

Relación DOI–desempeño en la contratación de gobierno a gobierno: estudio de caso de tres consultorías británicas en el Perú (2021–2023)

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Enviado: 20 de Febrero 2026 • Evaluado: 10 de Abril 2026 • Aprobado: 1 de Mayo 2026

Citar como:

Apaza Gallardo, J. M. J. (2026). DOI–Performance Relationship in Government-to-Government Contracting: A Case Study of Three UK Consultancies in Peru (2021–2023). *Revista Científica de la Escuela Superior de Guerra del Ejército*, 5(1), 133-168. <https://doi.org/10.60029/v5n1art8>

Resumen

Este estudio examina las implicaciones de la metodología del Grado de Internacionalización (DOI) y la Relación de Desempeño en empresas que participan en contratos Gobierno a Gobierno (G2G), centrándose en el proceso de internacionalización de tres consultoras británicas: Mace, Arup y Gleeds, filiales en Perú. El objetivo de este estudio es determinar las implicaciones del DOI y la Relación de Desempeño en empresas que participan en contratos G2G con respecto a su proceso de internacionalización.

Específicamente, investiga la relación entre el DOI, medido por Ventas en el Extranjero sobre Ventas Totales (FSTS), Activos en el Extranjero sobre Activos Totales (FATA) y Filiales en el Extranjero sobre Activos Totales (FATA2), y el desempeño, determinado por el Retorno sobre Activos (ROA). Mediante análisis descriptivo y de correlación/regresión, el estudio analiza datos de los primeros tres años del contrato G2G entre el Gobierno Peruano y el Gobierno del Reino Unido (2021-2023). Los resultados indican una asociación positiva entre un mayor DOI y una estrategia de internacionalización fructífera en el corto plazo, aunque con baja previsibilidad. Las empresas participantes también realizaron campañas de autopromoción y promovieron capital más allá de las fronteras del país de destino, independientemente de su grado de participación en el contrato G2G. El estudio concluye que los contratos G2G ofrecen una oportunidad única para la inmersión estratégica en los mercados objetivo y regionales. Las limitaciones incluyen el pequeño tamaño de la muestra y la dependencia de datos estimados.

Palabras clave: Perú–Reino Unido, filiales, Gobierno a Gobierno, compras públicas, provisión de infraestructura, grado de internacionalización, relación de desempeño, internacionalización.

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DOI-Performance Relationship in Government-to-Government Contracting: A Case Study of Three UK Consultancies in Peru (2021–2023)

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Abstract

This study examines the implications of the Degree of Internationalization (DOI) methodology and Performance Relationship in companies participating in Government-to-Government (G2G) contracts, focusing on the internationalization process of three British consultancies - Mace, Arup, and Gleeds - subsidiaries in Peru. The objective of this study is to determine the implications of DOI and Performance Relationship in companies participating in G2G contracts regarding its internationalization process. Specifically, it investigates the relationship between DOI, as measured by Foreign Sales over Total Sales (FSTS), Foreign Assets over Total Assets (FATA), and Foreign Affiliates over Total Assets (FATA2), and performance, as determined by Return on Assets (ROA). Using descriptive and correlation/regression analysis, the study analyzes data from the first three years of the G2G contract between the Peruvian Government and the Government of the UK (2021-2023). Results indicate a positive association between a higher DOI and fruitful internationalization strategy in the short term, albeit with low predictability. Participating companies also engaged in self-promotion campaigns and promoted capital beyond the destination country's borders, regardless of their degree of participation in the G2G contract. The study concludes that G2G contracts offer a unique opportunity for strategic immersion in target and regional markets. Limitations include a small sample size and reliance on estimated data.

Keywords: Peru–UK, subsidiaries, Government-to-Government, public procurement, infrastructure delivery, degree of internationalization, performance relationship, internationalization.

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Introduction

The internationalization of firms is a complex process fraught with uncertainty, and understanding the mechanisms that facilitate successful expansion into new markets is a pressing concern for scholars and practitioners alike. While existing research has extensively explored the role of institutional factors in shaping firms' internationalization strategies (Cuervo et al., 2018), there remains a notable gap in our understanding of how Government-to-Government (G2G) contracting, as an institutional mechanism, influences firm internationalization and performance. G2G contracts have been touted as a means to promote transparency, reduce corruption, and enhance the efficiency of public procurement processes (Mchopa et al., 2024), but their implications for firms' internationalization trajectories remain underexplored. As governments increasingly rely on G2G agreements to facilitate strategic partnerships and drive economic growth, understanding the impact of these contracts on firms' internationalization outcomes is crucial for informing policy and practice in public sector contracting, integrity, and strategic delivery capacity. By examining the intersection of G2G contracting and firm internationalization, this study aims to shed light on the ways in which institutional mechanisms can be leveraged to promote sustainable and responsible internationalization practices.

The gradual liberalization of markets has led to increased internationalization, with programs and public incentives aimed at attracting and exporting products and services (Acevedo et al. 2020). G2G agreements have become more significant in this context, facilitating strategic management, operational coordination, and evidence-based decision making (Chen, 2018). However, G2G treaties also present challenges, such as maintaining political will and clarifying roles and responsibilities among members (Chen et al. 2018). This study explores the impact of internationalization on performance in companies participating in Peru-UK G2G contracts, addressing the following research questions: How does Degree of Internationalization (DOI) influence Return on Assets (ROA) in Peruvian consultancies operating in the UK via G2G contracts? What is the nature of the relationship between DOI and ROA (linear, diminishing returns, or non-linear)? We test the hypothesis that DOI has a positive but diminishing returns relationship with ROA, reflecting increasing coordination costs and complexity as companies expand internationally.

Moreover, Enjuto et al. (2021), who investigates the effects of the G2G contracting in the state-society relations, mention that despite the indisputable advantages that a company with pre-established connections with the government may have, that is, the existence of inequality between the actors of the G2G contract, it is also indisputable that the participation of private companies in this type of contracting increases the public sector efficiency, since it strengthens the market principle of competition. From this perspective, when the situation for multinational companies entails the question of whether a greater DOI should be reflected in greater economic performance at the business level, it must be observed from the level of the returns offered by the analysis of the DOI and performance (Loncan and Meucci 2010).

Objectives

The general objective of this empirical study is to examine the implications of The DOI methodology and the Performance Relationship in companies participating in G2G contracts on their internationalization process. Specifically, this research aims to:

- Determine the relation between the Foreign Sales to Total Sales ratio and the companies' performance relationship in G2G contracts.
- Determine the relation between the Foreign Assets to Total Assets ratio and the companies' performance relationship in G2G contracts.
- Determine the relation between the Foreign Affiliates to Total Assets ratio and the companies' performance relationship in G2G contracts.

Literature Review

The Internationalization Process

Throughout its research on the reasons for de-internationalization, which covers the issues of export withdrawal, divestment of subsidiaries and back-shoring or reshoring, Da Fonseca and Da Rocha (2023), warn that once a firm has begun the internationalization process, there are not always guarantees that these activities abroad will continue, due to manifestations such as de-internationalization, exit decision, foreign divestment, international market exit, export market withdrawal, reverse internationalization or back-shoring, which are part of a bunch of possibilities originated because of drastic switching in operation modes. However, the authors distinguish from several trends that influence the process of exploring new markets, the fact that an incursion in a foreign market It is often due to the transfer of a subsidiary from a country to a neighboring country, a decision that also mean the reduction of a company's internationalization scope and a dent in the internationalization strategy.

Another interesting aspect is what was pointed out by Domínguez et al. (2023), who rethinks the existing internalization process in order to eliminate the paradigms that current models and theories have set within the internationalization process, the move away from the step-by-step internationalization model, to put in another way, the coexistence between this model and the non-linear internationalization process, the step-by-step approach is still commonly perceived as a safe internationalization process. Along these lines, the step-by-step process, or also called the linear process of internationalization, assumes that the first step abroad involves entering the closest countries. For this reason, the culture of the country in question has become an important factor when making decisions about the internalization strategy to implement.

On the contrary Breuillot et al. (2022), who investigate the factors that influence early internationalizing companies, mention that different levels of influence are reflected when it comes to the internationalization process of a beginning company in the exploration of new markets. Firstly, at the individual level, there are factors that influence the members of the work teams in charge of the internationalization process, such as previous experience in

similar practices, the type of network they manage, their cognitive characteristics and personal characteristics. In second order, there are other factors that influence at the organizational level, such as human capital, relationship capital, organizational capital, physical capital, and the financial capital that is available at the time of starting the internationalization process. Finally, the authors mention that the characteristics of the home market, industrial factors or even the evolution of new technologies are the factors that can affect the internationalization process at an environmental level.

Degree of Internationalization

The DOI methodology, as described in the research carried out by Nguyen (2017), is based on the index components, the measurement of the FS/TS, FA/TA, OS/TS ratios, the international senior management experience (TMIE), and the psychic dispersion of international operation (PDIO), which is also mentioned as a cultural phenomenon variable. In accordance with the authors, The DOI index tends to be computed as follows: $DOI = FSTS + FATA + TMIE + PDIO$, the last two once comprises the management's international experience and the psychic dispersion of international operations, respectively. However, for a holistic understanding of the application of this methodology, it is necessary to observe its application in related projects.

According to Sun and Lee (2013), who use the DOI methodology utilizing firm's financial performance, in terms of degree of franchising, in order to provide a strategy for companies in its decision-making process to internationalize as well as to determine the factors that influence a medium-sized enterprises' expansion into international markets. In this sense, the authors focus on the division of the number of properties that operate in foreign markets by the total number of subsidiaries of the company, in order to determine if the relationship between the firm's relative performance and degree of internationalization is inverted U-shape. In other words, the methodology helps us determine to what degree the relationship between both factors is curvilinear, an essential factor for the subsequent analysis of a research.

In the same order, Bhandari et al. (2023), who study how digitalization and internationalization affect the company performance, propose that in order to utilize in a very effective way the DOI construct, it is best to start from the most solid data, at analyzing the degree to which total company sales are derived from foreign sales, at dividing foreign sales by Total sales in (%), or at analyzing the (FATA) Foreign assets/Total assets. In this sense, the authors remarks that DOI would act as a moderator containing positive effects in other index such as the digitalization performance relationship or the Foreign Direct Investment index (FDI), whether it comes from the specific industry or the country where the study is carried out. In this way, the authors point out that this is reflected in the relatively steeper positive slope when the selected factor is greater than 0.75.

Performance Relationship

The relationship between Degree of Internationalization (DOI) and performance in companies participating in G2G contracts is complex and influenced by various factors. López and Gómez (2014) identify five general models that explain this relationship:

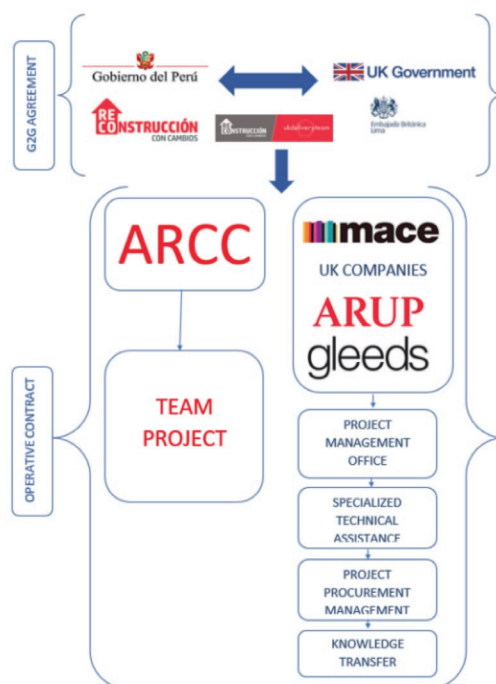
- **Positive And Linear Model:** DOI positively impacts performance, leading to increased economic benefits. This model assumes that as companies internationalize more, they reap more benefits, such as increased market share, revenue growth, and improved brand recognition.
- **Positive but Diminishing Returns Model:** DOI initially boosts performance, but benefits decrease over time. This model suggests that while internationalization brings initial gains, these benefits gradually decrease as companies face increasing costs, competition, and complexity in foreign markets.
- **U-Shaped Relationship Model:** Initial negative performance gives way to positive relationship over time. Companies may struggle initially due to liability of foreignness, but as they gain experience and adapt to local markets, performance improves.
- **Inverted U-Shaped Relationship Model:** Benefits of DOI peak and then decline due to increasing coordination costs. As companies expand internationally, they face growing coordination costs, cultural and language barriers, and complexity, which eventually outweigh the benefits of internationalization.
- **Sigmoid Relationship Model:** Three-stage process: initial costs, then efficiency gains, followed by declining benefits. Companies face initial costs of entry, then leverage internationalization for efficiency gains, but ultimately face declining benefits as they over-expand or face increased competition.

Given the context of Peru-UK G2G contracts, we expect a positive but diminishing returns relationship between DOI and performance. Consultancies may initially benefit from internationalization, but face increasing coordination costs and complexity as they expand. This study explores this relationship, examining how DOI influences performance in this specific context.

Method

To gain insight into the relationship between Degree of Internationalization (DOI) and performance of companies participating in the Peru-UK G2G project, we examine the evolution of specific financial ratios over time. The study focuses on three British consultancies and their Peruvian subsidiaries involved in the 2020 G2G project: Arup Group Limited/ Arup Peru Limited, Mace Limited/Mace Consultancy Peru, and Gleeds Advisory Limited/ Gleeds Peru Holding Limited. Given the small sample size, this exploratory study aims to illustrate quantitative patterns and provide a comparative case analysis of how DOI relates to performance in these companies, rather than seeking to make broad inferential claims. The selected companies have limited experience in the Peruvian market, making them suitable for examining the research objectives.

Figure 1
G2G Agreement and Operative Contract Scheme



Note. Framework based on the interaction between the UKDT and the ARCC, own elaboration.

To ensure accurate and consistent measurement with the nature of the research, the dimensions of the DOI index have been adjusted to the specific context of the Government-to-Government agreement between Peru and the United Kingdom, redefining the operational parameters in the following financial aspects: (1) External Sales, Sales specifically recorded in the Americas region (Peru) based on the firms' official annual reports. (2) External Assets, Consulting revenue generated in the Americas region (Peru) based on the annual consolidated financial statements. (3) External Subsidiaries, Number of projects executed under the G2G agreement based on the history of participation in the agreement.

In this sense, a series of methodological principles are established, oriented towards the financial reality of the participating subsidiary companies through their financial statements of their first three years of operations in Peruvian territory 2021-2023, taking into account the most appropriate financial ratios.

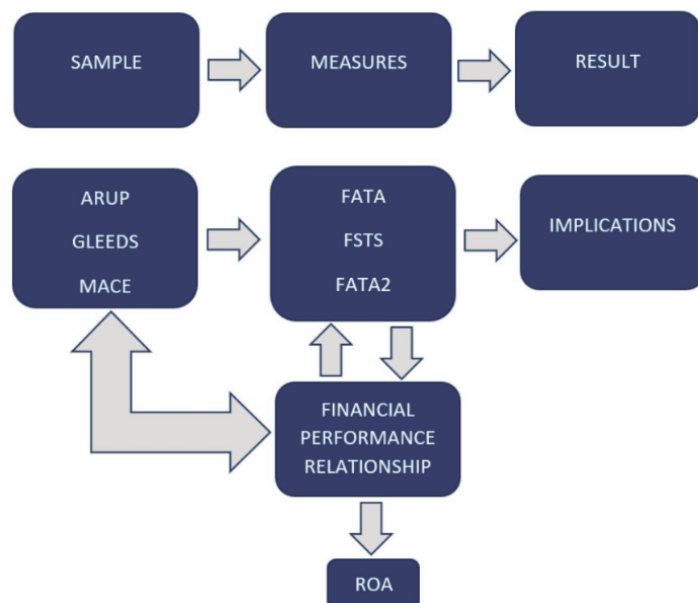
Firstly, It is intended that in terms of the constructs that make up the DOI methodology, they are adapted to the Peruvian-British G2G case and not to the general internationalization

activities applied by the firms. For this purpose, the following modifications to the scope of each of them are proposed to its constructs: (1) the ratio of Foreign Sales to Total Sales, to this extent the “Foreign Sales” will be considered as the sales in the Americas region (Peru), whose origin come from the annual report published on each of the official sites of the three companies mentioned, (2) Foreign Assets to Total Assets, in this degree the “Foreign Assets” will be considered as the consultancy revenue in the Americas region (Peru), whose main source come from the annual consolidated statement published on each of the official sites of the three companies mentioned (3) the ratios of Foreign Affiliates to Total Assets, concerning the “Foreign affiliates” there will be considered the quantity of projects in which the company has participated during the G2G agreement.

Secondly, given everything stated in the introduction of the Performance Relationship variable, there is a homogeneous opinion when choosing the most appropriate type of Performance Relationship for measurement during the research, it is the Financial Performance Relationship, and within it, this research will take the ROA, which will be applied to each of the official statements of the three British companies, in order to present solid data for the rigor of the analysis.

Figure 2

Relationship Between DOI Constructs and Performance Relationship



Note. Graphic representing the methodology applied, own elaboration.

Analytical method

The Degree of Internationalization (DOI) was originally conceptualized by Sullivan (1994) as a composite index comprising the ratio of foreign sales to total sales (FSTS), the ratio of foreign assets to total assets (FATA), top management international experience (TMIE), and the psychic dispersion of international operations (PDIO). Subsequent studies, including Nguyen (2017), operationalized DOI using similar components, incorporating FSTS, FATA, TMIE, overseas subsidiaries to total subsidiaries (OSTS), and PDIO as a cultural dispersion variable. In the present study, TMIE and PDIO are not available in the dataset and therefore cannot be operationalized. Consequently, rather than constructing a composite DOI index, this research adopts a proxy-based approach to internationalization. Specifically, three DOI proxies are employed: FSTS, FATA, and Foreign Affiliates to Total Affiliates (FATA2), the latter replacing OSTS to better reflect the structure of the available data. Firm performance is measured using Return on Assets (ROA). The empirical design examines the association between each DOI proxy (FSTS, FATA, and FATA2) and ROA individually, rather than estimating a unified DOI construct. Due to the very limited sample size ($n = 3$), the analysis is inherently descriptive and exploratory. As such, the results are not intended for formal hypothesis testing or statistical inference, but instead aim to provide preliminary insights into potential relationships between internationalization dimensions and firm performance.

Performance relationships are commonly evaluated using accounting-based indicators such as ROA, ROE, ROCE, ROS, Net Operating Income, Net Income, and the Zmijewski Score (Galant and Cadez, 2017). In professional services firms engaged in Government-to-Government (G2G) contracting, ROA is particularly appropriate because project execution depends primarily on human capital, managerial expertise, and knowledge-based assets rather than physical capital. ROA thus captures how effectively consulting firms transform their total asset base into operating returns within complex public-sector projects.

Alshehhi et al. (2018) identify ROA as the most frequently employed profitability measure in prior studies. Consequently, ROA is adopted as the performance indicator in this research. The ratio is calculated using consolidated financial statements of the parent companies to reflect overall organizational performance and incorporate results from Peruvian subsidiaries. This consolidated approach improves comparability across firms and aligns performance measurement with the multinational structure of G2G delivery models.

Financial Statements

To acquire information on the productive activities of the Arup company in its internationalization process through its participation in the G2G agreement between the UK and Peru, for the FA/TA, FS/TS, FA/TA2 and ROA variables, the following Full Accounts have been consulted in the Company Information Service of the GOV.UK.

The Financial Statements of the ARUP LIMITED 2021-2023, Company number 01312454, Nature of Business (SIC) 71122-Engineering related scientific and technical consulting activities, where the second part of the FA/TA variable will be identified and collected.

Table 1
ARUP LIMITED Balance Sheet 2021-2023

	NOTE	2021	2022	2023
		£	£	£
Revenue		1.717.100.000	1.893.800.000	2.163.600.000
Other income		33.900.000	22.300.000	3.300.000
Assets				
Non-current assets				
Property, plant and equipment		291.900.000	299.000.000	301.600.000
Right-of-use assets				
Intangible assets		353.400.000	324.100.000	317.300.000
Investments accounted for using the equity method		4.900.000	5.200.000	8.900.000
Deferred income tax assets		-	1.200.000	3.300.000
Financial assets at fair value through profit or loss		62.100.000	59.900.000	88.200.000
Net investments in subleases		18.500.000	21.800.000	16.600.000
Fulfilment contract assets		100.000	200.000	100.000
Other non-current assets		900.000	800.000	700.000
		-	2.400.000	2.200.000
	Total	731.800.000	714.600.000	738.900.000
Current Assets				
Contract assets		190.600.000	196.000.000	204.700.000
Trade and other receivables		304.600.000	339.100.000	382.700.000
Derivative financial instruments		0.0	0.0	0.0
Cash and cash equivalents		285.800.000	307.100.000	235.100.000
		781.000.000	842.500.000	822.500.000
Assets classified as held for sale		-	1.800.000	2.800.000
Total assets	Total	1.512.800.000	1.558.900.000	1.564.200.000

Note. Arup Limited financial statement audited in accordance with ISAs UK and applicable law. Registration number 01312454. (GOV.UK, 03 January 2023).

The Financial Statements of the ARUP PERU LIMITED 2021-2023, Company number 12686337, Nature of Business (SIC) 71122-Engineering related scientific and technical consulting activities, where the first part of the FA/TA variable will be identified and collected.

Table 2

ARUP PERU LIMITED Balance Sheet 2021-2023

	NOTE	2021	2022	2023
		£	£	£
Revenue by destination (Americas)		1.607.000	10.192.000	6.612.000
Employee benefit expense		613.000	4.526.000	3.444.000
Changes from sub-consultants		922.000	2.547.00	2.221.000
Depreciation		66.000	329.000	129.000
Communications		57.000	1.224.000	1.147.000
Net impairment losses on financial and contract assets		-	-	117.000
		1.658.000	8.626.000	7.058.000
Operating (loss) / profit		51.000	1.566.000	446.000
Finance income		-	0.0	9.000
Finance cost		1.000	35.000	132.000
(Loss) / profit before income tax		52.000	1.531.000	569.000
Income tax charge		199.000	1.998.000	816.000
Loss for the financial year		251.000	467.000	1.385.000
Assets		£	£	£
Non-current assets		302.000	86.000	44.000
Right-of-use assets		4.000	-	-
Deferred income tax assets		306.000	86.000	44.000
Current assets		1.122.000	2.627.000	1.459.000
Contract assets		148.000	2.298.000	2.990.000
Trade and other receivables		353.000	319.000	973.000
Cash and cash equivalents		1.623.000	5.244.000	5.422.000
Total assets	Total	1.929.000	5.330.000	5.466.000

Note. Part of the Arup Peru Limited, subsidiary of Arup Group Limited, audited financial statement in accordance with international Standards on Auditing (ISAs UK) and applicable law. Registration number 12686337. (GOV.UK, 05 January 2023).

The Financial Statements of the MACE LIMITED 2021-2023, Company number 02410626, Nature of Business (SIC) 70229-Management consultancy activities other than financial management, where the second part of the FA/TA variable will be identified and collected.

Table 3
MACE LIMITED Balance Sheet 2021-2023

	NOTE	2021	2022	2023
		£	£	£
Revenue		1.933.017.000	1.892.583.000	2.356.792.000
Non-current assets				
Property, plant and equipment		22.956.000	26.993.000	33.405.000
Intangible assets				
Deferred income tax assets		51.419.000	51.949.000	43.426.000
Investments in joint ventures & associates		6.908.000	7.903.000	4.631.000
Other investments		1.341.000	944.000	251.000
Restricted cash		12.996.000	11.314.000	6.675.000
Trade and other receivables		-	244.000	252.000
		1.199.000	600.000	
Deferred consideration		-	-	4.337.000
	Total	96.821.000	99.947.000	92.977.000
Current Assets				
Trade and other receivables		623.947.000	637.004.000	726.421.000
Development loan to join venture		80.947.000	44.430.000	33.700.000
Development work in progress		12.543.000	7.494.000	7.382.000
Asset of a disposal group classified as held for sale		-	932.000	-
Current tax assets		5.578.000	1.353.000	2.143.000
Restricted cash		237.000	26.281.000	10.842.000
Cash at bank		164.888.000	159.974.000	172.953.000
	Total	858.477.000	876.536.000	953.441.000

Note. Mace Consultancy Peru report in accordance with (ISAs (UK)) and applicable law. Registration number 02410626. (GOV.UK, 24 July 2023).

The Financial Statements of the MACE CONSULTANCY THE AMERICAS (PERU) LIMITED 2021-2023, Company number 10874751, Nature of Business (SIC) 70229-Management consultancy activities other than financial management, where the first part of the FA/TA variable will be identified and collected.

Table 4

MACE CONSULTANCY THE AMERICAS (PERU) Balance Sheet 2021-2023

	NOTE	2021	2022	2023
		£	£	£
Revenue by destination (The Americas)		-	-	-
Cost of sales		2.000	(24.000)	(123.000)
Gross (loss)/profit		2.000	(24.000)	(123.000)
Administrative expensive		125.000	(48.000)	
Exceptional items		-	(110.000)	-
Administrative expensive		125.000	(158.000)	(96.000)
Operating (loss) / profit		127.000	(182.000)	(219.000)
Interest receivable and similar income		-	7.368.000	-
Interest payable and similar expenses		(25.000)	-	(39.000)
Profit before tax		102.000	7.186.000	258.000
Tax on profit		-	(256.000)	65.000
Profit for the year		102.0000	6.930.000	(193.000)
Other Comprehensive income				
Profit for the year		102.000	6.930.000	(193.000)
Foreign currency translation losses		(60.000)	(7.000)	-
Total comprehensive income for the year		42.000	6.923.000	(193.000)
Current assets				

Trade and other receivables		1.843.000	15.340.000	799.000
Cash and cash equivalents		375.000	873.000	18.000
Tax asset		-	90.000	192.000
	Total	2.218.000	16.303.000	1.009.000
Total assets		£	£	£
Current liabilities		-	7.368.000	-
Trade and other payables		(1.073.000)	(15.255.000)	(216.000)
Tax liabilities		(20.000)	-	(5.000)
	Total	-	(15.255.000)	(221.000)
Net assets		(1.093.000)	1.048.000	855.000
Capital and reserves		1.125.000	(185.000)	2.000
Foreign exchange reserve		(178.000)	1.233.000	853.000
Retained earnings		1.303.000	1.048.000	855.000
Shareholders' funds		1.125.000		

Note. Mace Consultancy Peru, subsidiary of Mace Limited, report in accordance with (ISAs (UK)) and applicable law. Registration number 10874751. (GOV.UK, 11 August 2023).

Table 5

GLEEDS ADVISORY LIMITED Balance Sheet 2021-2023

	NOTE	2021	2022	2023
		£	£	£
Turnover		22.364.001.000	34.944.876.000	38.380.803.000
Cost of sales		(20.440.425.000)	(32.797.850.000)	(35.189.109.000)
Gross profit		1.923.576.000	2.147.026.000	3.191.694
Administrative expensive		(1.806.730.000)	(1.748.284.000)	(1.744.989)
Other operating income		13.140.000	36.165.000	35.315
Operating profit		129.986.000	434.907.000	1.482.020.000
Finance costs (net)		(5.982.000)	(18.926.000)	(30.788.000)
Profits on ordinary activities before taxation		124.004.000	415.981.000	1.451.232.000
Tax on profit on ordinary activities		(23.606.000)	(94.426.000)	(359.379.000)
Profit for the financial year-income for the year		100.398.000	321.555.000	1.091.853.000
Current assets				
Debtors-due within one year		5.121.618.000	12.437.876.000	7.726.649.000
Cash at bank and in hand		-	-	-
Total current assets	Total	5.121.618.000	12.437.876.000	7.726.649.000
Amounts falling due within one year		(3.444.101.000)	(10.438.804.000)	(4.635.724.000)
Net current assets		1.677.517.000	1.999.072.000	3.090.925.000
Total assets less current liabilities, being net assets	Total	1.677.517.000	1.999.072.000	3.090.925.000

Note. Gleeds Advisory Limited, report in accordance with (ISAs (UK)) and applicable law. Registration number 06472422. (GOV.UK, 12 October 2023).

The Financial Statements of the GLEED AMERICAS (PERU) HOLDING LIMITED 2021-2023, Company number 06213794, Nature of Business (SIC) 74909-Other professional, scientific, and technical activities not elsewhere classified, where the first part of the FS/TS variable will be identified and collected.

Table 6
Gleeds Americas (Peru) Holding Limited
Balance Sheet 2021-2023

	NOTE	2021	2022	2023
		£	£	£
Turnover		-	-	-
Cost of sales		-	-	-
Gross profit		-	-	-
Administrative expensive		(92.000)	(56.000)	(59.000)
Operating (loss)		(92.000)	(56.000)	(59.000)
Income from shares in group undertakings		516.279.000	-	-
(Loss)/ profit on ordinary activities before taxation		516.187.000	(56.000)	(59.000)
Tax on (loss)/profit on ordinary activities		(25.814.000)	-	-
(Loss)/ profit for the financial year		490.373.000	(56.000)	(59.000)
		£	£	£
Fixed assets		-	-	-
Investments		335.278.000	335.278.000	335.221.000
Current assets				
Debtors – due within one year		35.500.000	35.500.000	35.556.000
Cash at bank and in hand		173.000	116.000	152.000
Creditors: amounts falling due within one year		(11.527.000)	(11.526.000)	(11.620.000)
Net current assets		24.146.000	24.090.000	24.088.000
Total assets less current liabilities, being ne assets	Total	359.424.000	359.368.000	359.309.000

Note. Gleeds Peru Holding Limited, subsidiary of Gleeds Advisory Limited, report in accordance with (ISAs (UK)) and applicable law. Registration number 06213794. (GOV.UK, 12 October 2023).

Results

On one hand, the correlation coefficient measures the linear relationship between strategic key drivers of financial and marketing models with values between 1 or -1 with the aim of establishing more effective strategies for companies' campaigns based on the level of association of the data variables. In this sense, (1) a correlation coefficient of 0 means no linear relationship. (2) 1 indicates a perfect correlation or that the variables are the same size. (3) -1 constitutes a perfect negative linear relationship among variables. (4) Values between 0 - 0,3 means a poor positive linear relationship. (5) Values between 0,3 - 0,7 demonstrate a moderate positive linear relationship. (6) Values between 0,7 - 1 indicate a high positive linear relationship among variables (Ratner, 2019).

On the other hand, Uyanık and Güler (2013) note that linear regression analyzes the relationship between a dependent variable and one or more independent variables. This approach enables the establishment of a mathematical model based on the correlation line, allowing for the prediction of interactions between variables. Moreover, it's a step further for the association establishment between values in comparison with the correlation coefficient, it not only analyzes the interaction between variables, but also enables one to predict its interaction through the establishment of a mathematical model based on the correlation line. In this sense, the Regression counts with several parameters, (1) the Adjusted R Square, which determines the percentage of the variance explained by de independent variable regarding the total variability of the data can be measured on a similar range to the correlation coefficient, (2) the Regression Critic provides insight into the model's overall significance, suggesting whether the regression coefficients are likely to be zero (values below 0.05 indicate at least one coefficient may be non-zero). (3) The Independent Value Probability offers similar insight into the variance analysis, with values below 0.05 suggesting potential associations worth exploring further.

For the analysis, the following formulas will be applied, through SPSS Statistics, for each of the companies during the three-year period, concerning the correlation coefficient and the regression model of the DOI variables in relation to the Performance Relationship variable.

Figure 3

Pearson Correlation Coefficient Formula

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

r = correlation coefficient

x_i = values of the x-variable in a sample

$\bar{x}$ = mean of the values of the x-variable

y_i = values of the y-variable in a sample

$\bar{y}$ = mean of the values of the y-variable

Note. First mathematical formula proposed by Pearson in 1895. (Rodgers and Nicewander, 1988).

Figure 4

Multiple Linear Regression Formula

$$y = \beta_0 + \beta_1 x_1 + \dots + \beta_n x_n + \varepsilon$$

y = dependent variable

X_i = independent variable

β_i = parameter

ε = error

Note. The addition of multiple independent variables is the main difference between a simple linear regression and a multiple linear regression formula. (Uyanık and Güler, 2013).

Correlation Coefficient and Regression Analysis 2021

Table 7

Financial Ratio Definitions and Classification Ranges for 2021

Firms	DOI	DOI	DOI	PERF. REL.
	1	2	3	4
	FATA 2021	FSTS 2021	FATA2 2021	ROA 2021
ARUP	0,0012751	0,0009359	0,0000612	0,0001659
MACE	0,0023218	0,0000528	0,0532011	0,0000440
GLEEDS	0,2142595	0,0230812	0,0003283	0,2923207

Note. This classification table of the variables DOI (FATA - FSTS - FATA2) and Performance Relationship Ratio (ROA), both for calculation of Correlation and Regression Coefficient based on the results of the 2021 financial statements consulted on the GOV.UK website, self-elaboration.

Table 8

Regressi on Model of the FATA 2021 Variable Based on the ROA 2021 Variable

Correlation coefficient	0,99999
R Square	0,99998
Adjusted R Square	0,99996
Standard Error	0,00110
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,056926	0,056926	46692,42	0,00295
Residual	1	0,000001	0,000001		
Total	2	0,056927			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	-0,00237	0,00079	-3,00559	0,20448	-0,01237	0,00764	-0,01237	0,00764
X Variable 1	1,37536	0,00636	216,08428	0,00295	1,29448	1,45623	1,29448	1,45623

Note. This table shows the results of the Excel Multiple Regression apply to the FSTS 2021 data of the three companies (independent variable) and the ROA 2021 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FATA 2021 and the Performance Relationship financial variable ROA 2021 of the three British companies is 0,99 (High positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is 0,99 (Highly viable data model), (2) the Regression Critic Value is 0,002 (Inferior to 0,05, a reliable regression model), and (3) the Independent Value Probability is 0,002 (Inferior to 0,05, a reliable variable to do prediction).

Table 9

Regression Model of the FSTS 2021 Variable Based on the ROA 2021 Variable

Correlation coefficient	0,99944
R Square	0,99888
Adjusted R Square	0,99776
Standard Error	0,00799
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,05686	0,05686	891,14539	0,02132
Residual	1	0,00006	0,00006		
Total	2	0,05693			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	-0,00617	0,00577	-1,06916	0,47873	-0,07953	0,06719	-0,07953	0,06719
X Variable 1	12,92278	0,43289	29,85206	0,02132	7,42234	18,42322	7,42234	18,42322

Note. This table shows the results of the Excel Multiple Regression apply to the FSTS 2021 data of the three companies (independent variable) and the ROA 2021 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FSTS 2021 and the Performance Relationship financial variable ROA 2021 of the three British companies is 0,99 (High positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is 0,99 (Highly viable data model), (2) the Regression Critic Value is 0,02 (Inferior to 0,05, a reliable regression model), and (3) the Independent Value Probability is 0,02 (Inferior to 0,05, a reliable variable to do prediction).

Table 10

Regression Model of the FATA2 2021 Variable Based on the ROA 2021 Variable

Correlation coefficient	0,49653
R Square	0,24654
Adjusted R Square	-0,50692
Standard Error	0,20710
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,01403	0,01403	0,32721	0,66922
Residual	1	0,04289	0,04289		
Total	2	0,05693			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	0,14641	0,14698	0,99608	0,50125	-1,72120	2,01402	-1,72120	2,01402
X Variable 1	-2,73726	4,78521	-0,57203	0,66922	-63,53918	58,06465	-63,53918	58,06465

Note. This table shows the results of the Excel Multiple Regression apply to the FATA2 2021 data of the three companies (independent variable) and the ROA 2021 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FATA2 2021 and the Performance Relationship financial variable ROA 2021 of the three British companies is 0,49 (Moderate positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is -0,5 (Negative viable data model), (2) the Regression Critic Value is 0,6 (Superior to 0,05, a no reliable regression model), and (3) the Independent Value Probability is 0,6 (Superior to 0,05, a no reliable variable to do prediction).

Correlation Coefficient and Regression Analysis 2022

The content of each of the variables (FATA-FSTS-FATA2-ROA) responds to the three British companies selected, based on the 2022 financial results obtained by both, its global operations and those of its subsidiary in Peru.

Table 11

Financial Ratio Definitions and Classification Ranges for 2022

Firms	DOI	DOI2	DOI3	PERF. REL.
	1	2	3	4
	FATA 2022	FSTS 2022	FATA2 2022	ROA 2022
ARUP	0,00341908	0,00538177	0,00002214	0,00029957
MACE	0,01669563	0,00379693	0,00723793	0,00708973
GLEEDS	0,17976741	0,00000160	0,00032835	0,00002801

Note. This classification table of the variables DOI (FATA - FSTS - FATA2) and Performance Relationship Ratio (ROA), both for calculation of Correlation and Regression Coefficient based on the results of the 2022 financial statements consulted on the GOV.UK website, self-elaboration.

Table 12

Regression Model of the FATA 2022 Variable Based on the ROA 2022 Variable

Correlation coefficient	0,47053
R Square	0,22140
Adjusted R Square	-0,55720
Standard Error	0,00499
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,000007	0,000007	0,28	0,69
Residual	1	0,000025	0,000025		
Total	2	0,000032			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	0,00375	0,00375	1,00050	0,49984	-0,04387	0,05137	-0,04387	0,05137
X Variable 1	-0,01917	0,03595	-0,53325	0,68812	-0,47594	0,43760	-0,47594	0,43760

Note. This table shows the results of the Excel Multiple Regression apply to the FATA 2022 data of the three companies (independent variable) and the ROA 2022 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FATA 2022 and the Performance Relationship financial variable ROA 2022 of the three British companies is 0,47 (Moderate positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is -0,5 (Negative viable data model), (2) the Regression Critic Value is 0,69 (Superior to 0,05, a no reliable regression model), and (3) the Independent Value Probability is 0,69 (Superior to 0,05, a no reliable variable to do prediction).

Table 13

Regression Model of the FSTS 2022 Variable Based on the ROA 2022 Variable

Correlation coefficient	0.26369
R Square	0.06953
Adjusted R Square	-0.86093
Standard Error	0.00377
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.00000	0.00000	0.07473	0.83
Residual	1	0.00001	0.00001		
Total	2	0.00002			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	0.00261	0.00273	0.95560	0.51445	-0.03209	0.03731	-0.03209	0.03731
X Variable 1	0.18221	0.66655	0.27337	0.83012	-8.28716	8.65158	-8.28716	8.65158

Note. This table shows the results of the Excel Multiple Regression apply to the FSTS 2022 data of the three companies (independent variable) and the ROA 2022 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FSTS 2022 and the Performance Relationship financial variable ROA 2022 of the three British companies is 0,26 (Poor positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is -0,86 (Negative viable data model), (2) the Regression Critic Value is 0,83 (Superior to 0,05, a no reliable regression model), and (3) the Independent Value Probability is 0,83 (Superior to 0,05, a no reliable variable to do prediction).

Table 14

Regression Model of the FATA2 2022 Variable Based on the ROA 2022 Variable

Correlation coefficient	0,99745
R Square	0,99490
Adjusted R Square	0,98980
Standard Error	0,00040
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,0000319	0,0000319	195,09	0,05
Residual	1	0,0000002	0,0000002		
Total	2	0,0000320			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	-1,41146E-06	2,92906E-04	-4,81880E-03	9,96932E-01	-3,72314E-03	3,72031E-03	-3,72314E-03	3,72031E-03
X Variable 1	0,97801	7,00207E-02	1,39674E+01	0,05	8,83120E-02	1,86771E+00	8,83120E-02	1,86771E+00

Note. This table shows the results of the Excel Multiple Regression apply to the FATA2 2022 data of the three companies (independent variable) and the ROA 2022 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FATA2 2022 and the Performance Relationship financial variable ROA 2022 of the three British companies is 0,99 (High positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is 0,98 (Highly viable data model), (2) the Regression Critic Value is 0,05 (Not superior to 0,05, a reliable regression model), and (3) the Independent Value Probability is 0,05 (Not superior to 0,05, a reliable variable to do prediction).

Correlation Coefficient and Regression Analysis 2023

The content of each of the variables (FATA-FSTS-FATA2-ROA) responds to the three British companies selected, based on the 2023 financial results obtained by both, its global operations and those of its subsidiary in Peru.

Table 15

Financial Ratio Definitions and Classification Ranges for 2023

Firms	DOI	DOI2	DOI3	PERF. REL.
	1	2	3	4
	FATA 2023	FSTS 2023	FATA2 2023	ROA 2023
ARUP	0,00349444	0,00305602	0,00002159	0,00088544
MACE	0,00096424	0,00010947	0,11694747	0.00018444
GLEEDS	0,11622830	0,0000015372	0,00032841	0,000019088

Note. This classification table of the variables DOI (FATA - FSTS - FATA2) and Performance Relationship Ratio (ROA), both for calculation of Correlation and Regression Coefficient based on the results of the 2023 financial statements consulted on the GOV.UK website, self-elaboration.

Table 16

Regression Model of the FATA 2023 Variable Based on the ROA 2023 Variable

Correlation coefficient	0.63276
R Square	0.40038
Adjusted R Square	-0.19992
Standard Error	0.07209
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.00347	0.00347	0.66773	0.56384
Residual	1	0.00519	0.00519		
Total	2	0.00866			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	0.07310	0.05788	1.26288	0.42637	-0.66239	0.80860	-0.66239	0.80860
X Variable 1	-90.56350	110.82822	-0.81715	0.56384	-1498.76950	1317.64250	-1498.76950	1317.64250

Note. This table shows the results of the Excel Multiple Regression apply to the FATA 2023 data of the three companies (independent variable) and the ROA 2023 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FATA 2023 and the Performance Relationship financial variable ROA 2023 of the three British companies is 0,63 (Positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is -0,19 (Negative viable data model), (2) the Regression Critic Value is 0,56 (Superior to 0,05, a no reliable regression model), and (3) the Independent Value Probability is 0,56 (Superior to 0,05, a no reliable variable to do prediction).

Table 17

Regression Model of the FSTS 2023 Variable Based on the ROA 2023 Variable

Correlation coefficient	0.98883
R Square	0.97778
Adjusted R Square	0.95557
Standard Error	0.00036
Observations	3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.00001	0.00001	44.02311	0.09523
Residual	1	0.00000	0.00000		
Total	2	0.00001			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	-0.00029	0.00029	-1.01213	0.49616	-0.00402	0.00343	-0.00402	0.00343
X Variable 1	3.72616	0.56159	6.63499	0.09523	-3.40954	10.86187	-3.40954	10.86187

Note. This table shows the results of the Excel Multiple Regression apply to the FSTS 2023 data of the three companies (independent variable) and the ROA 2023 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FSTS 2023 and the Performance Relationship financial variable ROA 2023 of the three British companies is 0,98 (High positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is 0,95 (Highly viable data model), (2) the Regression Critic Value is 0,09 (Superior to 0,05, a no reliable regression model), and (3) the Independent Value Probability is 0,09 (Superior to 0,05, a no reliable variable to do prediction).

Table 18

Regression Model of the FATA2 2023 Variable Based on the ROA 2023 Variable

Correlation coefficient	0.33833
R Square	0.11446
Adjusted R Square	-0.77106
Standard Error	0.08972
Observations	3

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.00104	0.00104	0.12926	0.78027
Residual	1	0.00805	0.00805		
Total	2	0.00909			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95,0%</i>	<i>Upper 95,0%</i>
Intercept	0.05710	0.07204	0.79258	0.57333	-0.85829	0.97249	-0.85829	0.97249
X Variable 1	-49.59241	137.93581	-0.35953	0.78027	-1802.23300	1703.048	-1802.23300	1703.04820

Note. This table shows the results of the Excel Multiple Regression apply to the FATA2 2023 data of the three companies (independent variable) and the ROA 2023 data of the three companies (dependent variable), which comprises the correlation coefficient and the regression data (the Adjusted R Square, the Regression Critic Value and the Independent Variable Probability), self-elaboration.

Based on the correlation coefficient ranges, the association of the DOI variable FATA2 2023 and the Performance Relationship financial variable ROA 2023 of the three British companies is 0,33 (Poor positive linear relationship), whereas the Regression's parameters indicate that, (1) the Adjusted R Square is -0.77 (Negative viable data model), (2) the Critical Regression Value is 0,78 (Superior to 0,05, a no reliable regression model), and (3) the Independent Value Probability is 0,78 (Superior to 0,05, a no reliable variable to do prediction).

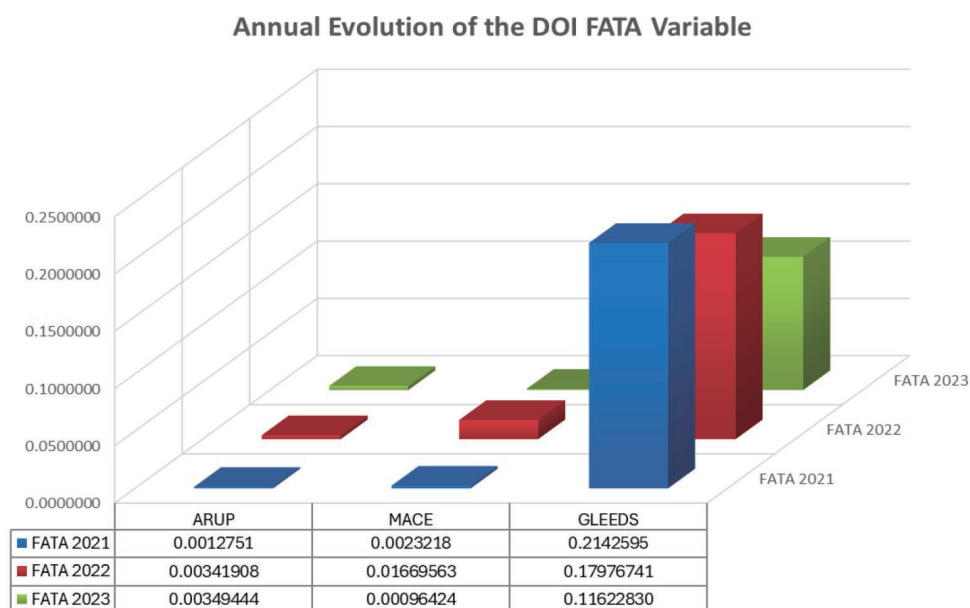
Descriptive Statistics

As can be seen in the following graph correlation table, there is a positive linear trend for the ARUP company with respect to its FATA variable throughout its participation in the G2G agreement, as for the MACE company, an exponential trend line prevails during the first two years, while for the GLEEDS company, a negative linear trend is observed in terms of its FATA variable throughout

its participation in the G2G model. Therefore, it is observed that only for the ARUP and MACE participation in the G2G agreement between the UKDT and the ARCC has represented a relatively positive and sustained development throughout the first 3 years of the project.

Figure 5

Evolution of FATA Variable Companies From 2021 to 2023

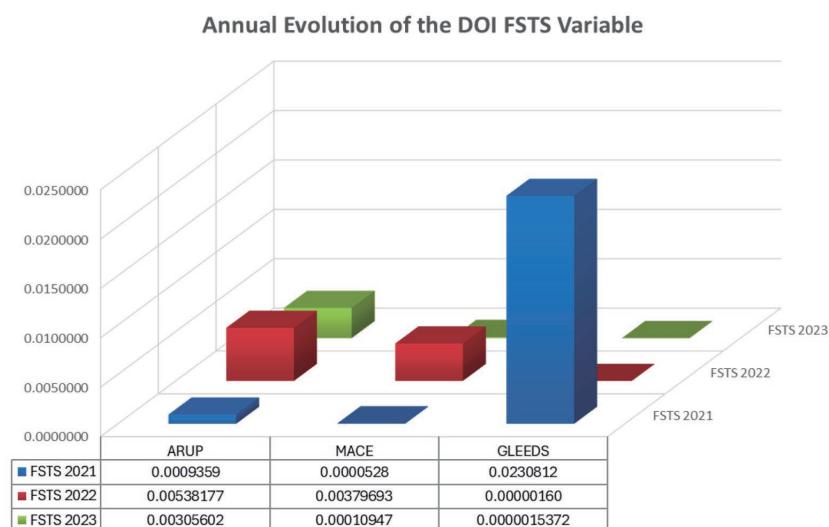


Note. This figure shows the variation between the FATA variables of the ARUP, MACE and GLEEDS companies throughout 2021, 2022 and 2023, that is, the significance of their participation in the G2G agreement during the last 3 years, self-elaboration.

As identified in the following graph, there is evidence of an exponential trend line for the companies ARUP and MACE during the first two years with respect to its FSTS variable, while for the GLEEDS company, a marked negative linear trend is observed in terms of its FSTS variable. Therefore, it is observed that only the ARUP and MACE participation in the G2G agreement between the UKDT and the ARCC has represented a partial positive development throughout the first 3 years of the project.

Figure 6

Evolution of FSTS Variable Companies From 2021 to 2023

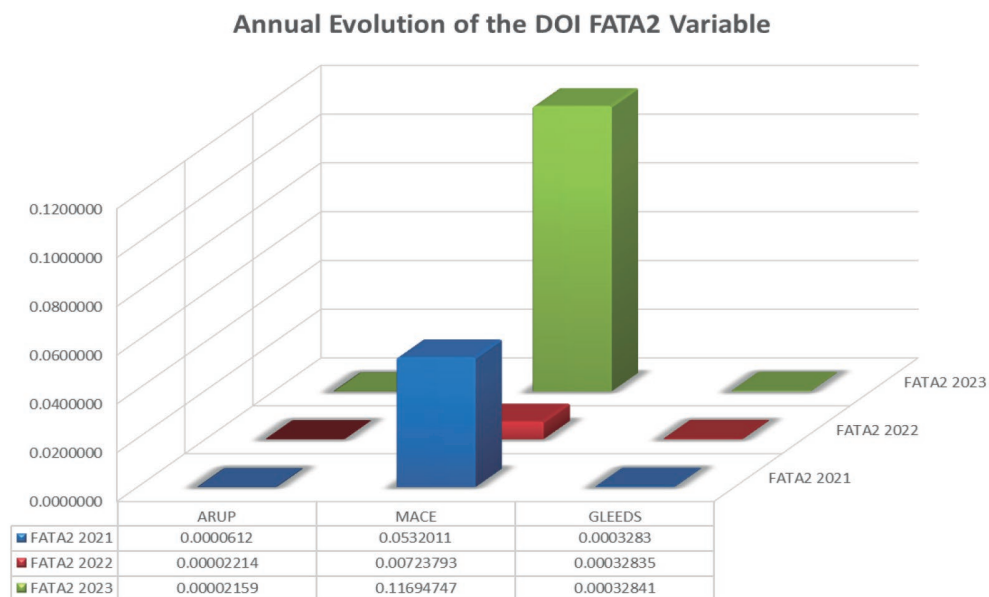


Note. This figure shows the variation between the FSTS variables of the ARUP, MACE and GLEEDS companies throughout 2021, 2022 and 2023, that is, the significance of their participation in the G2G agreement during the last 3 years, self-elaboration.

As observed in the correlation table below, there is a negative linear trend for the ARUP company with respect to its FATA2 variable. As for the MACE company, it has been identified a marked positive exponential trend line of the FATA2 variable in the year 2022-2023, while for the GLEEDS company, a static linear trend is observed regarding its FATA2 variable throughout their participation in the G2G model. Therefore, it can be stated that participation in the G2G agreement between the UKDT and the ARCC only has represented a positive or sustained development for the MACE company during 2021-2023.

Figure 7

Evolution of The FATA2 Variable Companies From 2021 to 2023

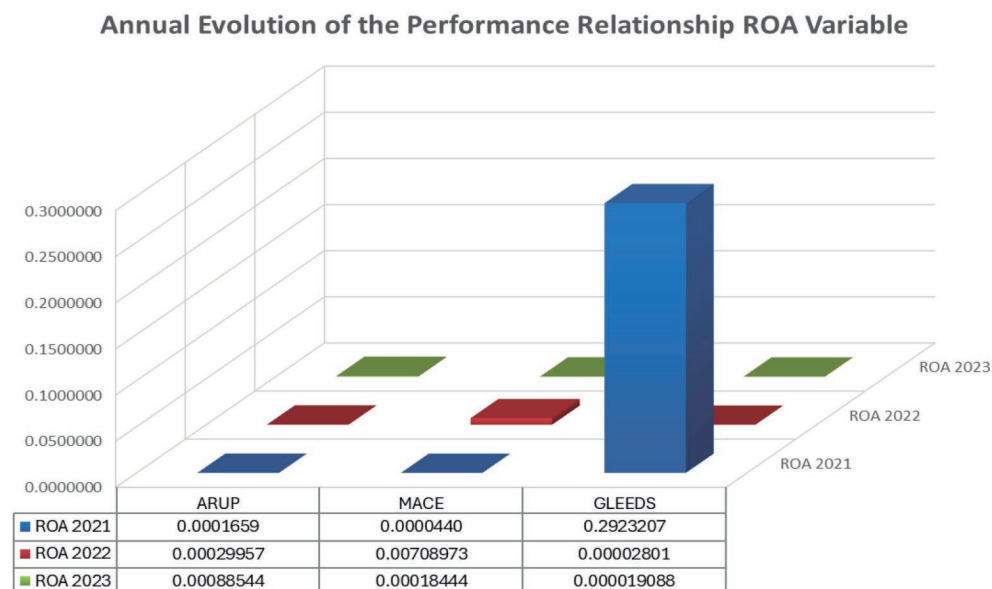


Note. This figure shows the variation between the FATA2 variables of the ARUP, MACE and GLEEDS companies throughout 2021, 2022 and 2023, that is, the significance of their participation in the G2G agreement during the last 3 years, self-elaboration.

As can be seen in the correlation table below, there is a positive but imperceptible linear trend for both the company ARUP and MACE with respect to its ROA variable, as for the company GLEEDS, a fairly marked negative linear exponential trend is observed between the year 2021-2022 in terms of its ROA variable. Therefore, it is observed that there is no company in G2G agreement between the UKDT and the ARCC with a positive development throughout the first 3-year period.

Figure 8

Evolution of The ROA Variable of Companies From 2021 to 2023



Note. This figure shows the variation between the ROA variables of the ARUP, MACE and GLEEDS companies throughout 2021, 2022 and 2023, that is, the significance of their participation in the G2G agreement during the last 3 years, self-elaboration.

Discussion

Once the financial statements have been determined, the DOI and Performance Relationship has been calculated and both the Correlation Coefficient and the Regression Model have been applied to the DOI and Performance Relationship sub-variables, as well as the statistical analysis of each of the variables over the three-year period have been introduced. It can be stated that, although it is true that the participation of ARUP, MACE and GLEEDS in a G2G agreement, precisely in a country where its presence or experience is not relevant, has become at least positive, given the characteristics of the contract, which offers a planned work structure with medium and long-term goals, as can be seen in the details of the analysis of the following results.

Concerning the analysis of the annual evolution of the DOI FATA variable , it reveals a poor, generalized linear trend during the firms' participation in the G2G model. This finding suggests that, overall, the agreement has not guaranteed improved asset efficiency for most of the participating organizations. However, it highlights the performance of ARUP and MACE, which showed positive and sustained development during the first three years of the project. This exceptional performance is further reinforced by the DOI FSTS variable, where again only these two companies achieved partial positive progress, setting them apart from the other participants in the UKDT-ARCC agreement.

A closer look at profitability reveals an even closer concentration of success around MACE. Regarding the DOI FATA2 variable, it is evident that only this organization managed to maintain positive or sustained growth during the 2021-2023 period. This performance is consistent with the ROA (Return on Assets) analysis, which shows that MACE was the only entity able to capitalize on its participation in the G2G agreement to improve its return on assets.

It is also observable that, based on the statistical outputs derived from the study dataset, although the three companies did not participate equally in the contracts included in the analysis, no consecutive periods of low activity were observed within the available data window, and most variables exhibited positive linear or exponential trends, with the exception of FATA2; however, these findings are exploratory and limited to the scope of the sample analyzed. Within this empirical boundary, the results suggest that participation in the UKDT-ARCC G2G framework coincided with increased operational activity for ARUP, MACE, and GLEEDS in Peru, although this study does not construct a contract-level participation dataset nor establish causality. Consequently, interpretations regarding market consolidation or regional diversification should be viewed as indicative rather than conclusive, while broader claims concerning prestige acquisition or positioning within the Latin American public sector are presented as contextual observations informed by existing literature and industry sources, rather than outcomes directly.

Conclusion

As regression level analysis, except for the Correlation Coefficient of the FSTS variable in 2022 and the FATA2 in 2023, the rest of the coefficients indicate a moderate / high level of association among variables. Therefore, a moderate to high level of association exists between the ratio of FSTS and the performance of companies participating in G2G contracts. However, this relationship is not constant over time, as a significant exception was identified in the Correlation Coefficient for 2022, where the link lost the strength observed in the rest of the analyzed period. This indicates that, while the international sales structure is generally aligned with corporate performance in this contractual model, there are temporary or situational factors that can weaken this association.

Additionally, concerning the Regression Model, in 2021 one-third of the regression analysis represent inconsistent figures to be able to predict association among variables (the FATA2/ROA analysis), in 2022 two-thirds of the regression analysis represent inconsistent figures to be able to predict association among variables (the FATA/ROA and the FSTS/ROA analysis), and in 2023 all the regression analysis present inconsistent figures to be able to predict association among variables (the FATA/ROA, the FSTS/ROA and the FATA2/ROA analysis). Therefore, it is

concluded that the relationship between the foreign asset ratio (FATA and FATA2) and business performance lacks long-term predictability, as the regression model showed inconsistent figures for predicting its impact on ROA in 2022 and a total lack of predictive power in 2023. From this, three sub-conclusions are derived: first, the explanatory power of assets on profitability deteriorated progressively from the second year; second, by the end of the period, both ratios ceased to be reliable predictors; and third, the international asset structure does not fully guarantee a projectable performance pattern under the G2G contract framework.

It is particularly relevant that the ROA findings contradict previous reports on financial performance in this type of contractual framework. While earlier literature or preliminary reports suggested broader benefits, this research demonstrates that the positive impact has been selective. This divergence underscores that success in the G2G model is not an inherent outcome of the agreement, but rather appears to be contingent on the specific management and execution capabilities of each firm, with MACE being the benchmark for greater financial sustainability during the three-year period analyzed.

As development fluctuation implication, except for the deficient trend shown by the Gleeds company, regarding the four sub variables throughout the first three years of the project, the companies Arup and Mace have presented a positive linear, an exponential growth or a static linear trend in almost all the sub-variables development during the period 2021-2023. This responds to the flexible nature of the G2G agreement in which the companies participate, which although it has allowed the organizations to intervene in all the 118 projects, not all have had the same degree of immersion in each of them. Furthermore, despite the lack of predictability during the project, the G2G agreement provides a framework that is considerably financially profitable in the short term for the participating companies, which exponentially increase the opportunities to obtain new contracts or extend the current ones with public or private entities.

Acknowledgment

This research did not receive external funding.

Conflict of interest statement

Author reported no conflict of interest

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Data Availability Statement

Data available in a publicly accessible repository that does not issue DOIs

This study analyzed publicly available datasets. These data can be found here:

[<https://www.gov.uk//> Company number 01312454]

[<https://www.gov.uk//> Company number 12686337]

[<https://www.gov.uk//> Company number 10874751]

[<https://www.gov.uk//> Company number 06472422]

[<https://www.gov.uk//> Company number 06213794]

[<https://www.gov.uk//> Company number 02410626]

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