies. Influencers seek to gather, connect, and sustain like-minded audiences by exhibiting credibility, trustworthiness, relatability, and expertise (Schouten et al. 2020; Smith & Fischer, 2021) and gain legitimacy (Ki & Kim, 2019) among their followers. Pan et al. (2025), in a meta-analysis encompassing 251 studies, stated that influencer characteristics (including source credibility, authenticity signals, and social identity congruence) are factors affecting consumer attitudes, behavioral engagement, and purchase intention. However, they revealed that the impact on actual purchasing behavior is primarily driven by post-level characteristics, including the perceived authenticity and informative significance of the influencer-generated content. These findings highlight a literature gap regarding the identification of normative qualities that legitimize influencer content in the eyes of consumers.

A successful influencer-follower dynamic is sustainable when the influencer is perceived as trustworthy (Leite & Baptista, 2022). However, for them to be effective, it is especially important that they are authentic (Casaló et al. 2020). Being perceived as authentic by followers contributes to achieving the goal of increasing the number of followers (Balaban & Szabolcs, 2022; Campbell & Farrell, 2020) and leads to consumer engagement (Chen et al., 2023). Pradhan et al. (2023) and Prentice et al. (2019) highlights the importance of comprehending the influence of the relationship between influencers and customers on purchasing behavior, which is essential for understanding consumer engagement with influencers. The issues that this research aims to examine stem from the debates in the literature about the authenticity and legitimacy of influencers and whether the number of followers can measure the credibility (Janssen et al., 2022), trustworthiness, number of followers or reliability of an influencer (Kim & Kim, 2021; Lou & Yuan, 2019; Schouten et al., 2020). Chung et al. (2023) suggest that sharing posts with close social ties can increase the perception of authenticity. Therefore, this finding shows that the authenticity of the influencer is more effective when it is based on social values and norms. One of the reasons that necessitated this research is what industry observers and academics have termed the "authenticity crisis." Duffek et al. (2025) state that while 88% of consumers consider authenticity to be central to their evaluation of influencer content, nearly half of active influencers are perceived as lacking authenticity, and more than a third are perceived as dishonest or lacking transparency in brand collaborations. Specifically, this demonstrates that influencers, brand managers, and consumers have fundamentally different and often inconsistent understandings of what constitutes authentic behavior, and that this inconsistency undermines consumer trust and reduces marketing effectiveness. These results indicate that authenticity is not a fixed attribute of an influencer, but rather a socially negotiated perception that is based on normative conformity. This accurately reflects the role that legitimacy theory assigns to cognitive, moral, and pragmatic evaluations.

¹ Permission was obtained from the Ethics Committee of İzmir Bakırçay University with the decision dated 08.11.2023 and document number 1287.

Based on Bora Semiz and Paylan (2023), that legitimacy factors (cognitive, moral, and pragmatic) have an impact on brand attitude and brand trust within the context of influencer marketing, this study aims to establish the relationship that exists between influencer authenticity, consumer engagement, and purchase intention as determined by the legitimacy principles defined by Suchman (1995) and applied by Randrianasolo and Arnold (2020). The following questions are the focus of this study in view of the increasing evolution of influencer marketing and the need for a more comprehensive understanding of how influencer marketers perceive authenticity (Audrezet et al., 2020).

RQ1: Do perceived legitimacy factors affect influencer authenticity factors?

RQ2: Do perceived legitimacy factors affect consumer engagement, mediated by authenticity factors?

Based on the finding that influencers' use of social ties in their posts increases their authenticity (Chung et al., 2023), this study aims to concretize these ties in terms of legitimacy. This study aims to help brands and companies make informed decisions when partnering with influencers. This framework enables influencers to comprehend the legitimacy factors that affect their authenticity.

Literature Review

Looking at Influencer Authenticity in terms of Perceived Legitimacy

Authenticity is defined as the protection of consumer value through the fulfillment of the basic obligations and responsibilities that consumers expect from the company (Chen, You, et al., 2021; Lee & Johnson, 2022). Authenticity pertains to the consumer's perceived authenticity, uniqueness, and honesty of an influencer who acts according to their own desires and authentic personality, rather than the expectations and desires of other viewers or sponsors (Kapitan et al., 2022; Kim & Baek, 2024). Consequently, a variety of studies have identified authenticity as a defining criterion for influencers to maintain their relationships with their followers and as a "ethical ideal" in terms of being genuine to oneself and one's followers. (Arnesson, 2022; Coco & Eckert, 2020; Wellman et al., 2020). Studies have shown that authenticity is examined in different conceptualizations (Beverland & Farrelly, 2010; Wellman et al., 2020; Zniva et al., 2023). A large body of academic literature agrees that it is a personally defined but socially constructed concept.

Additionally, studies show that authenticity factors mainly consist of attributes such as sincerity, authenticity, truthfulness, visibility, expertise, uniqueness, and authenticity (Agnihotri et al., 2023; Lee & Eastin, 2021; Pöyry et al., 2019). Authenticity is influenced by a variety of factors, including ethical behavior, consciousness, subjectivity, personal processes, and social or relational contexts (Balaban & Szambolics, 2022).

Chen et al. (2023) state that followers are influenced by organic content originating from "ordinary people" who are thought to be intrinsically motivated and are more persuasive and influential when they are ordinary people interacting with society. Wellman et al. (2020) argue that the ethical framework of influencers is predicated on the principles of authenticity (being true to oneself) and credibility (being true to one's audience). Research has proven that the concept of authenticity is socially constructed and that influencers should share their social ties. Therefore, the concept of authenticity should be evaluated in terms of general social norms and values. In other words, their authenticity should be constructed in terms of their legitimacy.

According to Suchman (1995), legitimacy means that people in society view an organization's actions as good and acceptable. These actions must be consistent with the norms,

values, and beliefs of society. Since, consumers are the primary stakeholders that can influence a firm's competitive advantages, it is argued that consumers can give legitimacy to firms (Randrianasolo & Arnold, 2020; Zimmerman & Zeitz, 2002). Randrianasolo and Arnold (2020) define consumer legitimacy as the acceptance of a firm by consumers as part of their environment. The legitimacy factors are as follows: *cognitive legitimacy* is assessed in terms of whether the organization serves as an essential and integral part of the individual and society. *Moral legitimacy* refers to the belief that an organization is morally legitimate in accordance with its values and standards. *Pragmatic legitimacy* assesses the effectiveness of activities and social outcomes in enhancing or enhancing the social lives of various individuals (Randrianasolo & Arnold, 2020; Suchman, 1995). Bora Semiz and Paylan (2023) have disclosed the extent to which consumers perceive influencers as legitimate and the impact of perceived legitimacy factors on brand trust and brand attitude. The results showed that while all perceived legitimacy factors of influencers affect brand trust, moral and pragmatic legitimacy affect attitudes towards the brand. These results indicate that consumers evaluate influencers and the brands they advertise in terms of legitimacy (Bora Semiz & Paylan, 2023). Martínez-Falcó et al. (2024) conducted a study investigated the impact of influencer marketing activities on corporate social legitimacy and economic performance. Considering the existence of studies that reveal that the authenticity of influencers should be based on social ties, act like an ordinary individual in society, and behave in accordance with the ethical framework, It is critical to identify the legitimacy factors that influence the authenticity of the influencer.

Authenticity and Engagement

Consumer engagement has been defined as customers' interactions/relationships with brands (Zhang & Li, 2022), cognitive, emotional and behavioral activities (Hollebeek, 2011; Hughes et al., 2019), and a psychologically based willingness to engage with specific interaction objects (Hollebeek et al., 2016; Kim et al., 2021). Most research agrees that consumer engagement is an antecedent to actual behavior (Myers et al., 2022). Consumer engagement is a multidimensional concept that is designed to establish a comprehensive brand experience with consumers, encompassing elements such as attention, dialogue, interaction, emotions, sensory enjoyment, and immediate action from an inclusive perspective (Chen, Lin, et al., 2021; Gambetti et al., 2012).

The literature on consumer engagement emphasizes a number of potential factors that can impact consumer engagement (Hughes et al., 2019). Pradhan et al. (2023) show that the determinants of consumer engagement are more likely to be the source credibility model and parasocial interactions. Li and Feng (2022) examined nation branding and influencer authenticity and stated that influencer authenticity is an important factor in increasing influencer-follower engagement. Other studies have found that high levels of perceived authenticity increase influencers' engagement rates on Instagram (Valentini et al., 2018) and that increased follower engagement is positively correlated with perceived authenticity and attractiveness (Miguel et al., 2022; Pöyry et al., 2019). According to Walsh et al. (2024), when a brand's relationship with influencers is supported through sponsorship, the influencers are perceived as less authentic by consumers, which damages their authenticity perception and decreases consumer interactions with the brand. Additionally, Eigenraam et al. (2021) show that consumers' perceptions of the authenticity of digital engagement initiatives are related to their ongoing customer engagement with the brand.

Consumer Engagement and Purchase Behavior

Past studies, such as Breves et al. (2021) and Trivedi and Sama (2020), show that influencer mechanisms such as source-credibility and sharing experiences (Audrezet et al., 2020) affect purchase intentions. Existing studies have shown that consumer engagement contributes to competitive advantage and improved economic performance (Wang & Huang, 2023). The findings show that consumer engagement significantly affects purchase behavior and brand loyalty (Prentice et al., 2019). Wang and Huang (2023) demonstrate that community-purchasing behavior is influenced by two distinct forms of consumer engagement: content participation and creation. Despite the evidence indicating a correlation between consumer engagement and purchase behavior, there is currently no additional evidence to support the relationship between consumer engagement with influencers and purchase behavior.

Mediating Role of Authenticity and Consumer Engagement

Being authentic is a desirable quality for an influencer (Lee & Eastin, 2021), so people are more likely to respond to influencers' social media performance who is authentic (Nah, 2022). Perceived authenticity significantly influences consumer engagement with influencer messages on social media. For example, when a product's information is promoted through a non-celebrity influencer's regular appearance (Casaló et al., 2020; Ren et al., 2023), consumers are more inclined to embrace the message because they perceive it as more genuine (Bi & Zhang, 2023; Lou & Yuan, 2019). An influencer-consumer relationship developed in this way leads to a positive attitude towards the product that was recommended and the subsequent increase in purchase intentions (Zhang et al., 2023). Studies have found that Instagram models perceived as authentic in the context of visual authenticity lead to increased purchase intentions (Shoenberger & Kim, 2023; Shoenberger et al., 2020). Moreover, in support of and , when consumers perceive influencers as unique and consistent, the extent to which their authenticity is perceived increases (Zniva et al., 2023). Here, we provide supplementary context to identify which of the influencer's perceived authenticity factors mediate the relationship between the influencer's perceived legitimacy and the consumer's engagement.

Studies have shown that engagement with branded content also mediates the relationship between parasocial identity, trust, and attitudes towards this type of content (Chen, Lin, et al., 2021). In addition, Dankwa (2021) demonstrated that the relationship between informativeness (complete mediation) and advertising creativity (partial mediation) in social media advertising and consumer decision-making is influenced by consumer engagement.

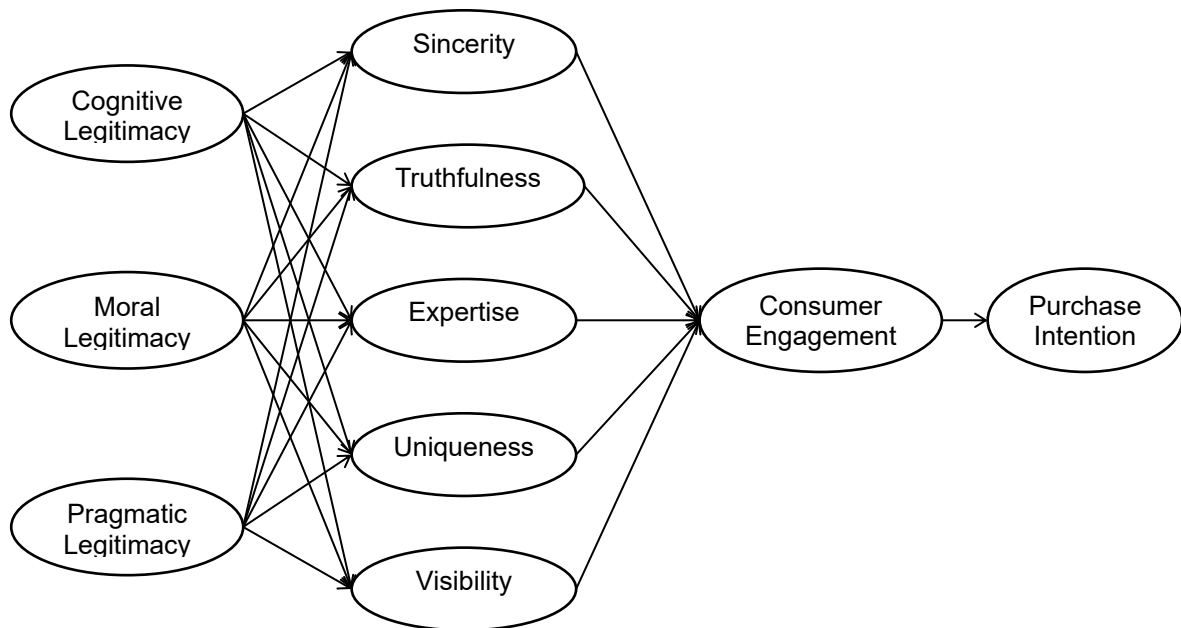
Methodology

Research Model

As shown in Figure 1, our research model is to investigate the relationships between perceived legitimacy of influencers and influencers' authenticity factors. Beside this aim we also try to make it clear that how this relationship reflects to purchase intention and consumer engagement.

Figure 1

Proposed Research Model



Note. This figure was created by authors via Microsoft Word

Hypothesis

H1a-e: Perceived cognitive legitimacy affects authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, e-visibility).

H2a-e: Perceived moral legitimacy affects authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, e-visibility).

H3a-e: Perceived pragmatic legitimacy affects authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, e-visibility).

H4a-e: Influencers' authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, e-visibility) affect consumer engagement.

H5: Consumer engagement affects purchase intentions.

H6a-e: Influencers' authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, and e-visibility) mediate the relationship between consumer engagement and perceived cognitive legitimacy.

H7a-e: Influencers' authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, and e-visibility) mediate the relationship between consumer engagement and perceived moral legitimacy.

H8a-e: Influencers' authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, and e-visibility) mediate the relationship between consumer engagement and perceived pragmatic legitimacy.

H9a-e: Consumer engagement mediates the relationship between influencers' authenticity attributes (a-sincerity, b-truthfulness, c-expertise, d-uniqueness, and e-visibility) and purchase intention.

Sampling and Data Collection Procedure

Data were collected in 2024 from a sample of 402 individuals, predominantly those aged 18 years or older, residing in Turkey, and possessing social media accounts to test the hypotheses. The sample was selected through convenience sampling. Through Google Forms, data were obtained through a Turkish-language questionnaire. Considering budgetary and time constraints, the convenience sampling method was implemented, despite certain constraints regarding the generalizability of the results. Consequently, analyses were performed on data from 402 participants. The Ethics Committee of the İzmir Bakırçay University has granted permission for the use of a convenience sampling method in this study, as evidenced by the decision dated 08.11.2023 and document number 1287.

Measures

The influencers' perceived legitimacy scale was derived from (Randrianasolo and Arnold (2020) and Bora Semiz and Paylan (2023). The scale has three dimensions: cognitive, ethical, and pragmatic legitimacy, and consists of 12 statements. Authenticity factors of influencers were adapted from Lee and Eastin (2021) and Agnihotri et al. (2023) and measured with a total of 18 items. Consumer engagement and purchase intention were adapted from Chen, Lin, et al. (2021). Consumer engagement was measured using five items, and purchase intention with 3 items, and all variables were assessed using a 5-point Likert-type scale. In addition, the survey included six questions on social media use and influencer follow-up and six demographic questions.

Common Method Bias

An exploratory factor analysis was conducted to assess common method bias in PLS-SEM studies, utilizing Harman's single factor (Fuller et al., 2016; Jordan & Troth, 2020). To prevent common method bias, the explained variance values should not exceed 0.5 and a particular factor should not be greater. The factor score was 0.48 when all variables were aggregated in a single factor, as indicated by the test. It can be concluded that there is no common method bias, as the value is not greater than 0.5 (Kock, 2021).

Findings

Descriptive Statistics

The demographic characteristics of the participants are summarized in Table 1. Of the participants, 73.9% were women. Participants born between 2000 and 2005 constituted 57.7% of the sample in terms of age. The study included 31.6% of undergraduates and 28.4% of secondary school graduates in terms of their educational background.

Table 1*Demographic Characteristics*

Gender	f	%	Education Level	f	%
Female	297	73.9	Primary School	3	0.7
Male	105	26.1	High School	114	28.4
Age	f	%	Two-year Degree	100	24.9
1965-1979	8	2.0	Undergraduate	127	31.6
1980-1999	162	40.3	Postgraduate	58	14.4
2000-2005	232	57.7	Occupation	f	%
Marital Status	f	%	Officer	45	11.2
Married	106	26.4	Craft/Tradesman	7	1.7
Single	296	73.6	Self-employment	22	5.5
Income Level*	f	%	Student	211	52.5
11500 TL and below	102	25.4	Housewife	15	3.7
11501-20000 TL	65	16.2	Unemployed	28	7.0
20001-30000 TL	73	18.2	Employee	54	13.4
30001-40000 TL	54	13.4	Others	20	4.9
40001-50000 TL	39	9.7			
50001 TL and above	69	17.2			

Note. Created by authors using Jamovi.org

Confirmatory Factor Analysis

Table 2 presents the results of the confirmatory factor analysis. The expression does not require removal from the analysis if the average variance extracted (AVE) and composite reliability (CR) values of the structure representing the expression exceed the threshold value, despite the fact that the factor load of the expression is less than 0.708 (Hair et al., 2014).

Table 2*Confirmatory Factor Analysis Results*

	Factor Loadings	Cro. Alpha	CR	AVE
Cognitive Legitimacy (CL)				
CL3. [...is a phenomenon that has no alternative for the community that follows him/her.]	0,61	0,803	0,869	0,621
CL2. [... is a vital member of the community that follows him/her]	0,797			
CL1. [... is a complementary (permanent) member of the community that follows him/her]	0,877			
CL4. [... represents the community of followers of which I am a member.]	0,843			
Moral Legitimacy (ML)				
ML4. [...is knowledgeable.]	0,926	0,963	0,964	0,901
ML1. [... is honest.]	0,954			
ML3. [...is respected.]	0,962			
ML2. [...is reliable.]	0,954			
Pragmatic Legitimacy (PL)				

PL1. [... in general, his/her posts about products are useful for me.]	0,882	0,914	0,914	0,795
PL2. [... in general, his/her posts about products are suitable for my lifestyle.]	0,905			
PL4. [... his/her posts about products in general reflect the practical values of his followers in daily life.]	0,872			
PL3. [... in general, his/her product-related posts are in line with the lifestyle of his followers.]	0,907			
Sincerity (SIN)				
SIN4. [... is realistic.]	0,919	0,956	0,957	0,885
SIN2. [... is kind.]	0,949			
SIN1. [... is gentle.]	0,943			
SIN3. [... is sincere.]	0,951			
Truthfulness (TRT)				
TRT3. [... introduces products that they will actually use/use.]	0,943	0,899	0,913	0,833
TRT1. [... provides meaningful/non-misleading information about products, although it advertises in its posts.]	0,852			
TRT2. [... makes very honest comments about the brands he shares.]	0,94			
Expertise (EXP)				
EXP1. [... is skilled in his/her field.]	0,973	0,958	0,962	0,923
EXP2. [... is knowledgeable in its field.]	0,971			
EXP3. [...has a natural talent in its field.]	0,939			
Uniqueness (UNQ)				
UNQ1.[... is unique.]	0,832	0,861	0,873	0,783
UNQ2. [... has a different character.]	0,916			
UNQ3. [... contents are not a copy of someone else's.]	0,904			
Visibility (VSB)				
VSB2. [... talks about the real issues going on in his/her life.]	0,934	0,911	0,946	0,789
VSB1. [... shares not only the good things in his/her life but also the negative things he/she encounters.]	0,922			
VSB3. [... talks about his own shortcomings and does not hesitate to publicize them.]	0,926			
VSB4. [... publicly discloses many things about his private life.]	0,758			
Consumer Engagement (ENG)				
ENG3. [... I share posts related to their posts.]	0,559	0,799	0,845	0,523
ENG4. [...'like' their posts.]	0,857			
ENG5. [...I recommend their posts about the brand.]	0,77			
ENG2. [... I comment on their posts.]	0,582			
ENG1. [... I watch/read the posts.]	0,798			
Purchase Intention (PI)				
PI3. [I will probably buy a product or products recommended by the influencer I follow.]	0,939	0,923	0,923	0,867
PI2. [I intend to buy a product or products recommended by the influencer I follow.]	0,943			
PI1. [I will definitely buy the product or products recommended by the influencer I follow in the near future.]	0,91			

Note. Created by authors using SmartPLS and Jamovi.org

The factor load of the statement “[... is down to earth)]” in which sincerity dimension was below 0.708. The CR value of the structure representing this expression was below 0.7,

and the AVE was below 0.5; therefore, the item was excluded from the analysis. We can infer that the scales' convergent validity was satisfactory since the AVE and CR values of the other structures exceeded the threshold values (Table 2). The reliability or internal consistency of the scales was ensured by the Cronbach's alpha coefficients for the dimensions and the convergent validity coefficients (CR) exceeding the criterion value of 0.7 (Hair et al., 2014).

Table 3
Fornell & Larcker's Discriminant Validity Results

	CL	ENG	EXP	ML	PI	PL	SIN	TRT	UNQ	VSB
CL	0.788									
ENG	0.409	0.723								
EXP	0.411	0.460	0.961							
ML	0.582	0.484	0.707	0.949						
PI	0.373	0.680	0.315	0.349	0.931					
PL	0.520	0.475	0.642	0.720	0.384	0.891				
SIN	0.421	0.476	0.855	0.744	0.355	0.673	0.941			
TRT	0.418	0.502	0.778	0.673	0.431	0.631	0.833	0.913		
UNQ	0.452	0.468	0.790	0.652	0.368	0.568	0.750	0.735	0.885	
VSB	0.402	0.447	0.791	0.606	0.387	0.603	0.774	0.788	0.782	0.888

Note. Created by authors using SmartPLS

Convergent validity consists of three stages: Fornell and Larcker criteria, cross loading and factor loadings, and Heterotrait-Monotrait Ratio (HTMT) criteria. The Fornell and Larcker criteria is the first stage of convergent validity, and its values was shown that Table 3. The square roots of the AVE values are represented by the dark and italic numbers, which are diagonally displayed in the table. The other values represent the correlation coefficients of the variables. According to Fornell & Larcker (1981), the correlation coefficients of the variables should not exceed the average variance extracted (AVE) value that represents the same structure. Therefore, it can be concluded that the Fornell-Larcker criterion was satisfied considering the values in Table 3.

Table 4
Factor Loadings and Cross Loadings

	CL	ENG	EXP	ML	PI	PL	SIN	TRT	UNQ	VSB
CL1	0.877	0.405	0.427	0.559	0.336	0.485	0.449	0.414	0.424	0.358
CL2	0.797	0.239	0.260	0.387	0.260	0.342	0.236	0.259	0.302	0.263
CL3	0.610	0.245	0.105	0.262	0.221	0.170	0.091	0.146	0.247	0.181
CL4	0.843	0.357	0.378	0.528	0.331	0.515	0.402	0.394	0.401	0.398
ENG1	0.375	0.798	0.522	0.507	0.487	0.478	0.551	0.495	0.456	0.429
ENG2	0.226	0.582	-0.005	0.123	0.425	0.119	-0.008	0.081	0.128	0.083
ENG3	0.206	0.559	-0.008	0.092	0.458	0.098	-0.008	0.126	0.163	0.126
ENG4	0.320	0.857	0.468	0.460	0.500	0.418	0.486	0.466	0.460	0.440
ENG5	0.306	0.770	0.275	0.296	0.655	0.354	0.272	0.364	0.276	0.298

EXP1	0.396	0.453	0.973	0.692	0.310	0.625	0.838	0.768	0.758	0.777
EXP2	0.421	0.443	0.971	0.710	0.307	0.646	0.842	0.757	0.752	0.763
EXP3	0.365	0.429	0.939	0.632	0.291	0.577	0.782	0.717	0.771	0.741
ML1	0.561	0.443	0.652	0.954	0.323	0.663	0.697	0.639	0.626	0.567
ML2	0.559	0.471	0.680	0.962	0.369	0.680	0.720	0.664	0.627	0.589
ML3	0.561	0.454	0.655	0.954	0.329	0.683	0.691	0.611	0.612	0.552
ML4	0.530	0.469	0.695	0.926	0.302	0.705	0.716	0.640	0.609	0.591
PI1	0.313	0.640	0.244	0.279	0.910	0.326	0.292	0.378	0.314	0.343
PI2	0.378	0.629	0.331	0.360	0.943	0.391	0.364	0.425	0.369	0.377
PI3	0.350	0.629	0.305	0.336	0.939	0.354	0.336	0.401	0.346	0.361
PL1	0.441	0.456	0.593	0.684	0.402	0.882	0.621	0.597	0.499	0.533
PL2	0.471	0.422	0.554	0.657	0.384	0.905	0.592	0.559	0.495	0.524
PL3	0.478	0.409	0.587	0.634	0.303	0.907	0.617	0.548	0.519	0.534
PL4	0.466	0.405	0.554	0.590	0.277	0.872	0.567	0.545	0.514	0.558
SIN1	0.367	0.453	0.771	0.661	0.336	0.612	0.943	0.742	0.641	0.679
SIN2	0.371	0.445	0.774	0.670	0.324	0.617	0.949	0.749	0.638	0.682
SIN3	0.418	0.435	0.835	0.723	0.319	0.653	0.951	0.807	0.762	0.773
SIN4	0.423	0.458	0.830	0.739	0.355	0.646	0.919	0.830	0.772	0.772
TRT1	0.337	0.429	0.627	0.502	0.357	0.509	0.681	0.852	0.558	0.633
TRT2	0.391	0.476	0.717	0.638	0.414	0.576	0.774	0.940	0.708	0.750
TRT3	0.410	0.468	0.776	0.687	0.407	0.634	0.816	0.943	0.730	0.765
UNQ1	0.411	0.347	0.553	0.491	0.268	0.406	0.519	0.549	0.832	0.559
UNQ2	0.407	0.424	0.728	0.570	0.360	0.542	0.686	0.669	0.916	0.756
UNQ3	0.387	0.462	0.793	0.655	0.342	0.546	0.762	0.717	0.904	0.742
VSBI	0.429	0.442	0.773	0.624	0.350	0.605	0.770	0.771	0.754	0.922
VSBI	0.395	0.428	0.760	0.586	0.386	0.584	0.734	0.741	0.717	0.934
VSBI	0.340	0.414	0.740	0.565	0.349	0.543	0.723	0.731	0.726	0.926
VSBI	0.218	0.265	0.470	0.295	0.277	0.352	0.455	0.506	0.554	0.758

Note. Created by authors using SmartPLS

The second stage of discriminant validity was factor loadings and cross-loadings. It is expected that there will be a difference of at least 0.1 between the factor loadings and cross-loadings of each variable. In this case, the items do not overlap (Yıldız, 2020). In Table 4, the bold values represent the factor loadings of the variables. The other values are cross-loadings. When the table is examined, it is seen that there are differences greater than 0.1 between the

cross-loadings and factor loadings; therefore, there are no overlapping items. Discriminant validity was also met according to the factor loadings and cross-loadings.

Table 5

Heterotrait-Monotrait Ratio (HTMT) Results for Discriminant Validity

	CL	ENG	EXP	ML	PI	PL	SIN	TRT	UNQ	VSB
CL										
ENG	0.474									
EXP	0.420	0.396								
ML	0.622	0.452	0.734							
PI	0.421	0.790	0.335	0.370						
PL	0.557	0.461	0.685	0.766	0.418					
SIN	0.422	0.422	0.890	0.773	0.377	0.718				
TRT	0.447	0.485	0.834	0.717	0.473	0.693	0.893			
UNQ	0.525	0.481	0.861	0.710	0.410	0.635	0.814	0.823		
VSB	0.431	0.430	0.826	0.622	0.419	0.643	0.807	0.852	0.868	

Note. Created by authors using SmartPLS

Discriminant validity was further assessed using the HTMT criterion (Table 5). All HTMT values remained below the liberal 0.90 threshold (Franke & Sarstedt, 2019), supporting discriminant validity at this level. It must, however, be acknowledged that several pairs among the authenticity dimensions approach this threshold and exceed the more conservative 0.85 criterion recommended by Henseler et al. (2015)—most notably sincerity–truthfulness (0.893), sincerity–expertise (0.890), uniqueness–expertise (0.861), uniqueness–visibility (0.868), and truthfulness–visibility (0.852). These elevated values indicate a degree of empirical overlap among the closely related authenticity sub-dimensions; this issue is revisited in the discussion as a measurement limitation.

Testing the Research Model

The research model (Figure 1) and the hypotheses were subjected to PLS-SEM testing. Firstly, the research model is tested and secondly, direct and indirect effect analyses will be conducted and results shown in Table 6.

Table 6

Research Model Results

Hypothesis	Path Analysis	VIF	Q ²	f ²	R ²
H_{1a}	CL -> SIN	1.564		0.007	
H_{2a}	ML -> SIN	2.364	0.588	0.337	0.596
H_{3a}	PL -> SIN	2.143		0.103	
H_{1b}	CL -> TRT	1.564		0.000	
H_{2b}	ML -> TRT	2.364	0.487	0.176	0.498
H_{3b}	PL -> TRT	2.143		0.087	
H_{1c}	CL -> EXP	1.564		0.003	
H_{2c}	ML -> EXP	2.364	0.529	0.254	0.538
H_{3c}	PL -> EXP	2.143		0.083	
H_{1d}	CL -> UNQ	1.564		0.008	
H_{2d}	ML -> UNQ	2.364	0.436	0.168	0.449

H_{3d}	PL -> UNQ	2.143		0.030	
H_{1e}	CL -> VSB	1.564		0.001	
H_{2e}	ML -> VSB	2.364	0.411	0.088	0.425
H_{3e}	PL -> VSB	2.143		0.094	
H_{4a}	SIN->ENG	5.117		0.002	
H_{4b}	TRT->ENG	3.999		0.026	
H_{4c}	EXP -> ENG	4.845	0.201	0.000	0.277
H_{4d}	UNQ -> ENG	3.320		0.013	
H_{4e}	VSB -> ENG	3.778		0.000	
H₅	ENG -> PI	1.000	0.129	0.860	0.462

Note. Created by authors using SmartPLS

Hair et al. (2011) mentioned that the rate at which the independent variable explains the dependent variable is denoted by the R^2 value. A value between 0.25-0.49 is considered weak, 0.50-0.74 is considered medium, and 0.75 and above indicates a high level of explanatory power. In addition, the SmartPLS program suggests that a calculated R^2 as 10% may be adequate. In Table 6, when the R^2 values of the legitimacy factors (independent variables) are examined, the independent variables explain the influencers' authenticity attributes (sincerity, truthfulness, expertise, uniqueness, and visibility) by approximately 60%, 50%, 54%, 45%, and 43%, respectively. Moreover, the R^2 values for customer engagement and the R^2 value of purchase intention were 28% and 46%, respectively. In this case, it can be said that legitimacy factors explain some influencers' authenticity attributes at a weak level and others at a moderate level. In addition, the influencers' authenticity attributes weakly explained customer engagement, and customer engagement weakly explained purchase intention.

Another value in Table 6 is the Variance Inflation Factor (VIF), which indicates whether there is a multicollinearity issue. As stated by Kock (2015), when factor-based PLS-SEM algorithms are implemented, the VIF threshold utilized in conventional method bias tests should perhaps be slightly elevated from 3.3. According to Hair et al. (2009) and Kock and Lynn (2012) the VIF value may be below 5. Table 6 shows that all variables (except one) are below five (5). One variable is slightly greater than five (5); however, according to O'Brien (2007) and Ringle et al. (2015), it may be below ten (10). Therefore, Table 6 demonstrates that the VIF values are not indicative of a multicollinearity issue by the inner model variables.

The research model's Q^2 effect values were determined using blindfolding analysis, also known as PLSpredict analysis. When the Q^2 value exceeds zero, it indicates that the model is capable of predicting endogenous variables. (Hair et al., 2014). As a result of the PLSpredict analysis, Table 6 shows Q^2 value for the customer engagement (ENG) was 0.201, expertise (EXP) was 0.529, purchase intention (PI) was 0.129, sincerity (SIN) was 0.588, truthfulness (TRT) was 0.487, uniqueness (UNQ) was 0.436 and the visibility (VSB) was 0.411. Finally, the endogenous constructs' Q^2 values were greater than zero, thereby confirming predictive relevance.

The effect size values (f^2) are an additional indicator that necessitates assessment and are listed in Table 6. Sarstedt et al. (2022) asserted that f^2 values below 0.02 are insignificant. Accordingly, it is possible to say that the cognitive legitimacy influence on influencers' authenticity attributes ($f_{SIN}^2=0.007$, $f_{TRT}^2=0.000$, $f_{EXP}^2=0.003$, $f_{UNQ}^2=0.008$, $f_{VSB}^2=0.001$) is insignificant. Additionally, the effect sizes of sincerity, expertise, uniqueness, and visibility ($f_{SIN}^2=0.002$, $f_{EXP}^2=0.000$, $f_{UNQ}^2=0.013$, $f_{VSB}^2=0.000$) on customer engagement are insignificant. The low effect size coefficients were due to indirect effects. As stated by Cohen (1992), for effect values of 0.02 and above, the magnitude is low, 0.15 and above is medium,

and 0.35 and above is high. The power of moral legitimacy to affect sincerity and expertise ($f_{\text{SIN}}^2=0.337$ and $f_{\text{EXP}}^2=0.254$) was at a medium level. In addition, customer engagement ($f_{\text{PI}}^2=0.860$) had a strong influence on purchase intention. The other independent variables affecting the dependent variables were at a low level.

Table 7

Direct Effects

Hypothesis	Path Analysis	Std. Beta	Std. Dev.	t	p*	Results
H1a	CL -> SIN	-0.065	0.040	1.609	0.108	Rejected
H1b	CL -> TRT	-0.008	0.048	0.165	0.869	Rejected
H1c	CL -> EXP	-0.045	0.046	0.989	0.323	Rejected
H1d	CL -> UNQ	0.080	0.053	1.517	0.129	Rejected
H1e	CL -> VSB	0.023	0.052	0.435	0.664	Rejected
H2a	ML -> SIN	0.567	0.054	10.604	0.000	Accepted
H2b	ML -> TRT	0.458	0.063	7.229	0.000	Accepted
H2c	ML -> EXP	0.527	0.057	9.222	0.000	Accepted
H2d	ML -> UNQ	0.469	0.069	6.789	0.000	Accepted
H2e	ML -> VSB	0.345	0.064	5.368	0.000	Accepted
H3a	PL -> SIN	0.298	0.058	5.154	0.000	Accepted
H3b	PL -> TRT	0.306	0.069	4.421	0.000	Accepted
H3c	PL -> EXP	0.286	0.063	4.572	0.000	Accepted
H3d	PL -> UNQ	0.189	0.074	2.563	0.010	Accepted
H3e	PL -> VSB	0.341	0.066	5.143	0.000	Accepted
H4a	SIN->ENG	-0.003	0.102	0.025	0.980	Rejected
H4b	TRT->ENG	0.308	0.083	3.707	0.000	Accepted
H4c	EXP -> ENG	-0.033	0.095	0.351	0.725	Rejected
H4d	UNQ -> ENG	0.210	0.077	2.724	0.006	Accepted
H4e	VSB -> ENG	0.028	0.081	0.344	0.731	Rejected
H5	ENG -> PI	0.693	0.028	24.499	0.000	Accepted

*p<0.05

Note. Created by authors using SmartPLS

According to Table 7, moral and pragmatic legitimacy significantly affect influencers' authenticity attributes (sincerity, truthfulness, expertise, uniqueness, and visibility). Thus, H2a-e and H3a-e are supported. Additionally, cognitive legitimacy does not affect influencers' authenticity attributes (sincerity, truthfulness, expertise, uniqueness, and visibility); thus, H1a-e are not supported. Some influencers' authenticity attributes (truthfulness and uniqueness) affect customer engagement, but the other influencers' authenticity attributes (sincerity, expertise, and visibility) do not affect customer engagement. Thus, H4b and H4d are supported, but H4a, H4c, and H4e are not. Customer engagement significantly influences purchase intention. So, H5 is supported.

Table 8

Indirect Effects

Hypothesis	Path Analysis	Std. Beta	Std. Dev.	t	p*	Results
H _{6a}	CL -> SIN -> ENG	0.000	0.008	0.022	0.982	Rejected
H _{6b}	CL -> TRT -> ENG	-0.002	0.015	0.159	0.874	Rejected
H _{6c}	CL -> EXP -> ENG	0.002	0.006	0.244	0.807	Rejected
H _{6d}	CL -> UNQ -> ENG	0.017	0.014	1.225	0.221	Rejected
H _{6e}	CL -> VSB -> ENG	0.001	0.005	0.129	0.898	Rejected
H _{7a}	ML -> SIN -> ENG	-0.001	0.058	0.025	0.980	Rejected
H _{7b}	ML -> TRT -> ENG	0.141	0.042	3.333	0.001	Accepted
H _{7c}	ML -> EXP -> ENG	-0.018	0.051	0.347	0.729	Rejected
H _{7d}	ML -> UNQ -> ENG	0.098	0.040	2.487	0.013	Accepted
H _{7e}	-ML -> VSB -> ENG	0.010	0.029	0.336	0.737	Rejected
H _{8a}	PL -> SIN -> ENG	-0.001	0.031	0.024	0.980	Rejected
H _{8b}	PL -> TRT -> ENG	0.094	0.035	2.699	0.007	Accepted
H _{8c}	PL -> EXP -> ENG	-0.010	0.028	0.346	0.729	Rejected
H _{8d}	PL -> UNQ -> ENG	0.040	0.023	1.746	0.081	Rejected
H _{8e}	PL -> VSB -> ENG	0.009	0.028	0.338	0.736	Rejected
H _{9a}	SIN -> ENG -> PI	-0.002	0.071	0.025	0.980	Rejected
H _{9b}	TRT -> ENG -> PI	0.213	0.060	3.581	0.000	Accepted
H _{9c}	EXP -> ENG -> PI	-0.023	0.066	0.351	0.726	Rejected
H _{9d}	UNQ -> ENG -> PI	0.145	0.054	2.691	0.007	Accepted
H _{9e}	VSB -> ENG -> PI	0.019	0.056	0.343	0.732	Rejected

*p<0.05

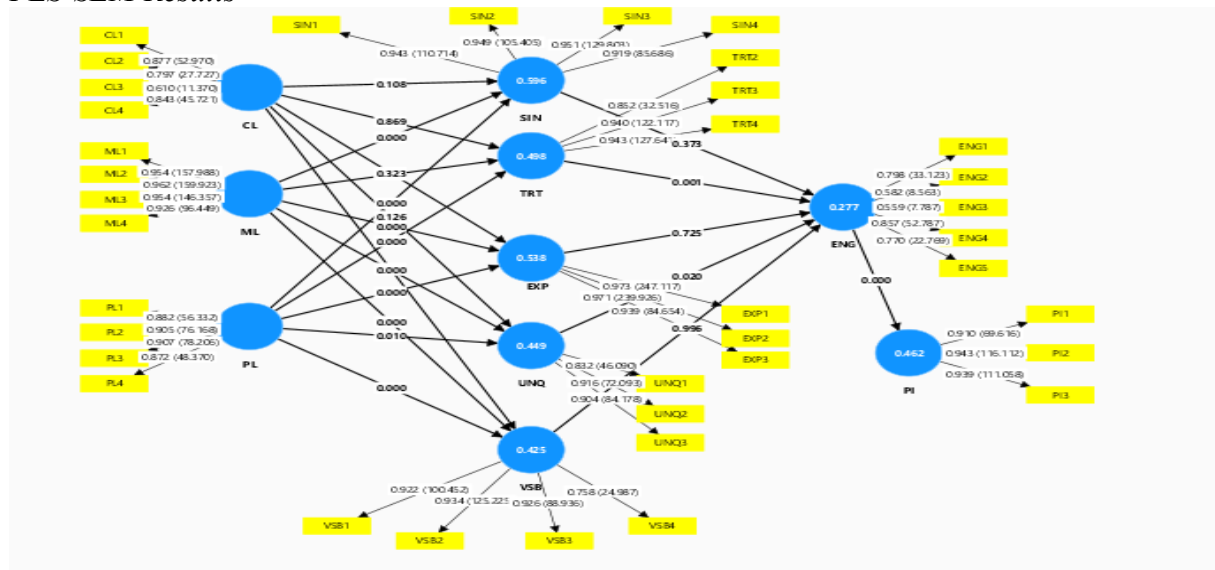
Note. Created by authors using SmartPLS

As stated by Zhao et al. (2010), if the indirect effects between variables in the mediating effect analysis are significant, the mediating effect can be discussed. The path analysis in Table 8 illustrates the indirect effects. All of the dimensions did not have statistically significant indirect effects. In this case, the truthfulness and uniqueness of influencers partially mediate the relationship between moral legitimacy and consumer engagement as indicated by Zhao et al. (2010). Moreover, truthfulness partially integrates the mediation of the relationship between pragmatic legitimacy and customer engagement. Customer engagement partially mediates the relationship between truthfulness and uniqueness in purchase intention. Thus, H_{7b}, H_{7d}, H_{8b}, H_{9b}, and H_{9d} were supported for the partial mediating effect.

Figure 2 shows that the regression coefficients were between 0.610-0.877 for CL, 0.926-0.962 for ML, and 0.872-0.907 for PL. This figure shows that the regression coefficients of influencers' authenticity attributes are between 0.919-0.951 for sincerity; are between 0.852-0.943 for truthfulness, between 0.939-0.973 for expertise; are between 0.832-0.916 for uniqueness, and between 0.758-0.934 for visibility. In addition, the regression coefficients are between 0.559-0.857 for customer engagement and between 0.910-0.943 for purchase intention.

Figure 2

PLS-SEM Results



Note. Figure 2 was created via SmartPLS, where Arial font customization is not supported.

Discussion and Conclusion

Studies on influencer marketing have recognized the importance of authenticity for social media influencers. Consumers increasingly demand authenticity from products and brands, and authenticity is known to improve message receptivity and increase perceived quality and purchase intentions. According to Eigenraam et al. (2021), informative initiatives are perceived as equally authentic, regardless of the brand type. The fact that the informative initiative is seen as authentic from the perspective of the follower can be considered to explain the significant effect of the influencer's truthfulness on loyalty. According to Visentin et al. (2019), the accuracy of an influencer's content significantly influences consumer behavioral intentions and engagement. When followers perceive the content to be accurate and consistent with their values, they are more inclined to interact with the messages and brand endorsements of an influencer. Wang and Huang (2023) found that expertise and knowledge power significantly increased consumer engagement, whereas uniqueness and sincerity had lesser direct effects. argued that influencers' expertise and uniqueness positively influence consumer engagement; however, the impact of sincerity and authenticity on engagement outcomes has not been directly tested. Kumar et al. (2022) found that visibility and friendliness significantly influence consumer engagement; however, expertise and uniqueness do not have a direct impact. (Shen, 2021) found that micro-influencers' sincerity and uniqueness positively influenced consumer engagement, whereas their expertise and visibility did not. Lee & Eastin (2021) found that sincerity is the strongest factor determining consumer attitudes and purchase intentions. In our study, sincerity did not affect engagement. In terms of visibility and truthfulness, our study is similar to Lee and Eastin (2021) in that truthfulness significantly affects engagement, whereas visibility does not. Both studies share the common conclusion that the uniqueness of the influencer has an impact on engagement. In general, we conclude that different authenticity attributes are important for different consumer groups due to reasons such as sample, country, brand collaborating with the influencer, and which category the influencer is in. The results of our study are consistent with those of Brodie et al. (2013) and Pradhan et

al. (2023), indicating that interaction leads to outcomes such as consumer loyalty, satisfaction, emotional attachment, trust, and commitment.

When the present findings are compared with prior evidence, three patterns warrant closer examination. First, the lack of a significant effect of cognitive legitimacy on any authenticity dimension diverges from source-credibility research, where expertise- and knowledge-based (i.e., cognitive) cues are reported as primary drivers of influencer evaluation (e.g., Wang & Huang, 2023). A plausible explanation is that, unlike discrete credibility judgements, cognitive legitimacy requires effortful, information-intensive processing that followers tend to bypass in favour of more accessible moral and pragmatic heuristics (Ryu & Jun, 2023).

Second, our finding that only honesty and uniqueness increase consumer engagement aligns with Shen (2021), who also reported significant effects of sincerity and uniqueness for micro-influencers. However, it contrasts with Kumar et al. (2022), where visibility—rather than uniqueness—was decisive, and with Wang and Huang (2023), who emphasized expertise. This divergence is consistent with our interpretation that the salient authenticity attribute depends on sample composition, cultural context, and influencer category.

Third, the strong engagement–purchase intention path ($\beta = 0.693$) is consistent in both direction and magnitude with Prentice et al. (2019) and Brodie et al. (2013), reinforcing the positioning of engagement as a proximal antecedent of purchase behavior rather than a parallel outcome. Taken together, these comparisons indicate that the contribution of the present model lies less in any single path than in specifying the normative (legitimacy-based) conditions under which particular authenticity attributes become behaviorally consequential.

Results related to mediation effects, Chen, Lin, et al. (2021) found that consumer interaction was associated with parasocial identification, attitudes towards the brand, and trust in the brand. Kim et al. (2021) found that consumer interaction was associated with brand loyalty and parasocial interaction. Nah (2022) found that perceived authenticity was associated with self-disclosure and message acceptance, Ren et al. (2023) between perceived authenticity, influencer types and purchase intention, and, Shoenberger and Kim (2023) between perceived authenticity, homophily type and purchase intention. According to our results, truthfulness has a significant mediating effect between moral and pragmatic legitimacy and consumer interaction, whereas uniqueness has a significant mediating effect only between moral legitimacy and consumer interaction. According to the other mediation effect results, consumer engagement seems to have a mediating effect between the authenticity criteria of truthfulness and uniqueness and purchase intention. In terms of causal relationships between variables and mediation analyses, companies should focus on truthfulness and uniqueness in terms of authenticity attributes and consider that these two attributes enable consumer engagement.

In terms of the relationship between authenticity factors and legitimacy and the overall model, the following evaluations can be made: Molleda (2010) argues that understanding authenticity is possible through insights from multiple disciplines, which can be achieved by developing approaches to complex social dynamics and segmented audiences, and that authenticity is influenced by organizational actions and stakeholder interactions. Arnesson (2022) revealed that emotional interactions with influencers create a perceived intimacy, which complicates the concept of authenticity, and followers feel a sense of betrayal when the influencer's behavior contradicts the values that followers perceive. Wellman et al. (2020) state that there is no official code of ethics for influencers and Miguel et al. (2022) mentions that some artificial interactions and manipulations raise ethical concerns about "interaction

authenticity". Beverland and Farrelly (2010) argue that authenticity in consumption is co-constructed through interactions with consumer identity and broader cultural narratives. According to Beverland and Farrelly (2010), consumers seek authentic experiences to achieve personal mastery (control), develop relationships with others and communities (connections), or conform to moral standards (virtue).

This study contributes to this global body of evidence by demonstrating that the normative dimension of influencer evaluation operates through the lens of legitimacy. Consumers attribute genuine credibility to an influencer after evaluating whether their behavior is consistent with broader social values (moral legitimacy) and whether their content provides a practical, personally relevant benefit (pragmatic legitimacy). This finding aligns with the meta-analytic observation that social identity congruence (the perceived congruence between an influencer's values and a follower's values) is a particularly strong moderator of engagement outcomes, especially in collectivist and value-sensitive cultural environments (Pan et al., 2025). Within this sample, respondents' reliance on moral and pragmatic legitimacy rather than purely cognitive legitimacy as the basis for authenticity evaluations may reflect cultural norms that prioritize relational trust and community-level appropriateness and could be investigated in other countries that share these cultural norms.

Ryu and Jun (2023) emphasize that when evaluating the legitimacy of an entity, consumers often act on heuristic cues because the information that must be possessed has cognitively demanding characteristics. Based on Marion (2006) definition of "legitimacy" as the acceptance of marketers' behaviors by society and "legitimization" as the justification of these behaviors to maintain their accepted status, we believe that it is possible for influencers to maintain their accepted status through their authenticity by basing their authenticity on a legitimate principle. This is because, as Beverland and Farrelly (2010) argue, socio-cultural norms play an important role in shaping consumers' standards of authenticity, which in turn influence their evaluations of brands and consumption practices.

In this study, based on the framework of the perceived legitimacy of influencers used by Bora Semiz and Paylan (2023), we attempted to identify which legitimacy factors affect authenticity criteria. In this way, both the authenticity criteria of influencers will be framed with perceived (moral, cognitive, pragmatic) legitimacy in terms of social norms and values, and brands and companies will be able to improve their collaboration with influencers by analyzing the legitimate factors consumers perceive in terms of influencer authenticity. Table 6 shows that the R^2 values of perceived legitimacy factors explaining authenticity criteria, authenticity criteria explaining customer loyalty, and customer loyalty explaining purchase intention are weak and moderate according to Hair et al. (2011). These results are similar to those of Bora Semiz and Paylan (2023) in terms of model contributes to the results of Wellman et al. (2020) in terms of the conclusion that influencers should rely on an ethical framework regarding the effect of authenticity on content design. We believe that the observation of the effect of pragmatic and moral legitimacy on authenticity factors, but not the effect of cognitive legitimacy, may be due to the phenomenon stated by Ryu and Jun (2023). In other words, consumers rely on heuristic signals to assess influencer authenticity. This approach might be necessary because their cognitive assessment of influencers' legitimacy must undergo a rigorous evaluative process. Moreover, the intimacy and emotional interaction between the influencer and their followers, which Arnesson (2022) notes, may also complicate or obscure the concept of authenticity and its cognitive (rational) the relationship between perceived legitimacy, brand trust, and attitude towards the brand. The fact that legitimacy factors show a certain effect value (Q^2) in explaining the factors related to the authenticity of the influencer shows that cognitive, pragmatic, and moral legitimacy factors can be used to provide a legitimate basis for the

authenticity factors of influencers. In addition, it can be said that the significance of the research basis for consumers' perceptions.

Theoretical Contributions

This study advances the influencer-marketing and consumer-behaviour literatures in four respects. First, to our knowledge, it is the first study to integrate Suchman's (1995) institutional legitimacy theory with the influencer-authenticity literature, thereby relocating influencer evaluation from the dominant source-credibility and parasocial-relationship paradigms to a normative, legitimacy-based account.

Second, by demonstrating that moral and pragmatic—rather than cognitive—legitimacy shape perceived authenticity, the study provides empirical support for the proposition that authenticity is not merely an individual trait but a socially negotiated perception anchored in shared norms (Chung et al., 2023; Wellman et al., 2020).

Third, it extends the influencer-specific legitimacy scale of Bora Semiz and Paylan (2023) previously linked only to brand trust and brand attitude—to the downstream constructs of authenticity, consumer engagement, and purchase intention, thereby articulating an integrated legitimacy–authenticity–engagement–intention chain that has not previously been modelled jointly. Fourth, by evidencing the primacy of moral and pragmatic legitimacy within a Turkish (collectivist, value-sensitive) setting, the study contributes culturally contextualised theory and specifies a boundary condition that invites cross-cultural replication (Pan et al., 2025).

Practical Implications

This research has numerous practical implications for firms that are contemplating a partnership with influencers. First, before collaborating with an influencer to promote a particular product, managers should seek their followers' perceptions of the influencer's legitimacy based on moral and pragmatic legitimacy. Testing these legitimacy factors through the integrity and uniqueness of the influencer is the best option for the influencer to collaborate with, given the research model.

Second, it shows that consumer engagement is also influenced by truthfulness and uniqueness. Executives should analyse a consumer's motivation to follow and engage with a particular influencer based on truthfulness and uniqueness and can better align their brand or product with the influencer based on these attributes. The fact that truthfulness and uniqueness have a mediating effect between moral and pragmatic legitimacy and consumer engagement, and that consumer engagement has a mediating effect between truthfulness and uniqueness and purchase intention, and that the research model yields significant results gives managers the opportunity to consider the research model.

Limitations and Future Research

There were several significant limitations to this investigation. Initially, the results' generalisability is restricted by the fact that the sample was selected using a non-probability sampling procedure. However, time and budget constraints and impossibilities seen in all research made it necessary to carry out this research in this way. In addition, because the data were obtained through convenience sampling, some demographic characteristics' concentrations limit the statistical representativeness of the sample for the broader population of social media users in Türkiye. Accordingly, the effects reported below should be interpreted as analytical rather than population-descriptive, and they should not be generalised to the

population without replication on a more demographically balanced and probability-based sample. Second, when measuring perceptions of legitimacy and authenticity, we did not set any limitations, such as brand, influencer category, or product category. We asked them to write down the names of the three influencers whose posts they followed the most at the beginning of the survey and to answer the other questions with these three influencers in mind. This may have led to a lack of a specific perception of legitimacy and authenticity in the respondents' minds when thinking about influencers in terms of authenticity and legitimacy factors. In this respect, preparing the model with a more solid and framed set (specific product, brand, influencer category, sponsored advertisement, etc.) of questions may provide managers and academics with different ideas and opportunities regarding the model's overall level of impact and significance. Third, a further limitation concerns measurement. Several authenticity sub-dimensions exhibited HTMT values above the conservative 0.85 threshold, and one dimension (sincerity) showed an inner-model VIF above the 5.0 reference value, signalling possible conceptual overlap and collinearity among closely related constructs. Subsequent studies should consider scale refinement or a second-order conceptualisation of influencer authenticity to strengthen discriminant validity.

Individuals desire consistent and precise self-assessments, and social comparison theory is one of the theoretical frameworks that facilitates this evaluation. Individuals approach influencers with a similar status to themselves with intimacy, while those they perceive as superior are approached with admiration, according to this theory (Kim et al., 2023). In this respect, we believe that testing the perceptions of the legitimacy of influencers in terms of social comparison theory will allow managers and academics to make interesting inferences.

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T.C
İZMİR BAKIRÇAY ÜNİVERSİTESİ
GİRİŞİMSSEL OLMAYAN KLİNİK ARAŞTIRMALARI ETİK KURULU
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Research Article

**International Soft Law and Safe Blood Transfusion Systems: WHO Standards
and National Implementation**

ASM Mahmudul Hasan^a

Abstract

Introduction: The article explores how international soft law has developed national blood transfusion safety systems by utilizing the normative frameworks of the World Health Organization (WHO). Although there is currently no binding treaty for blood safety in place globally, the WHO has developed a multi-layered governance pathway that creates norms through various forms of documentation, including: World Health Assembly (WHA) Resolutions; Strategic Action Plans; Technical Guidelines; and Benchmarking Mechanisms.

Method: Using legal doctrinal analysis, norm-diffusion theory, and regulatory-governance analysis, and drawing on comparative case studies of China, India, and Bangladesh, this article examines how non-binding WHO standards shape domestic blood legislation, institutional design, and regulatory practice.

Results or Findings: The study finds that there is a significant degree of normative convergence around 5 core principles including: (1) Voluntary and Non-remunerated Blood Donation; (2) Universal Testing for Infection; (3) Centralized Blood System Governance; (4) Hemovigilance; and (5) Quality Management Systems. However, due to issues such as structural inequality, fragmentation of institutions and limited resources, the implementation of these principles has been uneven.

Discussion or Conclusion: The study concludes by stating that the WHO utilizes its authority through an epistemic form of legitimacy, technical expertise, benchmarking and norm entrepreneurship and does not rely on coercion to enforce compliance. By framing blood governance as a hybrid model of transnational administrative regulation, this study advances the scholarship on global health law and regulatory governance and highlights the efficacy of soft law as a form of de facto regulation in highly technical environments.

Keywords: international soft law, global health governance, blood regulation, World Health Organization, voluntary blood donation

JEL Codes: K32, K33, K38

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Araştırma Makalesi

**Uluslararası Yumuşak Hukuk ve Güvenli Kan Transfüzyon Sistemleri: DSÖ
Standartları ve Ulusal Uygulama**

ASM Mahmudul Hasan^a

Öz

Giriş: Bu makale, uluslararası yumuşak hukukun, Dünya Sağlık Örgütü'nün (DSÖ) normatif çerçeveleri aracılığıyla ulusal kan transfüzyonu güvenliği sistemlerinin gelişimine nasıl katkıda bulunduğunu incelemektedir. Küresel ölçekte kan güvenliğine ilişkin bağlayıcı bir uluslararası antlaşma bulunmamasıyla birlikte, DSÖ; Dünya Sağlık Asamblesi (WHA) kararları, stratejik eylem planları, teknik kılavuzlar ve karşılaştırmalı değerlendirme (benchmarking) mekanizmaları gibi çeşitli belge türleri aracılığıyla normlar üreten çok katmanlı bir yönetim mekanizması geliştirmiştir.

Yöntem: Hukuki doktrinal analiz, norm yayılımı teorisi ve düzenleyici yönetim yaklaşımından yararlanan bu çalışma, Çin, Hindistan ve Bangladeş örnek olayları üzerinden, bağlayıcı olmayan DSÖ standartlarının ulusal kan mevzuatını, kurumsal tasarımı ve düzenleyici uygulamayı nasıl şekillendirdiğini incelemektedir.

Sonuçlar ya da Bulgular: Araştırma, beş temel ilke etrafında önemli ölçüde bir normatif yakınsama bulunduğunu ortaya koymaktadır. Bu ilkeler: (1) gönüllü ve karşılıksız kan bağıışı, (2) enfeksiyonlara yönelik evrensel tarama, (3) merkezi kan sistemi yönetimi, (4) hemovijilans ve (5) kalite yönetim sistemleridir. Bununla birlikte, yapısal eşitsizlikler, kurumsal parçalanma ve sınırlı kaynaklar gibi faktörler nedeniyle bu ilkelerin uygulanması ülkeler arasında eşit düzeyde gerçekleşmemiştir.

Tartışma ya da Yapılan Çıkarımlar: Çalışma, DSÖ'nün uyumu sağlamak için zorlayıcı araçlara dayanmak yerine epistemik meşruiyet, teknik uzmanlık, karşılaştırmalı değerlendirme ve norm girişimciliği yoluyla otoritesini kullandığını ortaya koymaktadır. Kan yönetişimini ulusötesi idari düzenlemenin hibrit bir modeli olarak kavramsallaştıran bu çalışma, küresel sağlık hukuku ve düzenleyici yönetim literatürüne katkı sunmakta ve yüksek derecede teknik alanlarda yumuşak hukukun fiili bir düzenleme aracı olarak etkinliğini vurgulamaktadır.

Anahtar Kelimeler: uluslararası yumuşak hukuk, küresel sağlık yönetişimi, kan düzenlemesi, Dünya Sağlık Örgütü, gönüllü kan bağıışı

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Introduction

Blood transfusions must be made in a safe, effective manner; this is a critical component of our present healthcare system. Millions of people rely on transfusion and/or blood products each year for different medical needs (e.g., trauma or major surgery, obstetric complications, blood disorders, pediatric anemia). There are many issues regarding the way human blood is managed within systems of government. Even with improvements in technology for testing and influencing methods associated with blood transfusions, there are different types of government policies regarding blood transfusions across the world. In some places, blood transfusions are happening through the use of national systems using highly centralized and quality-assured methods; however, there are places that do not operate a comprehensive and coordinated system and instead rely on poorly designed laws, insufficient testing, and reliance on paid or family donors.

Furthermore, there are two questions that arise when discussing blood transfusion systems: firstly, do international laws such as the WHO shape how blood transfusion systems are operated throughout the world; secondly, how does international law affect national blood transfusion systems even when there is no written agreement allowing for the agreement to be enforced within the jurisdiction?

This article examines the role of international soft law in regulating the way each country and territory have developed and operated their blood transfusion systems. The analysis will focus on whether and how the WHO has established normative standards related to blood transfusion systems. Finally, the analysis compares and contrasts the normative values created through medical practice in blood transfusion systems and the normative values created through international law that regulate blood transfusion systems.

This article argues that WHO blood safety standards operate as a form of de facto regulatory governance, even though they are not legally binding as treaty obligations. Their influence arises through technical expertise, epistemic authority, benchmarking, institutional templates, and domestic legal internalization. The article therefore does not merely describe WHO standards; it explains how non-binding international norms are translated into national legislation, administrative practice, and professional standards, and why this process produces uneven outcomes across different institutional contexts.

Global Significance of Safe Blood Transfusion and The Governance Problem

The global significance of safe blood transfusion is both epidemiological and structural. According to the WHO (2025), approximately 118.5 million blood donations are collected annually worldwide, yet 40% of these donations occur in high-income countries that account for only 16% of the global population. Donation rates per 1,000 population vary dramatically: 31.5 in high-income countries compared with 5.0 in low-income countries (WHO, 2025). These disparities illustrate persistent global inequities in access to safe blood.

The risks associated with unsafe transfusion are well documented. Transfusion-transmissible infections (TTIs) such as HIV, hepatitis B virus (HBV), and hepatitis C virus (HCV) remain central concerns. In low-income countries, HIV prevalence among blood donors is reported at 0.70%, compared with 0.002% in high-income countries; HBV prevalence is 2.81% versus 0.02%, and HCV prevalence 1.00% versus 0.007% (WHO, 2025). These differences reflect disparities in donor selection systems, screening technology, and regulatory oversight.

Beyond infectious risk, blood availability is closely linked to maternal mortality and pediatric survival. WHO's global consultations have emphasized that severe postpartum hemorrhage is a leading cause of maternal death, particularly in sub-Saharan Africa (WHO, 2008). Safe blood transfusion is one of the essential emergency obstetric interventions required to reduce maternal mortality and achieve global development targets. Accordingly, WHO has integrated blood safety into broader global health strategies, linking it to United Nations Sustainable Development Goal (UN-SDGs) 3 on ensuring healthy lives and promoting well-being (WHO, 2025).

The intersection between blood safety and global health security has been well documented over the last decade and has been highlighted by the emergence of new pathogens, such as HIV and SARS-CoV-2. These new infectious agents illustrate not just the vulnerability of transfusion systems to emerging infectious threats (WHO, 2008) but also that national blood systems provide both clinical services and epidemiological surveillance. Weak transfusion systems pose a significant risk to countries and constitute an international threat. In summary, this information establishes that safe blood transfusions are a global public health priority, health inequity, and a threat to global security.

Despite its global importance, blood transfusion governance remains fragmented and uneven. WHO data indicate that while 73% of reporting countries have a national blood policy, only 66% possess specific blood legislation; among low-income countries, this figure drops to 39% (WHO, 2025). The absence of binding legal frameworks often results in decentralized and inconsistent regulatory oversight.

Fragmentation can occur in various ways. Blood services in low and middle-income countries are typically provided through hospitals and do not have a cohesive nationwide coordination structure, resulting in inconsistent screening policies, as well as lost opportunities for economies of scale (WHO, 2021). The 2021 WHO *Guidance on Centralization of Blood Donation Testing and Processing* outline how small, decentralized blood centers will have difficulty adopting more technologically advanced testing methodologies, such as nucleic acid test (NAT) procedures, as well as comprehensive Quality Management Systems (QMS). (WHO, 2021).

Conversely, centralized countries (e.g., the United Kingdom) have a more comprehensive and integrated system of regulation, including licensure, inspection, hemovigilance, and traceability processes that support the effective operation of their blood transfusion services (Joint United Kingdom Blood Transfusion Services/National Institute for Biological Standards and Control (Joint UKBTS/NIBSC), 2005)

The international governance issues associated with blood transfusion also derive from how this area of regulation operates on an international level. Although WHO standards are trustworthy in that they are established by international consensus, they are not put forth as legally binding in the form of a treaty. For example, WHA resolution WHA58.13 (WHO, 2005). encourages Member States to promote the use of voluntary non-remunerated blood donation (VNRBD) and to eliminate the practice of paid blood donation through legislation where appropriate (WHO, 2005).

Therefore, while WHO guidelines are the basis for the establishing of national blood systems, ultimately, the implementation of these policies will depend on whether countries have political will and the capacity to put these requirements into effect domestically. These relative advantages of blood transfusions in decentralized versus centralized systems highlight that blood transfusions are subject to the international soft law separate from hard law; they are the outcome of normative frameworks that do not include formal coercive powers yet impose normative obligations to shape the behavior of countries offering blood transfusion services.

Research Questions and Methodology

Existing scholarship on blood transfusion has developed primarily within clinical medicine, epidemiology, transfusion science, and public health. This literature has examined transfusion-transmissible infections, donor selection, screening technologies, voluntary blood donation, patient safety, and national service-delivery problems. For example, recent work on India's blood transfusion system identifies legal, regulatory, licensing, quality-control, voluntary-donation, and access-related challenges, but it remains mainly focused on domestic regulatory reform rather than the international legal status of WHO standards (Mammen et al., 2021). WHO's global blood safety and availability reports also provide extensive empirical data on donation rates, testing, processing, hemovigilance, and national blood policies, but these documents are primarily technical and institutional rather than theoretical legal analyses (WHO, 2025).

The Global status report on blood safety and availability is particularly relevant because it provides systematic evidence on national blood policies, donation systems, testing coverage, processing capacity, and haemovigilance, thereby supplying the empirical foundation for assessing the implementation of WHO standards (WHO, 2022).

Global health law scholarship has examined WHO lawmaking, global health governance, soft law, health security, and international health regulation more broadly. Recent scholarship emphasizes that WHO has historically functioned as a normative agency and that soft law remains central to global health law because it allows flexible standard-setting in technically complex and politically sensitive areas (Sekalala & Masud, 2021; Gostin et al., 2024). However, this literature has paid limited attention to blood transfusion safety as a specialized field in which WHO resolutions, guidance documents, benchmarking tools, and technical standards produce practical regulatory effects without treaty enforcement.

This article fills that gap by conceptualizing WHO blood safety standards as international soft-law instruments that operate through norm diffusion, epistemic authority, benchmarking, institutional modelling, and domestic legal internalization. Its contribution is therefore twofold: first, it situates safe blood transfusion within global health law and regulatory governance scholarship; second, it explains why WHO soft law produces significant but uneven convergence in national blood transfusion systems.

The research questions that this article will address are as follows:

1. In what ways does the WHO exert normative authority through mechanisms other than legally binding power? This question seeks to identify the means by which WHO-developed standards (e.g., resolutions, guidance documents, and policy frameworks) guide the implementation of blood governance at the national level without using formal coercive measures.

2. What kind of influence do soft law instruments have on the development of national blood transfusion systems? The focus here will be on empirical outcomes including adoption of the principles of VNRBD; legislative reform; centralization; quality management systems; and the use of hemovigilance (WHO, 2005).
3. What accounts for the differences observed in the implementation of these policies by nation-states? The purpose of this comparative analysis is to identify the structural, economic, institutional, and political factors affecting compliance rates across jurisdictions.

This research uses an integrated doctrinal-comparative methodology supported by normative institutional analysis. First, the doctrinal analysis examines WHO resolutions, technical guidance documents, strategic action frameworks, and benchmarking instruments in order to identify the normative content of WHO blood safety standards. Particular attention is given to voluntary non-remunerated blood donation, universal testing for transfusion-transmissible infections, centralized blood system governance, hemovigilance, and quality management systems.

Second, the article applies normative institutional analysis to examine how these non-binding WHO standards are translated into domestic legal and administrative systems. This approach is appropriate because the study is concerned not only with the formal legal status of WHO instruments, but also with their practical regulatory effects on national legislation, institutional design, professional standards, and compliance behaviour.

Third, the article uses a comparative case-study design focusing on China, India, and Bangladesh. These cases are selected because they are all exposed to WHO blood safety norms but differ significantly in regulatory capacity, administrative structure, resource availability, and enforcement conditions. China represents a case of strong state-led internalization following a public health crisis; India represents partial internalization within a fragmented and federal regulatory structure; and Bangladesh illustrates the gap between legislative adoption and practical enforcement in a resource-constrained setting. This “most different systems” logic allows the article to explain why similar WHO norms produce different domestic outcomes.

Theoretical and Analytical Framework: Soft Law, Regulatory Governance, and Norm Diffusion

To comprehend the unique role of the WHO in the regulation of safe blood transfusions, it is essential to clearly define and situate the concept of international soft law within the framework of global health governance. There is no single comprehensive international treaty regime governing blood transfusions. Instead, there exist numerous resolutions adopted by the WHA, technical guidelines, frameworks for action, ethical codes, and various types of policy instruments. While no individual instrument has any formal binding force, collectively they impact the legislation of individual states, shape the institutional structure of the health system, and establish the professional standards that govern the profession of medicine and other healthcare disciplines across multiple jurisdictions. This section will establish a theoretical foundation for analyzing how the various forms of soft law from WHO create a transnational regulatory framework for global blood governance, drawing insights from legalization theory, theoretical work on the diffusion of normative ideas through constructivism, the theory of transnational legal process, and a body of scholarly work on regulatory governance. This

section will provide an analytical model to understand how soft law created by WHO serves as a global regulatory mechanism for governing blood.

This article connects WHO blood safety standards with five related bodies of literature: global health governance, transnational regulatory governance, global administrative law, compliance theory, and norm diffusion. Global health governance operates in a fragmented institutional environment where WHO often exercises influence through coordination, expertise, standard-setting, and policy guidance rather than direct legal command, a dynamic reflected in contemporary scholarship on global health law and soft law governance. Transnational regulatory governance explains how standards may influence domestic regulation without formal coercion. Slaughter's account of transgovernmental networks is useful here because blood governance depends not only on WHO as an international organization but also on interaction among domestic regulators, ministries of health, professional bodies, laboratories, and international expert networks (Slaughter, 2004). Global administrative law helps clarify how international bodies perform administrative functions such as standard-setting, benchmarking, reporting, and technical assessment. From a global administrative law perspective, WHO's blood safety instruments may be understood as transnational administrative practices because they perform standard-setting, monitoring, reporting, and accountability-related functions beyond the domestic state (Kingsbury et al., 2005). Compliance theory explains why states may follow non-binding standards through reputation, expertise, peer comparison, and institutional incentives. Norm diffusion theory explains how international norms become internalized through repeated interaction, professional acceptance, and domestic legal incorporation. This process is consistent with norm life-cycle theory, according to which norms emerge, spread through persuasion and socialization, and eventually become internalized as accepted standards of appropriate conduct (Finnemore & Sikkink, 1998).

International soft law includes norms, principles, declarations, guidelines, and standards that do not create legally binding obligations under international law but can still have a significant influence over the behavior of states (Hasan, 2025). Soft law is fundamentally different to treaties, which create binding obligations through the process of consent or ratification; soft law instruments rely primarily on persuasive power, legitimacy and technical authority, and reputational pressures to operate.

The influential "legalization" theory by Abbott and Snidal (2000) views international law as a three-dimensional construct comprised of obligation, precision, and delegation; hard law has high levels of each of these dimensions (binding obligations, clear rules, and delegation of power to other entities to interpret and enforce the law), while soft law has limited levels of two dimensions (e.g. high precision but low obligation) or only one dimension (e.g. high delegation without binding enforcement). The flexibility of soft law allows states to coordinate policy in politically sensitive or technically complex areas without the need to adopt rigid legal commitments.

An example of this phenomenon is the governance of blood transfusion. WHO's technical guidance on VNRBD, quality management systems, and centralized testing may have been expressed very precisely from an operational perspective (WHO, 2021) but are not legally binding obligations as set out in treaties.

Shelton (2000) and Chinkin (1989) argue that soft law is becoming increasingly important in international governance, especially in cases where rapid scientific advancements

and political sensitivity make binding agreements unfeasible. Soft law serves multiple roles: as a precursor to hard law, as an adjunct to existing law, as a platform for coordination in very technical areas of governance, and as a means to develop norms and gradually harmonize practices.

Blood governance fits nicely within this framework. There are no Global Blood Conventions in existence; rather, blood governance develops through WHA resolutions (e.g. WHA58.13), regional frameworks, and technical guidelines that gradually create expectations for national blood systems (WHO, 2005). As a result, blood governance operates in a soft law environment, characterized by low levels of formal legal obligations and high levels of technical precision.

The WHO Constitution grants the Organization authority to act as the “directing and coordinating authority on international health work” (WHO, 2009, Article 2). While WHO possesses limited treaty-making power under Articles 19 and 21, it has historically relied far more heavily on non-binding instruments such as recommendations, technical guidelines, model legislation, and action frameworks (WHO, 2009).

In the field of blood transfusion, WHO has developed a layered normative architecture:

- • WHA resolutions WHA28.72 (WHO, 1975) and WHA58.13 (WHO, 2005)
- Action Framework to Advance Universal Access to Safe, Effective, and Quality-Assured Blood Products
- Technical guidance on centralization (WHO, 2021)
- Fact sheets with global benchmarking data (WHO, 2025)
- Regional publications such as *Blood Transfusion: A Basic Text* (WHO Regional Office for the Eastern Mediterranean (WHO EMRO), 1994)

WHA58.13 urges Member States to promote VNRBD and eliminate paid donation systems (WHO, 2005). While not legally binding, such resolutions carry substantial political legitimacy because they are adopted by consensus or majority vote of Member States.

WHO guidance documents further translate these political commitments into operational standards. The 2021 *Guidance on Centralization of Blood Donation Testing and Processing* provides detailed institutional blueprints for restructuring national blood systems, including QMS implementation, regulatory oversight, and economies of scale (WHO, 2021). Despite its non-binding nature, it functions as a de facto regulatory template.

WHO also acts as a norm entrepreneur. Through technical expertise, epidemiological data (WHO Global Database on Blood Safety), and global benchmarking reports, WHO frames voluntary donation as both ethically superior and epidemiologically safer (WHO, 2025). By linking blood safety to SDG 3 and maternal mortality reduction, WHO situates transfusion governance within broader global development commitments.

Thus, soft law in global health operates through: Political endorsement (WHA resolutions), Technical standard-setting, Data-driven benchmarking, Ethical framing, Institutional modeling. Blood transfusion governance offers a paradigmatic example of this mechanism.

In order to understand how WHO's non-binding norms influence a country's legal system; it is important to examine the broader concept of diffusion and conformity with regard to the international normative system.

Constructivist scholarship argues that state behaviour is shaped not only by material interests or coercion, but also by socialization, persuasion, identity formation, and the internalization of shared norms (Finnemore & Sikkink, 1998). The process of internalizing acceptance of the non-binding norm of VNRBD is an example of this. From 2008 to 2018, there was a rise in voluntary donations by 10.7 million globally (WHO, 2025). This trend illustrates that states were slowly accepting WHO's ethical justification for voluntary non-remunerated blood donations.

Koh (1996) formulated a theory on the transnational legal process. This theory purports that after repeated interaction, interpretation and, incorporation into the domestic legal system, international norms become customary law. In this respect, the WHO guidelines that are cited in domestic policy documents and referenced in judgments (for example, informed consent lawsuits) will be relied upon to provide guidance and incorporated into the licensing process for the blood transfusion industry. This ongoing process is how soft law ultimately acquires a quasi-binding effect.

Regulatory governance theory illustrates the changing nature of regulation from a hierarchical command-and-control type of regulation to a governance model that incorporates multiple stakeholders who participate in regulating their industries. In the blood transfusion industry, different actors engaged in the regulatory process include Ministries of Health, National Regulatory Authority, Professional Associations, International Organizations (e.g., WHO/ISBT), and Donor Communities. Within this networked governance model, the WHO is recognized as a standard-setter rather than as a regulator.

An additional way to understand how this process occurs is through an epistemic community. According to Haas (1992), epistemic communities are networks of professionals that have been collectively recognized as having the same level of expertise and who share common normative beliefs (e.g., transfusion medicine specialists, laboratory scientists, and public health experts). Consequently, when the WHO issues guidance on blood transfusion practices, it typically reflects the consensus of this expert network. Because the guidance from WHO is epistemically legitimate based on the agreement of the experts who form the epistemic community from which it draws, this has significant implications for compliance with soft law.

There is therefore a conceptual basis on which to attribute influence to soft law, even though it is non-binding in nature; that is, compliance with soft law is attributable to: 1) professional consensus, 2) reputational incentives, 3) peer comparison; 4) conditionalities applied to donor funding; and 5) capacity building partnerships.

The article's analytical model is based on the proposition that WHO soft law influences national blood transfusion systems through six connected mechanisms. First, WHO exercises technical authority by producing evidence-based guidance on blood donation, screening, quality management, and centralization. Second, it exercises epistemic authority because its standards are grounded in expert consensus and global public health knowledge. Third, it uses institutional templates by providing models for national blood services, regulatory authorities, hemovigilance systems, and quality management structures. Fourth, it uses benchmarking through the Global Database on Blood Safety (GDBS) and global fact sheets, which allow states to compare their performance with other jurisdictions. Fifth, WHO operates as a norm

entrepreneur by framing VNRBD and quality-assured screening as ethical and public health obligations. Sixth, these norms become effective when they are internalized into domestic law, administrative rules, professional standards, and institutional practice.

This model allows the article to evaluate not only whether states formally accept WHO standards, but also how deeply those standards are incorporated into national governance. The depth of internalization may be assessed through five indicators: formal policy endorsement, legal codification, institutional restructuring, technological modernization, and accountability mechanisms such as hemovigilance or liability rules.

WHO's Soft Law Architecture for Safe Blood Transfusion

In terms of global health governance, the WHO has created one of the most comprehensive and the longest-lasting examples of a "soft law" framework in relation to blood transfusion. Although blood safety is not governed by a universal legal instrument such as an international treaty, the WHO has built a layered set of legal norms through its constitutional base, WHO Assembly (WHA) resolutions, global strategic plans, technical guidance and benchmarks to create an overall governance structure for shaping national safe blood transfusion policies, regardless of the legal or institutional framework

In this section, it will be explored that the constitutional basis for WHO's authority, the main soft law instruments used by WHO, the normative content of WHO's blood safety agenda, and the regulatory mechanisms through which WHO has attempted to encourage compliance with this agenda.

WHO Constitutional Mandate

The authority of WHO to establish global blood governance stems from its Constitution, especially Article 2, whereby it has the role as the "directing and coordinating" agency for all international health issues. Some of these roles include proposing conventions and regulations, making recommendations to its Member States, establishing and updating international standards, providing technical assistance and responding to requests for assistance from governments. (WHO, 2009).

While WHO does not often utilize its treaty-making power as defined by Articles 19 and 21, it does regularly utilize its recommendation authority as set forth in Articles 23 and 62. Although non-binding, all WHO recommendations have a large amount of both political and technical authority because WHO is the UN's specialized agency for health. (WHO, 2009)..

An example of WHO's normative leadership function is in regard to the governance of blood transfusions. Starting with such regional publications as Blood transfusion: A basic text (WHO EMRO, 1994) and culminating with global strategies, WHO has always framed the responsibility for the safety of blood transfusions as being part of the public health system requiring a national strategy, quality control, and the ethical recruitment of donors.

This early regional WHO text is important because it already framed blood transfusion as a system-wide public health responsibility involving organization, quality assurance, donor recruitment, regulatory control, and culturally legitimate public education rather than merely a clinical or laboratory activity (WHO EMRO, 1994)

WHO's leadership function is supported by their ability to collect data. WHO uses the GDBS to collate standardized data on donation rates, screening coverage, hemovigilance

systems and legislative systems (WHO, 2025). This function of surveillance improves WHO's epistemic authority and places WHO as the primary knowledge broker in the governance of blood at a global level.

Thus, the constitutional mandate of WHO serves as the foundation of WHO's soft law architecture; thus, directing and coordinating not through coercion, but rather through normative standards, technical advisory assistance and political endorsement.

Core Soft Law Instruments

The World Health Organization's (WHO) approach to promoting safe blood transfusions includes various interlinked legal and policy documents that work at many levels of regulation.

WHA resolutions offer Member States political agreement and support for blood safety priorities. WHA Resolution 58.13 (WHO,2005) states that VNRBD is the most important way of ensuring that there are safe and adequate supplies of blood in all countries and therefore calls for the removal of donated blood systems where donors receive payment (WHO,2005). Although these resolutions are politically binding on WHO and the Member States, they show a consensus on political commitment and the agreement on international principles.

There were also earlier WHA resolutions to establish a blood service in each country with WHA Resolution 28.72 (WHO,1975) laying the foundation for developing the national blood services. Since then, WHA has continued to make resolutions and has created a framework for developing global blood governance based on voluntary blood donations, quality screening and rational use of blood.

The 2008 WHO report on Universal Access to Safe Blood Transfusion describes a detailed plan for providing all countries with sufficient and safe supplies of blood (WHO 2008), consisting of five components: i) Coordinated blood transfusion services at the national level; ii) Blood collected from voluntary non-remunerated donors only; iii) All donated blood is screened to ensure its quality; iv) Clinical use is rational; v) A quality system exists for the complete blood transfusion system. Thus, the report provides the framework for implementing the global commitment to blood safety by identifying ways to reduce maternal mortality and the incidence of HIV as well as contributing to achieving the Millennium Development Goals (MDGs). The report also includes indicators that can be used to evaluate progress towards the goals, providing a basis for performance-based governance.

The 2008 report is therefore not merely a descriptive policy document; it functions as a strategic soft law instrument by consolidating WHO's core principles into an operational framework for national blood systems.

WHO has produced specific action frameworks to further implement their strategic objectives related to providing universal access to safe, effective, quality blood products, including timelines, performance indicators, and priority activities that aid in ensuring accuracy—a primary dimension of legalization theories (Abbott & Snidal, 2000). Strategic documents emphasize capacity building, integration of national policies, and strengthening of regulatory frameworks to convert aspirational norms into formal, structured pathways for implementation.

The 2021 Guidance Document on Centralizing Blood Testing and Processing is one of WHO's most in-depth technical documents (WHO, 2021).

It highlights the risk posed by structural fragmentation and advocates for consolidating blood testing and processing to realize economies of scale, improve QMS, and create stronger regulatory oversight.

The guidance frames centralization not just as an administrative change to operations but rather as a necessary safety measure. It provides operational steps, risk assessments, regulatory requirements, and monitoring mechanisms for the centralization process. While the document does not have the force of law, it serves as a quasi-regulatory reference material.

The 2025 WHO Fact Sheet on Blood Safety & Availability includes current global statistical data indicating continued disparity in blood donation rates; legislative systems covering blood donation; and hemovigilance worldwide (WHO, 2025). By publicizing the benchmarking data, the WHO maintains transparency and enhances peer accountability. All of these documents form a complete soft-law framework incorporating political endorsement, strategic planning, technical precision, and empirical benchmarking.

Across its resolutions, action frameworks, technical guidance, and benchmarking documents, WHO's blood safety agenda can be summarized around five core principles. First, blood systems should be based on VNRBD rather than paid or commercially driven donation. Second, all donated blood should be screened through quality-assured testing for major transfusion-transmissible infections. Third, blood services should be nationally coordinated rather than fragmented across isolated hospital-based systems. Fourth, hemovigilance and traceability should be developed to monitor adverse transfusion events and strengthen accountability. Fifth, QMS should govern the full transfusion chain, including donor selection, testing, processing, storage, distribution, clinical use, documentation, and audit. These principles form the normative core through which WHO soft law seeks to harmonize national blood transfusion governance.

Although WHO lacks enforcement authority, it employs multiple regulatory techniques to promote compliance:

- **Benchmarking:** Through the Global Database on Blood Safety, WHO publishes comparative data on donation rates, screening coverage, and legislative status (WHO, 2025). Benchmarking generates reputational incentives and peer comparison.
- **Reporting Obligations:** Member States are encouraged to report blood safety indicators. Although reporting is voluntary, participation fosters transparency and accountability.
- **Technical Assistance:** WHO provides training, assessment missions, and regulatory guidance to strengthen national capacity. Technical assistance functions as a compliance facilitation mechanism.
- **Capacity Building:** WHO organizes workshops, develops model curricula, and supports national regulatory authorities. Capacity building reduces structural barriers to implementation.
- **Peer Review and Networks:** Regional workshops and collaborative networks facilitate knowledge exchange and norm diffusion. Epistemic communities reinforce professional consensus.
- **Model Legislation Guidance:** Publications such as Smit Sibinga (2017) provide legislative templates consistent with WHO principles, encouraging domestic legal internalization.

National Implementation: Comparative Analysis

The cases of China, India, and Bangladesh are selected to examine how similar WHO blood safety norms are internalized under different domestic conditions. The selection follows a “most different systems” logic. The three countries differ in political structure, administrative capacity, economic resources, legal architecture, and enforcement conditions, but all are exposed to the same WHO normative framework on safe blood transfusion. China illustrates centralized and crisis-driven internalization; India illustrates partial internalization under federal and institutionally fragmented regulation; and Bangladesh illustrates the gap between statutory adoption and practical enforcement in a resource-constrained setting. The comparison therefore helps explain why WHO soft law produces convergence at the level of formal principles but divergence at the level of implementation.

National implementation is the clearest demonstration of WHO’s soft law framework in action. WHO recommends a common governance framework around voluntary VNRBD, centralized coordination, quality-controlled blood screening, hemovigilance, and rational clinical use of blood, but national legal systems do not uniformly adopt these WHO norms. There are some differences in national adoption of WHO norms because of differences in political will, institutional capacity, economic resources, regulatory experience, or epidemiological context.

This section undertakes an analytical comparison of national implementation patterns, focusing primarily on China and India, supplemented by observations from Bangladesh and broader regional disparities. Rather than presenting purely descriptive case studies, the section evaluates how and why WHO norms are adopted, modified, or resisted.

Case Study 1-China

China represents a case of substantial normative internalization combined with state-led regulatory consolidation. Its trajectory illustrates how crisis-driven reform can catalyze comprehensive alignment with WHO standards.

The turning point in China’s blood governance was the enactment of the *Blood Donation Law* in 1998, following severe HIV outbreaks linked to paid plasma collection in the 1980s and 1990s (Gao et al., 2020). The law formally institutionalized VNRBD and prohibited commercial blood trade.

This legislative intervention directly reflects WHO’s normative emphasis on VNRBD as the safest model of supply (WHA, 2005). It transformed a fragmented and commercially driven system into a state-regulated public welfare model.

Between 1998 and 2018, blood donors increased from 4 million to 15 million, and total blood collection rose from 5 million to 25 million units (Gao et al., 2020). These figures demonstrate measurable normative uptake.

China progressively abolished employer-organized donation (2005) and ultimately canceled family/replacement mutual blood donation (FRMBD) nationwide in 2018 (Gao et al., 2020). Although FRMBD had initially been tolerated under Article 15 of the Blood Donation Law, its expansion created risks of hidden commercialization.

The cancellation of FRMBD illustrates a shift from partial compliance to stricter alignment with WHO’s preference for pure VNRBD systems.

China's adoption of nucleic acid testing (NAT) beginning in 2010 and expanding nationwide by 2015 marked a significant upgrade in screening capacity (Gao et al., 2020). NAT reduced window periods for HIV, HBV, and HCV detection and contributed to a decline in transfusion-related litigation.

This reflects compliance with WHO's principle of 100% quality-assured screening (WHO, 2025). Importantly, NAT implementation required substantial state investment—demonstrating that normative compliance is resource-dependent.

China's 2010 Tort Law introduced no-fault liability for transfusion-related injury (Gao et al., 2020). Previously, liability depended on proof of negligence. Under the new regime, patients may obtain compensation without demonstrating fault.

This development exceeds WHO's minimum requirements and signals a shift toward patient-protective governance. It reflects domestic legal innovation rather than direct WHO mandate but is consistent with WHO's emphasis on safety and accountability.

China exemplifies strong normative convergence with WHO soft law, facilitated by centralized political authority, regulatory capacity, and post-crisis mobilization. Implementation was driven not merely by normative persuasion but by reputational damage, public health emergency, and state modernization strategy.

Analytically, China demonstrates a high level of WHO norm internalization. WHO norms were internalized through crisis-driven legislation, centralized administrative authority, technological modernization, and state-led institutional reform. The 1998 Blood Donation Law translated the principle of VNRBD into domestic law, while the expansion of NAT and the development of accountability mechanisms strengthened the safety and quality dimensions of the system. WHO soft law was more effective in China because the state possessed the administrative capacity, financial resources, and centralized authority necessary to convert international standards into enforceable domestic practice. China therefore illustrates how epistemic authority and technical standards become effective when they are supported by strong domestic governance capacity.

Case Study 2-India

India presents a contrasting case characterized by partial adoption, regulatory fragmentation, and persistent structural challenges.

In India, blood is regulated under the *Drugs and Cosmetics Act 1940*, which classifies blood as a “drug” (Pal et al., 2011). Licensing and oversight fall under drug control authorities rather than a specialized blood governance statute. While the National AIDS Control Organisation (2007) articulates goals aligned with WHO—100% voluntary donation, quality screening, and rational use—it lacks direct statutory force (Pal et al., 2011). This regulatory architecture reflects indirect internalization of WHO norms but without institutional coherence.

Multiple bodies operate within India's blood governance system: Drug Controller General of India, State Drug Controllers, National Blood Transfusion Council (NBTC), State Blood Transfusion Councils (SBTCs). NBTC and SBTCs hold advisory roles without enforcement authority (Pal et al., 2011). This fragmentation weakens regulatory uniformity.

Empirical data cited in the literature indicate: Significant proportions of blood banks previously unlicensed, Continued reliance on replacement donors, Limited component separation rates (Pal et al., 2011). These findings suggest incomplete implementation of WHO's

centralized and quality-assured model. Scholars have argued for a dedicated national blood law to replace the Drugs Act model (Pal et al., 2011). The absence of a specialized statute contrasts sharply with China's 1998 Blood Donation Law.

The Supreme Court of India banned paid donation in 1996, reflecting judicial reinforcement of voluntary donation norms. However, legislative consolidation remains incomplete. Although India has increased voluntary donations over time, achieving 100% VNRBD remains challenging due to demographic scale, cultural attitudes, and infrastructure limitations.

Unlike China's centralized enforcement capacity, India's federal structure diffuses authority across states, complicating uniform compliance. India demonstrates partial normative convergence with WHO standards. Core principles—voluntary donation, screening, and national policy—are formally endorsed, but institutional fragmentation and regulatory overlap impede full realization.

Analytically, India represents partial and uneven internalization of WHO blood safety norms. WHO principles are visible in national policy commitments, judicial rejection of paid donation, licensing requirements, and the promotion of voluntary donation. However, these norms have not been fully consolidated into a specialized and coherent national blood law. The classification of blood as a drug, the division of authority among central and state bodies, and the advisory rather than enforcement-based role of blood transfusion councils weaken implementation. India therefore shows that formal acceptance of WHO standards is insufficient when regulatory authority is fragmented and enforcement capacity varies across jurisdictions.

Case Study 3-Bangladesh

Bangladesh historically relied heavily on professional and replacement donors (Nurunnabi et al., 2010). The Safe Blood Transfusion Act 2002 and subsequent regulations marked progress toward WHO-aligned governance (Ministry of Law, Justice and Parliamentary Affairs (MLJPA), 2002). Screening for HIV, HBV, HCV, syphilis, and malaria became mandatory, and voluntary donation campaigns expanded. Nevertheless, replacement donation persists, reflecting socio-economic and cultural constraints.

Bangladesh's experience illustrates that legislative adoption does not automatically eliminate entrenched donor practices. Although the Safe Blood Transfusion Act 2002 establishes a formal legal basis for registration, oversight, and compulsory screening, Bangladesh still illustrates the broader implementation gap commonly found in resource-constrained blood systems, where formal legal adoption does not always ensure consistent institutional enforcement (MLJPA, 2002).

WHO regional data reveal stark disparities in legislative coverage and screening compliance (WHO, 2025). Only 39% of low-income countries report specific blood legislation, compared with 79% of high-income countries. Component separation rates reach 96% in high-income countries but only 38% in low-income settings (WHO, 2025). These regional differences confirm that normative convergence is mediated by economic capacity and regulatory infrastructure.

Analytically, Bangladesh illustrates the difference between legal adoption and practical internalization. WHO-aligned norms have been incorporated through the Safe Blood Transfusion Act and mandatory screening requirements, but implementation remains

constrained by limited resources, weak monitoring capacity, unregulated or poorly supervised blood banks, and continuing reliance on replacement donation. Bangladesh therefore shows that soft law may shape legislative reform without necessarily producing full institutional transformation. In this case, the effectiveness of WHO norms depends less on formal legal recognition and more on sustained enforcement, public trust, financial capacity, and administrative coordination.

Table 1

A Comparative Matrix.

Case	Main mechanism of WHO norm internalization	Legal/institutional transformation	Level of effectiveness	Main limiting factor
China	Crisis-driven reform, centralized authority, state technical modernization	Blood Donation Law, abolition of paid/replacement donation practices, nationwide NAT expansion, accountability reforms	High	Requires strong state capacity and financial investment
India	Policy adoption, judicial intervention, licensing on paid donation, professional regulation, advocacy	National Blood Policy, ban under Drugs and Cosmetics Act, NBTC/SBTC structures	Moderate/partial	Federal fragmentation, overlapping authority, uneven enforcement
Bangladesh	Legislative adoption and mandatory requirements	Safe Blood Transfusion Act, compulsory screening, donor campaigns	Limited/uneven	Resource constraints, weak monitoring, replacement donation, unregulated practices

Note. Created by the author.

Discussion: Why and How WHO Soft Law Works

The comparative analysis shows that WHO soft law works not through coercive enforcement but through de facto regulatory influence. WHO does not compel states to adopt blood safety standards through treaty sanctions. Instead, it shapes domestic governance through technical expertise, epistemic legitimacy, benchmarking, institutional templates, and the professional authority of transfusion medicine networks. This explains why WHO standards can become practically influential even when they are formally non-binding. The effectiveness of soft law therefore depends on the interaction between international normative authority and domestic institutional capacity.

Convergence and Uneven Domestic Internalization

WHO soft law encourages broad agreement on fundamental principles, but its practical implementation varies across national contexts. China has achieved the strongest alignment with WHO standards through legal prohibition of paid blood donation, nationwide technological modernization such as nucleic acid testing, and patient-protective accountability mechanisms. These reforms closely reflect WHO's model of coordinated, quality-assured blood

governance. High-income European systems, including the UK, show even more institutionalized forms of compliance through legally binding regulatory frameworks, licensing, inspection, traceability, and hemovigilance systems (Joint UKBTS/NIBSC), 2005). The United Kingdom provides a strong example of such institutionalization, as its national blood transfusion guidelines incorporate licensing, quality systems, traceability, component standards, and haemovigilance within a highly regulated framework.

By contrast, India and Bangladesh demonstrate partial internalization of WHO norms. Both countries have formally endorsed voluntary non-remunerated blood donation, mandatory screening, and national blood policies, but implementation remains constrained by fragmented regulatory authority, continuing reliance on replacement donation, uneven hemovigilance systems, and inconsistent enforcement. These differences show that compliance with WHO soft law depends not only on normative acceptance but also on domestic institutional capacity. Advanced screening technologies, quality management systems, and centralized blood infrastructure require sustained financial resources and administrative coordination (WHO, 2021).

Therefore, WHO soft law should be understood as operating along a continuum rather than through simple compliance or non-compliance. States may first endorse WHO principles, then codify them in legislation, consolidate institutions, modernize technologies, and finally develop accountability mechanisms such as hemovigilance or liability systems. The cases show that WHO norms have significantly shaped national blood governance, but full structural convergence remains limited by domestic capacity, political organization, socio-economic conditions, public trust, and sustained governmental commitment.

De Facto Regulatory Influence and Indicators of Effectiveness

WHO soft law may be considered effective not because it produces complete compliance in every country, but because it creates measurable changes in national law, institutional design, professional standards, and transfusion-safety practice. Its effectiveness can therefore be evaluated through indicators such as the expansion of voluntary donation, universal screening, technological modernization, centralization, hemovigilance, and the internalization of WHO standards into domestic governance.

VNRBD is an obvious sign of how much of an effect WHO has had with its soft laws. WHO continues to frame voluntary donation as both ethically desirable and safer from the perspective of epidemiology, referring to WHA58.13 and later documents. WHO data shows that there was a 10.7 million increase in voluntary, unpaid blood donations from 2008-2018, and there are now 79 countries that collect over 90% of their blood from voluntary donors, with 64 countries collecting 100% (WHO, 2005). While VNRBD is not universal, the increase over the last twenty years indicates that there has been significant normative convergence. The diffusion and spread of VNRBD across differing political systems demonstrate that WHO soft laws have persuasive power.

Advanced screening technology, specifically NAT, is the second indicator of WHO soft law effectiveness. WHO has emphasized that all three viruses (HIV, HBV, and HCV) must have 100% quality-assured screening as the minimum safety standard (WHO, 2025). Countries like China have progressively adopted nationwide NAT screening, reducing the window period for detecting infections and showing a measurable reduction of transfusion-transmitted infections (Gao et al., 2020). Though NAT and automated immunoassay system adoption are

not equal throughout the world, it is evident that there has been a large global expansion of these systems due in large part to WHO's technical guideline recommendations.

Another indicator, reductions in TTIs, is a reflection of improved governance through WHO statistics showing a much lower rate of prevalence for HIV, HBV and HCV in blood donors in high-income countries compared with low-income countries (WHO, 2025). While there are still disparities, the overall trend globally shows increased screening coverage. Only a small fraction of all countries that report do not test all donated blood for the major infections (WHO, 2025). It is also a strong indicator of normative compliance because the widespread introduction of screening standards is nearly universal.

A different indicator, the movement toward centralization of blood donation testing and processing (WHO Guidance on Centralization 2021), discusses fragmentation as a system risk factor and advocates consolidation to attain economies of scale and improve QMS (WHO, 2021). Several countries have initiated their reform efforts involving this model of centralization. Even in those countries where there has not yet been complete centralization, the dialogue around the issue has changed. The best practices for providing blood donations will now consist of a nationally coordinated service. Thus, this change in the institutional imagination of how to provide appropriate governance demonstrates the ideational impact of WHO's soft law instruments.

Based on the collective increase in voluntary donations, increased numbers of people being tested through blood donation, the technological modernization of laboratory processes and the consolidation of blood donation testing and processing, there is evidence that the WHO's soft law instruments have impacted national systems in measurable ways.

Soft law is more adaptable than hard law because it provides flexibility for countries to gradually adopt WHO standards without facing the same penalties for violations that they would face if they were to violate a binding treaty. This incremental approach is particularly useful in resource-limited settings that cannot meet rigid obligations rapidly. The implementation of NAT in China illustrates how states have been able to progressively align with technical standards over time (Gao et al., 2020).

The technical legitimacy that WHO provides fosters compliance. WHO's authority is based on scientific expertise and collective global epidemiological surveillance—and because the recommendations made by WHO are based on evidence-based public health needs rather than being politically imposed limits, many countries will comply with WHO's recommendations. When WHO states that countries should have 100% screening or that donations should be voluntary, WHO bases its statements on epidemiological evidence from its GDBS (WHO, 2025), providing a scientific rationale that reduces the potential for disagreements about compliance.

The use of soft law allows for less time-consuming development of normative practice than developing binding treaties. WHO has the ability to provide guidance and revise its technical recommendations within the time frames necessary to respond to new infectious disease threats. In particular, the 2021 centralization guidance is an example of adaptive governance in response to structural risks identified by WHO (WHO, 2021). The speed at which norms can be established through the mechanism of soft law is significant due to the fact that pathogens are likely to evolve quickly.

Countries may be concerned about the impact signing binding international health obligations may have on their ability to regulate at the national level. Non-binding

recommendations allow countries to maintain their formal sovereignty and facilitate the convergence of “public health law”. Resolutions of the WHA adopted jointly by Member States create a political commitment to take the action called for in the resolution, but do not compel Member States by force of law (WHO, 2005). These advantages explain why, although WHO does not have enforcement power for its blood safety architecture, the majority of countries accept it as a normative framework for blood safety.

The authority of WHO with respect to blood governance is largely epistemic in nature. As WHO has amassed global scientific data and synthesized comparative data, WHO has developed norm-creating, evidence-based standards for global blood governance. Thus, the basis for state compliance with WHO is not the threat of sanctions, but rather the perception that failure to adhere to WHO's guidance indicates deficient regulatory capacity.

The authority of WHO is further supported by its legitimacy via science. By providing recommendations for a voluntary blood donation process or a single-site blood testing process, WHO is also addressing the issue of reducing epidemiological risk; thus, the scientific basis for WHO's recommendations create a basis of policy direction that is seen as a necessity.

The experience of reputational impact compounds the normative pressure placed on states by WHO; in particular, WHO's benchmarking process provides information to states on their relative performance in blood donation rates, blood donor screening coverage, and blood donor regulatory status (WHO, 2025). States may wish to limit the negative impact on their reputation stemming from being categorized as non-compliant or being recognized as a high-risk jurisdiction. States' reputations in the global health governance arena will impact their diplomatic credibility and relationships with donors.

Finally, WHO operates through transnational professional networks; transfusion medicine professionals, the laboratory scientific community, and blood donor regulatory officials comprise epistemic communities that domestically advocate for policy changes that are consistent with WHO standards. Thus, soft law becomes embedded into the practices of those communities.

Therefore, WHO's power with respect to blood transfusion governance is normative, scientific, and reputational in nature. WHO's power influences expectations, describes legitimacy, and impacts policymaking. All of these collective characteristics demonstrate that soft law does not provide a guarantee for universal compliance; however, soft law has dramatically altered the global framework for blood transfusion governance.

Structural Limits of Soft Law Governance

The most noticeable limitation is that there are no enforcement mechanisms for WHO; thus, sanctions against countries that do not comply cannot be levied. The implementation of soft law depends solely on voluntary acceptance and the political will of states to implement the legislation. The WHO has indicated that 66 per cent of the countries it has evaluated have enacted legislation specific to blood and, in low-income countries, this percentage drops to virtually non-existent (WHO, 2025). The use of soft laws, as well as the absence of binding legal obligations, leads to persistent gaps in regulatory regimes.

Another limitation is the lack of uniform application of soft law globally; high-income countries have nearly achieved universal screening, as well as advanced blood component processing and hemovigilance systems, while low-income countries often do not have a dependable replacement blood donor program, have incomplete screening processes, and do

not have adequate quality management infrastructure (WHO, 2025). The use of WHO's soft law does not ameliorate global structural inequalities, and may actually accentuate these inequalities through benchmarking.

The final structural limitation is the degree to which effective implementation of WHO's soft law approach is reliant on the political will of those states. China experienced rapid reform after a public health crisis and after implementing a predetermined governance structure with a unified central authority (Gao et al. 2020). In India, the fragmentation of the Drugs and Cosmetics Act illustrates how structural complexity associated with federalism and the coexistence of multiple governance institutions can impede progress toward achieving congruence (Pal et al., 2011). Moreover, WHO's soft law framework is unable to substitute for domestic structural political realities.

Finally, there are significant financial barriers to implementing the principles associated with WHO's soft law governance, due to the ongoing need for financial investment in implementing NAT (nucleic acid amplification techniques), quality management systems, hemovigilance networks, and centralized infrastructure. Although WHO may provide some technical assistance, it cannot provide direct funding to countries to develop their national blood centers. In low-income countries, the absence of financial support from external sources will be a major determining factor as to whether states can successfully implement soft law principles. So, the efficacy of WHO's soft law approach is predicated upon availability of resources. Collectively, the other structural limitations discussed in this article illustrate that soft law's influence is mediated by the structural capacity of the country to which it applies. Normative clarity alone cannot remedy material deficiencies.

The influence of WHO soft law is significant, but it remains limited by sovereignty, inequality, fragmented implementation, normative divergence, and the absence of binding enforcement. The global governance of blood safety reveals several of the fundamental tensions present in many soft law regimes: state sovereignty continues to exist, there is structural inequality between low- and high-income countries, potential for normative fragmentation exists, and the unresolved issue around whether binding legal instruments provide stronger guarantees than non-binding ones. This section provides a critical assessment of the aforementioned limitations of global health soft law and highlights the promise and structural fragility of global health soft law.

Soft law emphasizes state discretion. WHO guidelines, whether through WHA resolutions, guidance documents, or action frameworks, either do not create binding obligations under international law or do create legally binding obligations but with the continuing recognition by states of their sovereignty over how to organize and fund and enforce their health systems—all of which is the greatest strength and greatest weakness of this structure.

On the plus side, when states sign on to non-binding standards, they are generally more willing to support WHO resolutions—such as WHA58.13 endorsing VNRBD (WHO, 2005)—because such resolutions do not create obligations under international law. The fact that WHO resolutions do not create a treaty obligation allows for broad consensus from countries with different political ideologies.

On the flip side, sovereignty allows states to selectively implement WHO standards. According to WHO's 2025 fact sheet, two-thirds of those countries reporting to WHO have specific laws regarding blood donation, with the greatest gaps existing in low-income countries (WHO, 2025). States may endorse WHO standards but delay enacting reforms that require reallocation of financial or structural resources.

Domestic political barriers may also serve to constrain implementation of soft law. In countries like India with federal systems, regulatory fragmentation makes it difficult to implement standards uniformly (Mammen et al., 2021). More broadly, decentralized or hospital-based transfusion systems may face professional, infrastructural, and monitoring barriers that weaken quality assurance, even where national actors formally endorse WHO-aligned ethical and safety standards. Soft law is limited in its ability to overcome the deeply embedded administrative traditions and disinclination of government officials to invest in centralized infrastructure.

While soft law creates a venue for the creation of global norms, it does not limit states' discretion based on their sovereignty. The extent of authority granted by WHO is persuasive, not required.

Global inequality is one limitation of structural justice. The nature of soft law is heavily dependent on the material conditions associated with its implementation. According to WHO data, countries with high incomes have much greater access to blood donors, developing blood components, and having hemovigilance systems than countries with low incomes (WHO, 2025). New screening technologies such as NAT are also significantly more expensive than standard blood screening tests and thus create the potential for major inequities in the safe collection and processing of blood. The modernization plans for NAT in China illustrates how a national effort can significantly improve blood donation, while very few countries with low incomes have the capital to make similar upgrades (Gao et al., 2020).

Another limitation of structural justice is the significant difference in resource availability between high-income and low-income countries. For example, countries with high incomes typically rely on near-total reliance on voluntary donors and have developed comprehensive hemovigilance systems, whereas countries with low incomes may continue to depend on replacement donors and have limited laboratory capacity (Darbandi et al., 2017). In such cases, WHO normative benchmarks may be perceived as aspirational goals rather than achievable benchmarks.

In addition, soft law provides no guarantee of mobilizing the financial resources necessary to implement its provisions. In contrast to treaty-based regimes that establish funds to support compliance with the treaty, WHO recommendations are based only on financial resources available to the country using domestic funding or external donor assistance. Consequently, countries must rely on international assistance, which is subject to changing priorities of donors and may create an unstable funding situation for implementation. As a result of these two limitations, global inequality is a broader theoretical issue that structural justice does not adequately address by developing universal standards for all parties to meet but does not provide for equal capacity of those parties to meet those standards. In this regard, normative convergence does not ensure distributive justice.

One of the main concerns relating to global transfusion practices is because of the existence of the potential for normative fragmentation. While the WHO generally encourages the establishment of global harmonization for all forms of transfusion safety there are many regional and national regulatory bodies which may develop their own individual standards.

For example, blood safety in Europe is regulated not only by WHO recommendations but also by EU regulations and by the standards of the Council of Europe (one example is that the UK's blood transfusion services operate under guidelines that may provide for higher levels of regulatory compliance than required by WHO). By contrast to this, some countries or regions

may have more lenient / loose systems of regulation and may adopt their domestic legal regulations more than WHO.

Some forms of normative fragmentation which may occur include:

- **Regionally different donor eligibility criteria:** Especially in relation to deferrals based on behavior.
- **Different threshold levels of hemovigilance reporting.**
- **Different liability models for blood transfusion practice:** For example, Blood Shield Laws exist in the US (Goldman, 1995), but in China no-fault liability laws apply (Gao et al., 2020).
- **Cultural or religious influences on the jurisprudence of refusing blood transfusion** (Molinelli et al., 2009; Martínez-Torrón, 2010).

Although not all aspects of the diversity associated with these forms of normative fragmentation will necessarily be problematic, it is the existence of fragmentation which may have the effect of undermining global consistency in the transfusion process. In a highly interconnected global marketplace where plasma products, reagents and expertise are transported from one place to another across borders, the absence of global harmonization may hinder efforts to create mutually recognized regulatory systems and integration within the global supply chain.

The flexibility of soft law in this respect may, therefore, be a two-edged sword: it provides for the adaptability of the regulatory regimes, but it also permits the divergence of the same.

The limitations identified above raise a fundamental normative question: should global blood safety governance move toward binding international law?

A treaty-based framework could theoretically establish minimum binding obligations regarding: Voluntary donation policies, Mandatory screening standards, National regulatory authority requirements, Hemovigilance systems, Reporting obligations.

Such an instrument might reduce selective implementation and strengthen accountability. The International Health Regulations (2005) (IHR) offer a comparative example of binding global health law requiring states to develop core surveillance capacities.

Nonetheless, many obstacles stand in the way of achieving this goal:

1. **Political feasibility of an international treaty:** Blood transfusion systems are deeply embedded in the national health systems and budgetary priorities of each state. States may resist entering into a treaty if they view that treaty as requiring fundamental changes to their blood systems that would be both financially taxing and administratively burdensome.
2. **Limitations of legal obligations:** Experience with the IHRs has shown that being legally binding does not guarantee compliance with the stated or agreed-upon requirements within that instrument. On multiple occasions, many states have failed to reach the Core Capacity Requirements by the required deadlines. The mere existence of a formal obligation will not resolve the existing shortage of resources.
3. **Advantages of soft law:** Because transfusion medicine is a dynamic, proactive discipline, soft law has proven advantageous as an alternative governing approach that

enables the rapid revision of blood safety and transfusion standards to accommodate the emergence of new pathogens. This flexibility does not exist in the lengthy treaty amendment processes.

4. **Cultural and ethical sensitivities:** Blood governance intersects with highly sensitive cultural and ethical issues such as commercialization of blood products, religious objections to certain procedures or therapies, and the use of reproductive technologies. The implications for sovereignty may elicit resistance from some states toward the imposition of binding uniformity.

Therefore, rather than replacing soft law, it is likely that the more realistic trajectory for international blood governance will include reinforcing and developing additional non-binding soft law mechanisms. Mechanisms such as enhanced benchmarking, peer review frameworks, regulatory capacity-building, and financing mechanisms may contribute to greater compliance without generating political opposition.

While there may not be strict necessity for hard law, the effectiveness of soft law would be dependent on the following: sustained political commitment; adequate financial resources; and institutional coherence.

The limitations of global health soft law with respect to blood transfusion governance illustrate the relationship between normative authority and structural constraints. The WHO's framework has been highly successful in creating a broad global consensus around three fundamental principles of blood transfusion safety (i.e., voluntary donation, quality screening, and centralized blood transfusion coordination), but the overall impact of that success is tempered by issues relating to sovereignty, inequities among states, and fragmentation of the global blood transfusion system. Although binding treaty law may provide states with stronger formal accountability to each other, there is strong evidence that political and practical realities will favor the continued development and strengthening of soft law as the predominant mode for enhancing blood transfusion governance.

Theoretical Contribution: WHO as Norm Entrepreneur and Hybrid Regulatory Authority

This article contributes to scholarship on global governance through the analysis of blood transfusion systems as a paradigmatic case of international soft law functioning as an effective regulatory architecture. Historically, global health law scholarship has primarily focused on binding instruments such as the International Health Regulations (2005) or the Framework Convention on Tobacco Control; however, the governance of blood safety provides an example of how non-binding standards can be the basis for significant normative convergence.

International relations theory conceptualizes “norm entrepreneurs” as actors who frame issues, mobilize expertise, and reshape expectations in international society. WHO operates as such an entrepreneur in blood governance. Through repeated WHA resolutions, technical guidance, and strategic frameworks, WHO has constructed VNRBD, quality-assured screening, centralized coordination, and hemovigilance as global standards of appropriateness (WHO, 2005; WHO, 2008; WHO, 2021).

Normative entrepreneurship can be seen in three ways:

1. **Reshaping blood governance:** WHO reshaped the view of blood and blood supply from being a technical medical activity to a public health issue and a government

responsibility. Through publications such as *Blood Transfusion: A Basic Text* (WHO EMRO, 1994), WHO articulated national coordination, quality assurance, and regulation as areas requiring normative development before being able to create a global architecture for blood supply policy.

2. **Linking blood safety to global health agendas:** WHO established the link between blood safety issues and the broader agenda of global health by connecting blood safety with HIV prevention, the reduction of maternal mortality, and Sustainable Development Goal 3 (WHO, 2025). This strategic management activity transformed the international governance of blood supply from a medical issue to a development and socio-economic issue.
3. **Establishing ethical norms:** WHO established ethical norms regarding the non-commercialization of the blood supply and introduced moral arguments as part of the regulatory framework through WHA58.13. Through this resolution, voluntary donation was determined not only to be a safety-related requirement but also an ethical obligation and thus a civic responsibility (WHO, 2005). By establishing a normative vocabulary to legitimize blood governance, WHO has created a path of influence over how states view the legitimacy of their own blood governance. This illustrates how an international organization may exert normative force without using direct coercive means.

Blood transfusion system governance adds to the growing body of literature on global or transnational administrative law, which examines how international institutions generate standards, procedures, monitoring practices, and accountability expectations outside traditional domestic administrative structures (Kingsbury et al., 2005). Global or transnational administrative law scholars investigate how internationally governed bodies create standards, procedures, and accountability mechanisms that are analogous to administrative regulations outside their domestic jurisdictions.

WHO's blood safety/development framework demonstrates several classic functions of administrative regulation: standard-setting through technical guidelines; data collection via the Global Database of Blood Safety; comparative data collection via benchmarking and reporting (WHO, 2025); capacity-building missions and regulatory assessments (WHO, 2021); and model legislative guidance for national implementation (Smit Sibinga, 2017). These functions are functionally equivalent to domestic administrative law functions of rulemaking, monitoring, inspection, and evaluation, but they take place at a transnational level.

Proceduralizing is emphasized by WHO in its guidelines. QMS documentation requirements; hemovigilance reporting; audit structures; all reflect administrative rationality in health governance. Although WHO does not have any authority to enforce compliance with its guidelines, it creates procedural expectations from which the national regulators create binding domestic instruments. Examples include Malawi's Guidelines for Safe Blood Transfusion and China's Blood Donation Law reform (Gao et al., 2020).

Thus, Blood Governance demonstrates how global administrative norms are transferred to domestic bureaucracies. Transnational Administrative Law may be implemented through persuasion and institutional modeling and not necessarily through hierarchical command.

This article's main theory is that the soft law of the WHO acts as a de facto regulation of blood governance. As WHO instruments are technically non-binding, they also result in:

- **Adoption of VNRBD as a legal norm:** Virtually all countries have implemented voluntary non-remunerated blood donation.

- **Mandatory testing for transfusion-transmissible infections:** Near-universal testing has become standard practice.
- **Greater centralization of testing and/or processing facilities:** Centralized systems improve safety and efficiency.
- **Expansion of hemovigilance systems:** Monitoring of adverse transfusion events is increasingly implemented.
- **Integration of QMS** proven QMS frameworks are incorporated into regional regulatory structures covering blood donations and transfusions.

These outcomes suggest that soft law may achieve regulatory convergence comparable to binding instruments in certain technical domains.

Epistemic authority and reputation incentives form the foundations for effective regulation under these de facto norms. Guidance from WHO is informed by scientific consensus and epidemiological information (WHO, 2025). Thus, any departure from these prescribed guidelines may be seen as a reflection of inadequate regulation and impose reputational costs upon states or subject them to scrutiny by international donors. Moreover, when WHO standards are utilized as benchmarks by domestic courts and professional organizations to determine optimal levels of care, they convert soft law into expectational obligations.

In this manner, soft law operates via internalization rather than coercion; therefore, once incorporated into domestic law through legislation, administrative regulation or professional standards, WHO norms become practically binding.

This finding supports regulatory governance theory by showing that effective regulation can exist without a formal treaty-based obligation. As there is no clear treaty obligation for countries to adopt what are simply best practice norms established by WHO for very technical/science-based disciplines, the normative authority, combined with benchmarking and professional consensus, may be all that is necessary to promote regulatory convergence.

How countries govern their blood transfusion systems demonstrates a hybrid form of authority that incorporates:

- **Normative persuasion** via WHO resolutions and ethical codes.
- **Technical standard-setting** through guidance on blood screening, QMS, and the centralization of blood transfusion systems.
- **Data-driven benchmarking** through internationally comparative data sharing.
- **Legal internalization** of blood transfusion governance through domestic legislation and guidelines.
- **Judicial mediation** through case law and other forms of jurisprudence concerning liability and rights

This hybrid form of authority presents a challenge to traditional binary categories of hard and soft law. Blood transfusion governance demonstrates that soft law can exist alongside the enforcement of hard law at the domestic level. The WHO creates normative baselines for blood transfusion governance; in turn, domestic blood transfusion governance creates legally binding rules for compliance and enforcement of these normative baselines through: licensing

rules, rules against malpractice (tort), and rules for regulatory enforcement through site inspections.

The hybrid model of governance develops a structured governance template whereby international soft law defines expectations and templates, domestic law provides mechanisms of enforcement (i.e., sanctioning systems), and professional communities provide the epistemic legitimacy to support the legal process.

The article demonstrates how blood transfusion governance contributes to three fields or disciplines in the scholarly community by:

- **Demonstrating that procedural standards** developed in one location may travel across international borders and become institutionalized in another location within the field of global administrative law.
- **Demonstrating a regulatory transformation** of the delivery of clinical practice into structured governance within the scope of health law.
- **Demonstrating, through the lens of regulatory governance theory**, that authority can be derived from knowledge, benchmarking, and institutional design rather than from the use of power to sanction through an enforcement mechanism.

Ultimately, the governance of blood transfusion systems is representative of many global health regulations; power is exercised using expertise, legitimacy is constructed through science and compliance is achieved through institutional diffusion, rather than by coercion.

Policy Recommendations

The analysis suggests that WHO soft law should not be replaced by a binding treaty at this stage; rather, its effectiveness should be strengthened through more systematic compliance-support mechanisms. Because implementation gaps are caused largely by institutional fragmentation, limited resources, and weak enforcement capacity, future reform should focus on improving domestic legal consolidation, benchmarking, reporting, technical assistance, and equitable resource mobilization.

Despite WHO instruments' lack of binding authority, compliance can also be assured by establishing structured accountability frameworks that do not rely on treaty-based enforcement. First, the WHO could institute regular peer review assessments of national blood systems, in a manner similar to the Universal Periodic Review of human rights governance. These assessments would assess countries' implementation of core principles (i.e., voluntary non-remunerated blood donation; mandatory transfusion-transmissible infection screening; hemovigilance systems; centralized control; and quality management systems) (WHO, 2008; WHO, 2021).

Second, WHO's Global Benchmarking Tool (GBT), which is currently in use for the assessment of regulatory systems, could be adapted in a consistent manner for assessing blood regulatory authorities. By linking the results of benchmarking assessments to packages of technical assistance, the incentive for performance could be increased without the need for coercion.

Third, the use of measurable indicators (e.g., the percentage of voluntary donors; the percentage of donations that are covered by nucleic acid testing; and the completeness of hemovigilance reporting) would allow for the transformation of normative expectations into

operational compliance metrics (WHO, 2025). The effectiveness of soft law is generally increased if these same normative standards also support transparent measurements.

Inconsistent reporting is a major gap in many national systems. To obtain useful comparative information, WHO's GDBS offers many useful items of information but also provides an incomplete and inconsistent set of data in certain regions (Darbandi et al., 2017; WHO, 2025).

Thus, institutionalization of national hemovigilance reporting systems should be standard. Some suggested areas for the inclusion of mandatory national hemovigilance reporting systems through domestic legislation are as follows:

- **Systematic reporting** of all adverse events associated with blood transfusions.
- **Public reporting on blood safety**, issued at least once per year.
- **A traceability system** from the donor to the recipient of the transfusion.
- **Development of protocols for data sharing** with WHO-associated regional offices.

Malawi's Guidelines for Safe Blood Transfusion provides a good example of how national administrative mechanisms can implement vein-to-vein traceability and quality assurance mandates. Replicating these types of structured reporting mechanisms in other national jurisdictions would add to the transparency and the learning involved across jurisdictional boundaries.

Furthermore, the integration of digital health, through central blood authority information management systems, will improve blood inventories, cross-border coordination, and preparedness for emergencies (e.g., during a pandemic or other humanitarian disaster) (World Health Organization, 2021).

To effectively monitor former UN member states with regard to blood safety, blood and transfusion programs should be explicitly incorporated as a key component of SDG monitoring. Blood safety supports multiple health initiatives, including the following:

1. **Reduction of maternal mortality.**
2. **Surgical safety.**
3. **Trauma care (emergency response).**
4. **Control of communicable diseases.**

Currently, transfusion safety and blood governance are aligned with the SDGs primarily through the indicators developed by the WHO (2025) for these health initiatives. However, blood safety is not yet incorporated as a systematic indicator within the overall SDG monitoring framework.

Thus, if measuring and reporting on transfusion safety included blood safety metrics (e.g., VNRBD, screening coverage, and availability by population—numbers per 1,000), this would elevate the importance of transfusion-related governance within national development plans. This would also:

1. **Increase the political visibility** of blood governance.

2. **Encourage budget allocation** for blood transfusion systems.
3. **Increase the attraction of donor funding.**
4. **Strengthen the linkage between blood governance and Universal Health Coverage.**

Because global normative compliance is generally assessed against soft law standards, aligning these standards with global development metrics supports and enhances the ability of the WHO to promote normative compliance through reputational and developmental incentives.

One of the clearest findings of comparative analysis is that soft law effectiveness increases when norms are codified domestically. Countries with dedicated blood legislation or structured regulatory frameworks demonstrate stronger alignment with WHO principles (Smit Sibinga, 2017; Gao et al., 2020).

National reforms should therefore prioritize: Enactment of comprehensive blood transfusion acts, Clear designation of national regulatory authorities, Mandatory licensing and inspection regimes, Statutory embedding of QMS and hemovigilance, Legal prohibition of paid donation.

India's experience illustrates both progress and fragmentation under pharmaceutical-centric legislation, while broader WHO data confirm that decentralized and weakly coordinated systems face recurring challenges in screening, haemovigilance, traceability, and enforcement. WHO could support this process by updating and disseminating model legislative templates, building upon prior guidance (Smit Sibinga, 2017) and regional policy frameworks.

Regional cooperation mechanisms provide a practical way of increasing compliance with non-binding law (soft law). The WHO regional office can establish a structured peer-review system through which member states can share best practices on donor recruitment, strategies on centralization, the design of hemovigilance systems, and experiences on strengthening regulatory structures.

Experience from the WHO Eastern Mediterranean Region has illustrated that regional networks are effective ways to address disparities in capacity within the region (Darbandi et al., 2017). Regional harmonization in the areas of plasma fractionation standards, donor eligibility, and laboratory accreditation will decrease normative fragmentation.

Collaborating with established regional organizations (such as the European Union, African Union, and Association of Southeast Asian Nations (ASEAN)) may provide hybrid governance models that combine WHO's guidelines for soft law with regionally binding regulatory structures.

These recommendations for policy development do not advocate for an immediate transition to binding treaty law but instead focus on strengthening the operationalization of existing non-binding regulatory (soft law) frameworks through benchmarking, institutionalizing reports, incorporating UN-SDGs in domestic law, codifying regional law, and peer-reviewing regions.

Such actions maintain WHO's technical legitimacy of authority as a non-binding regulatory authority while also improving accountability, transparency and convergence. Together, these actions provide further support for this article's primary thesis; that soft law

supported by political will and institutional design can serve as a suitable governing framework to promote safe blood transfusion practices around the globe.

Conclusion

This article has examined how international soft law shapes the development of national safe blood transfusion systems through the normative framework established by the WHO. Although there is no binding global treaty on blood safety, the analysis demonstrates that WHO has developed a dense regulatory ecosystem composed of WHA resolutions, strategic action frameworks, technical guidance documents, benchmarking instruments, data-reporting mechanisms, and capacity-building activities. These instruments do not create direct treaty obligations, yet they generate significant normative and practical influence over national blood governance.

The study has shown that WHO soft law has contributed to the emergence of a common global baseline for legitimate blood governance. This baseline includes voluntary non-remunerated blood donation, quality-assured screening for transfusion-transmissible infections, nationally coordinated blood services, hemovigilance, rational clinical use of blood, and comprehensive quality management systems. These principles have become widely accepted as standards of safe and responsible transfusion governance, even though their implementation differs across national contexts.

The comparative analysis of China, India, and Bangladesh confirms that WHO norms produce convergence at the level of general principles but divergence at the level of domestic implementation. China illustrates strong internalization of WHO standards through crisis-driven reform, centralized authority, legal consolidation, technological modernization, and state capacity. India demonstrates partial internalization, where WHO-aligned principles are reflected in policy commitments, judicial intervention, and regulatory practice, but implementation remains constrained by federal fragmentation, overlapping institutional mandates, and the absence of a specialized national blood law. Bangladesh shows that legislative adoption alone is insufficient where monitoring capacity, financial resources, enforcement mechanisms, and public trust remain limited.

The article therefore argues that WHO soft law operates as a form of de facto regulatory governance. Its authority does not depend on coercive enforcement but on technical expertise, epistemic legitimacy, professional consensus, benchmarking, institutional templates, and norm entrepreneurship. Through these mechanisms, WHO shapes the expectations of legislators, regulators, health professionals, donors, and national institutions. Once WHO standards are incorporated into domestic law, administrative regulation, professional standards, or institutional practice, they may become practically binding even though they remain formally non-binding at the international level.

This finding contributes to global health law and regulatory governance scholarship by showing that soft law can function as an effective regulatory instrument in highly technical fields where scientific consensus is strong but treaty-based regulation may be politically difficult. Blood transfusion governance demonstrates that international authority may operate through knowledge, legitimacy, institutional diffusion, and reputational incentives rather than through sanctions. It also challenges a strict distinction between hard law and soft law by

showing how non-binding international standards may influence binding domestic legal and administrative systems.

At the same time, the study also confirms the limits of soft law. WHO standards can define safe practice, legitimate governance, and responsible regulation, but they cannot by themselves provide blood supplies, finance laboratory infrastructure, enforce domestic laws, or monitor adverse transfusion events. Soft law provides direction, not delivery. Its effectiveness depends on political commitment, administrative capacity, financial investment, legal consolidation, professional acceptance, and sustained public trust.

The future of global blood governance therefore lies not in replacing soft law with a binding treaty, but in strengthening the institutional conditions through which soft law becomes effective. Improved benchmarking, peer-review mechanisms, domestic codification, hemovigilance systems, regulatory capacity-building, and equitable technical and financial support are necessary to reduce the gap between normative acceptance and practical implementation. In this sense, WHO soft law can contribute to saving lives, not by coercion, but by shaping the legal, institutional, and professional systems through which safe blood transfusion is delivered.

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