

Pengaruh Profitabilitas, Leverage, Corporate Governance, Dan Cash Holding Terhadap Nilai Perusahaan (Studi Empiris Pada Perusahaan Aneka Industri Yang Terdaftar Pada Bursa Efek Indonesia Tahun 2020-2022)

Mahindra Nathan Mastroyanna Arifin¹, Listyorini Wahyu Widati², Muhammad Ali Ma'sum³

^{1,2,3}Universitas Stikubank

Jl. Kendeng V Bendan Ngisor Semarang, 024-8414970/024-

8441738,sekretariat.univ@edu.unisbank.ac.id

ARTICLE INFO

Article history:

Received 30 Agustus 2024

Received in revised form 2 Oktober 2024

Accepted 10 November 2024

Available online 1 Desember 2024

ABSTRACT

The purpose of this study is to determine the effects of cash holding, corporate governance, profitability, and leverage on a company's value. In this study, quantitative methods are used. An industrial sector business that was listed on the Indonesian stock exchange between 2020 and 2022 serves as the sample. 126 samples were obtained by applying the purposive sample method to data extracted from the financial accounts. Data analysis techniques include double linear regression analysis and hypothesis testing (t-testing). The findings indicate that the following factors raise a company's value: cash holding, corporate governance, profitability, and leverage.

Keywords: cash holding, corporate governance, profitability, leverage, and company value.

1. Introduction

According to corporate theory, increasing company value is the main goal. Company value is very important because the level of investor growth will be influenced by the value of the company, which means that a high company value will also result in a high level of investor growth.

Market value is a measure of company value because if the company's share price rises, the company value can generate profits for shareholders. Company value can show future prospects and current developments (Oktaviarni, 2019).

Company value is influenced by several factors. The first factor that can influence Firm Value is profitability. Profitability is the level of profit achieved by a company during operations (Hartanti et al., 2019).

The second factor is Leverage. Leverage is one of the factors that can influence the value of a company. Companies can obtain financing by using financing sources from within the company, such as depreciation and income, or by obtaining financing from outside the company, such as debt and equity.

The third factor is corporate governance. Corporate governance is one of the keys to a company's success in increasing the efficiency and effectiveness of business growth, increasing investor confidence and protecting investor interests (Suhadak et al., 2019).

The last factor is cash holding. If the company's interests differ from the interests of shareholders, managers can use cash holdings or cash available to the company to meet the company's needs.

Based on the explanation above, the following hypothesis can be drawn:

H1: Profitability has a positive effect on company value.

H2: Leverage has a positive effect on Company Value

H3: Corporate governance has a positive effect on company value

H4: Cash holding has a negative effect on company value

2. Research Methods

The research objects used are various industrial companies that have gone public and are listed on the Indonesia Stock Exchange (BEI) for the 2020-2022 period. This research uses quantitative data as secondary data. The data collection technique using purposive sampling has the following criteria:

1. Various Industrial Companies are registered on the IDX (2020-2022).
2. The company uploads financial reports to the IDX for 3 consecutive years.
3. Companies whose financial report data is complete.

3. Results and Discussion

Descriptive Statistic

Descriptive statistics provide an overview or description of data seen from the average value (mean), standard deviation, variance, maximum, minimum.

Table 1 Descriptive Statistics Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	101	-.87079	.15550	-.0262600	.13920193
DER	101	-17.95244	114.28958	2.4035310	11.95486691
GCG	101	.77670	1.00000	.9412670	.05838784
CH	101	.00032	.85714	.0812317	.11928277
PBV	101	-1.48234	11.49650	.7368275	1.23460163

The distribution of the Company's profitability data as measured using the ROA ratio shows an average value of -0.0262 or -0.26% of the total assets owned by the Company. The minimum ROA value is -0.87079 or -87.08% obtained by SRIL in 2021 and the maximum ROA value reaches 0.1555 or 15.55% obtained by ADMG 2022 with a standard deviation of 0.1392.

The distribution of company leverage data measured using the DER ratio shows an average value of 2.4035. The minimum DER value was -17,952 obtained by HDTX in 2021 and the maximum DER value reached 114,289 obtained by MYTX in 2020 with a standard deviation of 11,954.

The distribution of company corporate governance data measured using disclosure of 103 CG items shows an average value of 0.94126. This shows that the average sample company has a CG disclosure of 0.9412 or 94.12% of the company's ownership. The minimum CG disclosure value is 0.7767 or 77.67% obtained by POLY in 2022 and the maximum CG disclosure value reaches 1 or 100% with a standard deviation of 0.0583.

The distribution of company cash holding data measured using the CR ratio shows an average value of 0.08123. The minimum cash holding value is 0.00032 obtained by ARGO 2020 and the maximum cash holding value reaches 0.85714 obtained by STAR in 2021 with a standard deviation of 0.11928.

Normality Test

Data normality is a requirement that data can be analyzed using regression. Data normality testing will be carried out using the Skwerness and Kurtosis tests. Normal data is indicated by the Skwerness and Kurtosis test values which have values below 1.96.

Table 2 Data Normality Results

Statistics	Mark	N	$\sqrt{6}/n$	$\sqrt{24}/n$	Z
Skewness	0.248	101	0.242		1,024
Kurtosis	-0.504	101		0.485	-1,039

The results of normality testing on testing 101 data or by removing 25 data show that the regression model has residual values that are normally distributed. This is indicated by the Z value of skewness and kurtosis which is smaller than the value of 1.96, namely the z-skewness value of 1.024 and z-kurtosis of -1.039. For this, some data was removed from the model to achieve a normal distribution.

Classical Assumption Test

Multicollinearity Test

Testing was carried out using 101 data that met normal assumptions. The independent variables of the model consist of 4 variables which will provide different VIF values. The VIF and Tolerance values of each independent variable are obtained as follows:

Table 3 Multicollinearism Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	ROA	,962	1,040
	DER	,975	1,026
	GCG	,978	1,023
	CH	,958	1,044

The test results show that there is a VIF value for the variable that has a value smaller than 10. Thus, the regression model does not have a multicollinearity problem. The tolerance value for all variables shows a value smaller than 1.

Heteroscedacity Test

Heteroscedasticity testing was also carried out using 101 data that met normal assumptions. Heteroscedasticity testing was carried out using the Glejser Test.

Table 4 Glejser Heteroscedacity Test

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	Q	Sig.
(Constant)	,038	,391		,096	,924
ROA	-.055	,175	-.032	-.312	,756
DER	-.002	,002	-.091	-.893	,374
GCG	,338	,414	,083	,815	,417
CH	-.134	,205	-.067	-.652	,516

a. Dependent Variable: AbsRes

The results of the Glejser test show that the research model tested in this study shows that there are no variables that are significant to the absolute value of the regression residual, where the model significance value is greater than 0.05. This means that the model does not have heteroscedasticity problems.

Autocorrelation Test

Autocorrelation testing was also carried out using 101 data that met normal assumptions. Autocorrelation testing was carried out using the Durbin Watson test. The Durbin Watson value that is between the du and 4 - du values indicates a model that is not affected by autocorrelation problems.

Table 5 Durbin-Watson Autocorrelation Test

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.941a	,886	,881	,42566705	1,923

a. Predictors: (Constant), CH, GCG, DER, ROA
b. Dependent Variable: PBV

Source:

The DW value obtained is 1.923. The du table value for k = 4 and data from 101 samples is 1.77. Thus, the DW value of 1.923 is between 1.77 and 4 - du = 2.23. This means there is no autocorrelation problem in the regression model. The image below shows that the DW value is between du and 4-du which indicates that the model is free from autocorrelation problems.

Multiple Linear Regression Test

This hypothesis testing aims to test the significance of the influence between the independent variables on the dependent variable. Testing was carried out using 101 data that met normal assumptions.

Table 6 Linear Regression Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1,053	,696		-1,513	,134
	ROA	1,150	,312	,130	3,689	,000
	DER	,095	,004	,919	26,317	,000
	GCG	1,610	,737	,076	2,184	,031
	CH	,945	,365	,091	2,593	,011

a. Dependent Variable: PBV

$$PBV = -1.053 + 1.150 \text{ ROA} + 0.095 \text{ DER} + 1.610 \text{ GCG} + 0.945 \text{ CH} + e$$

Model Feasibility Test (F Test)

The results of testing the feasibility of the regression model are shown by the F value from the test results.

Table 7 Model Feasibility Test

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	135,030	4	33,757	186,307	,000c
	Residual	17,394	96	,181		
	Total	152,424	100			

a. Dependent Variable: PBV

An F value of 186.307 was obtained with a significance of 0.000 which is smaller than 0.05. By showing that this regression model provides empirical evidence that company value as a proxy for PBV can be explained by the profitability ratio, leverage, corporate governance and cash holding variables.

Coefficient of Determination

The coefficient of determination value shows the percentage of the dependent variable that can be explained by the independent variables. The coefficient of determination value can be obtained from the adjusted R2 value.

Table 8 Determination Coefficient Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941a	.886	.881	.42566705

a. Predictors: (Constant), CH, GCG, DER, ROA

b. Dependent Variable: PBV

This research obtained an adjusted R2 value of 0.881. This means that 88.1% of company value can be explained by the profitability ratio, leverage, CG disclosure and cash holding ratio variables, while the other 11.9% of PBV can be explained by other variables.

Hypothesis Test (t Test)

To see which variables have a partially meaningful influence on company value.

Table 9 Hypothesis Testing

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1,053	,696		-1,513	.134
	ROA	1,150	,312	,130	3,689	,000
	DER	,095	,004	,919	26,317	,000
	GCG	1,610	,737	,076	2,184	.031
	CH	,945	,365	,091	2,593	.011

a. Dependent Variable: PBV

Discussion

The Effect of Profitability on Company Value

The test results regarding the effect of profitability on company value as proxied by PBV show that it has a t value of 3.689 with a significance of 0.000 ($p < 0.05$). This means that ROA profitability has a positive influence on company value. This means that Hypothesis 1 is accepted. The positive influence of profitability on company value is logical because profitability shows the level of the company's ability to generate profits for the company. Signaling theory, which is widely associated with company financial performance, reveals that better disclosure of profitability information will provide a positive signal to parties with an interest in the company (stakeholders) and to the company's shareholders (shareholders).

The Effect of Leverage on Company Value

The test results regarding the effect of the leverage ratio on company value as proxied by PBV show that it has a t value of 26.317 with a significance of 0.000 ($p < 0.001$). This means that leverage has a positive influence on company value. This means that Hypothesis 2 is accepted. This condition illustrates that companies with a high level of leverage will have high company value. Trade-off Theory explains that leverage or capital structure is the idea that a company chooses how much debt financing and how much equity financing to use by balancing costs and benefits.

The Influence of Corporate Governance on Company Value

The test results regarding the effect of corporate governance (CG) disclosure on company value as proxied by PBV show that it has a t value of 2.184 with a significance of 0.031 ($p < 0.05$). This means that corporate governance disclosure has a positive influence on company value. This means that Hypothesis 3 is accepted. This means that the number of CG disclosures by the company influences the higher company value. Agency theory can be used to design incentives from the existence of corporate governance mechanisms appropriately by considering what interests motivate agents to act.

The Effect of Cash Holding on Company Value

The test results regarding the effect of the cash holding ratio on company value as proxied by PBV show that it has a calculated t value of 2.593 with a significance of 0.011 ($p < 0.05$). This means that the cash holding ratio has a positive and significant influence on company value. This means that Hypothesis 4 is rejected. The significant positive influence of cash holding on company value can be seen from the strength of the value of cash held by the company (cash) as a form of the company's ability to fulfill its short-term obligations. According to trade-off theory, companies can consider the marginal benefits and costs of holding cash to maximize shareholder wealth (Dittmar et al., 2003).

4. Conclusion

In this research, using multiple linear regression analysis, it can be concluded as follows:

1. The research results show that ROA profitability has a positive and significant influence on company value as measured using PBV.
2. The research results show that leverage has a positive and significant influence on company value as measured using PBV.
3. The research results show that corporate governance has a positive and significant influence on company value as measured using PBV.
4. The research results show that cash holding has a positive and significant influence on company value as measured using PBV.

Limitations

Based on the researcher's direct experience in this study, there are several limitations that future researchers should pay attention to in order to improve their research. This is because this research itself certainly has shortcomings that need to be corrected in future research. Several research limitations include:

1. The results of cash holding did not prove negative so it was necessary to re-examine this variable with other company sectors.

Suggestion

Future research can use control variables to reduce company-specific characteristic bias, such as using a control variable for company size. Apart from that, to minimize the effect of this bias, it can be done using a panel regression model.

References

- [1] Albari, Atika Kartikasari, 2019. The Influence of Product Quality, Service Quality and Price on Customer Satisfaction and Loyalty. *Asian Journal of Entrepreneurship and Family Business*, Vol. III No. 01, 49-64
- [2] Alfa Dwi Wahyuningrum, Sunarto, 2023. Pengaruh Likuiditas, Profitabilitas, *Leverage* Dan Ukuran Perusahaan Terhadap Nilai Perusahaan. *Jurnal Riset Akuntansi Politala*, Vol. 6 No. 1, 122–136.
- [3] Amrie Firmansyah, Tommy Aviv Setiawan, & Fajar Fathurahman, 2020. Nilai Perusahaan: Kebijakan Utang, *Good Corporate governance*, *Cash holding*. *Jurnal Akuntansi Dan Bisnis*, Vol. 20 No. 2, 237–254.
- [4] Andi Wiguna, R., Yusuf, M., & Tinggi Ilmu Ekonomi Bank BPD Jateng, S., 2019. PENGARUH PROFITABILITAS DAN GOOD CORPORATE GOVERNANCE TERHADAP NILAI PERUSAHAAN (Studi Empiris pada Perusahaan yang Terdaftar di Bursa Efek Indonesia). 1(2).
- [5] Andika, I.K.R dan I.B.P. Sedana. 2019. Pengaruh Profitabilitas, Struktur Aktiva dan Ukuran Perusahaan Terhadap Struktur Modal Perusahaan. *E-Jurnal Manajemen* 8(9):5803-5824.
- [6] Augusty, Ferdinand., 2006. Metode Penelitian Manajemen: Pedoman Penelitian untuk skripsi, Tesis dan Disertai Ilmu Manajemen. Semarang: Universitas Diponegoro.
- [7] Bambang Supomo dan Nur Indriantoro, 2002, Metodologi Penelitian Bisnis, Cetakan Kedua, Yogyakarta; Penerbit BFEE UGM
- [8] Budiasih. dan Sari, V., 2014. Pengaruh Debt to Equity Ratio, Firm Size, Inventory Turnover dan Assets Turnover pada Profitabilitas. *E-Jurnal Akuntansi Universitas Udayana* 6 (2) : 261-273
- [9] Budiraharjo, 2018, “Pengaruh Profitabilitas dan *Leverage* Keuangan terhadap Reurnt Saham pada Perusahaan Industri Konsimi Makanan dan Minuman yang Terdaftar di Bursa Efek Indonesia”, *Profita Ilmiah Akuntansi dan Perpajakan*, Vol. 11, No. 3.
- [10] Dewi, L. A., & Praptoyo Sugeng, 2022. PENGARUH UKURAN PERUSAHAAN, PROFITABILITAS, DAN *LEVERAGE* TERHADAP NILAI PERUSAHAAN. www.idx.co.id Dividend Policy And Debt Policy And Firm Value. *Dinamika Keuangan Dan Perbankan* Vol. 3, No. 1.
- [11] Dittmar, A. et al. (2003). *International Corporate governance and Corporate Cash holding. Journal of Financial and Quantitative Analysis*.
- [12] Fahmi, Irham, 2011. Analisis Laporan Keuangan. Bandung: Alfabeta.
- [13] Ghozali, Imam, 2018. Aplikasi Analisis Multivariate dengan Program IBM SPSS 25. Badan Penerbit Universitas Diponegoro: Semarang
- [14] Gill, Amarjit dan Charul Shah, 2012. Determinants of Corporate *Cash holdings*: Evidence from Canada. *International Journal of Economics and Finance*. Vol. 4. No. 1.

-
- [15] Gore, A., 2009. Why do cities hoard cash? determinants and implications of municipal *cash holdings*. *Accounting Review*, 84(1), 183–207.
 - [16] Gusriandari, W., Rahmi, M., & Putra, Y. E., 2022. Pengaruh Good *Corporate governance* Terhadap Nilai Perusahaan Pada Perusahaan Pertambangan Yang Terdaftar Di Bursa Efek Indonesia Tahun 2017-2020. *JURNAL PUNDI*, 6(1).
 - [17] Harmono, 2011. Manajemen Keuangan Berbasis Balanced Scorecard Pendekatan Teori, Kasus, dan Riset Bisnis (Edisi 1). Jakarta: Bumi Aksara
 - [18] Hartanti, W. et al., 2019. Pengaruh Earning Per Share Dan Debt To Equity Ratio Terhadap Return Saham Dengan Kebijakan Dividen Sebagai Intervening Pada Perusahaan Property & Real Estate Yang Terdaftar Di Bei Periode Earning Per Share (EPS) perusahaan untuk menghasilkan keuntungan. *JSMBI (Jurnal Sains Manajemen Dan Bisnis Indonesia)*, 9(1), 34–44
 - [19] Hery, 2015. Analisis Laporan Keuangan. Yogyakarta: CAPS (Center for Academic Publishing Service).
 - [20] Houston, B. E., 2009. *Dasar-dasar Manajemen Keuangan*. Jakarta: Salemba Empat.
 - [21] Iman, C., Sari, F. N., Pujiati, N., Ekonomi, F., Bisnis, D., Budi, U., & Jakarta, L., 2021. Pengaruh Likuiditas dan Profitabilitas Terhadap Nilai Perusahaan. *Jurnal Ekonomi & Manajemen Universitas Bina Sarana Informatika*, 19(2).
 - [22] Jensen, M., C., dan W. Meckling, 1976. “Theory of the firm: Managerial behavior, agency cost and ownership structure”, *Journal of Finance Economic* 3:305-360,
 - [23] Kartika Dewi, N. P. I., & Abundanti, N., 2019. PENGARUH *LEVERAGE* DAN UKURAN PERUSAHAAN TERHADAP NILAI PERUSAHAAN DENGAN PROFITABILITAS SEBAGAI VARIABEL MEDIASI. *E-Jurnal Manajemen Universitas Udayana*, 8(5), 3028.
 - [24] Kasmir, 2013. Bank dan Lembaga Keuangan Lainnya. Jakarta: PT Raja Grafindo Persada
 - [25] Kasmir, 2016. *Analisis Laporan Keuangan*. Jakarta: PT. Raja Grafindo Persada.
 - [27] Kuncoro, Mudrajad, 2013. Metode Riset Untuk Bisnis Dan Ekonomi : Bagaimana Meneliti Dan Menulis Tesis / Mudrajad Kuncoro .
 - [28] Maharesi Satrio Nugrohojati Hidayatul Aziz, & Listyorini Wahyu Widati, 2022. Pengaruh *leverage*, profitabilitas, pertumbuhan perusahaan dan ukuran perusahaan terhadap nilai perusahaan manufaktur industri barang konsumsi. *Journal of Information System, Applied, Management, Accounting and Research*, Vol. 7 no. 1, 171–184.
 - [29] Miller, M.H. and Orr, D. (1966) A Model of the Demand for Money by Firms. *Quarterly Journal of Economics*, 80, 413-435.
 - [30] Modigliani, F. dan Miller. M. H., 1963. Corporate Income Taxes and the Cost of Capital: A Correction. *American Economic Review*, 53 (3) June, 433-443.
 - [31] Muasiri, A. H., Sulistyowati, E., Ekonomi, F., Bisnis, D., & Timur, J., 2021. PENGARUH INTELLECTUAL CAPITAL DAN *CORPORATE GOVERNANCE* TERHADAP NILAI PERUSAHAAN DENGAN PROFITABILITAS SEBAGAI VARIABEL MODERASI. *Jurnal EK&BI*, 4, 2620–7443
 - [32] Myers, S. C., dan N. S. Majluf., 1984. Corporate Financing and Investment Decision When Firm Have Information That Investor do not Have. *Journal of Financial Economic*, Vol. 13 (2): 187-221.
 - [33] Myers, S.C., 1984. The Capital Structure Puzzle. *Journal of Finance*. V.39 (3): 573-592.
-

-
- [34] Nazir dan Agustina, Nelly, 2018. Pengaruh FirmSize, DER, ROA, dan Current Aset terhadap PriceValue pada Perusahaan Manufaktur Sub Sektor Tekstil di Indonesia. *Jurnal Visioner & Strategis*, Vol. 7, No. 2, hal: 43-49.
 - [35] Nur utami, C., & Widati, L. W., 2022. Pengaruh Profitabilitas, Likuiditas dan Kepemilikan Manajerial terhadap Nilai Perusahaan. *Owner*, 6(1), 885–893.
 - [36] Oktaviani, Eni, 2019. Pengaruh Kompetensi, Time Budget Pressure Dan Fee Audit Terhadap Kualitas Audit (Studi Kasus pada 10 Kantor Akuntan Publik di Kota Bandung). Other thesis, Universitas Komputer Indonesia
 - [37] Purwati, A. A., Siahaan, J. J., & Hamzah, Z., 2019. Analisis Pengaruh Iklan, Harga dan Variasi Produk terhadap Keputusan Pembelian di Toko Rumah Mebel Pekanbaru. *Jurnal Ekonomi KIAMAT*, 30(1), 20
 - [38] Rizqia Muharramad, & Zulman Hakim, M., 2021. Pengaruh Ukuran Perusahaan, *Leverage*, Dan Profitabilitas Terhadap Nilai Perusahaan.
 - [39] Saputra, Moses Dicky Refa & Asyik, Nur Fadjrih. 2017. Pengaruh Profitabilitas, *Leverage* Dan *Corporate governance* Terhadap Tax Avoidance. *Jurnal Ilmu dan Riset Akuntansi*, vol 6, no 8, 2017.
 - [40] Selli Agustianingrum, Titiek Suwanti, & Gregorius N. Masdjojo, 2023. THE EFFECT OF DEBT POLICY, GOOD *CORPORATE GOVERNANCE*, *CASH HOLDING*, AND SALES GROWTH ON COMPANY VALUE (IN MANUFACTURING COMPANIES LISTED ON THE INDONESIA STOCK ECHANGE (IDX) IN 2018-2021).
 - [41] Septiana, A., 2019. *Analisis Laporan Keuangan : Konsep Dasar dan Deskripsi Laporan Keuangan*. Duta Media Publishing
 - [42] Sofyaningsih, Sri Pacawati Hardiningsih, 2011. Struktur Kepemilikan, Kebijakan Dividen, Kebijakan Utang Dan Nilai Perusahaan Ownership Structure,
 - [43] Spence, Michael, 1973. Job Market Signaling. *The Quarterly Journal of Economics*, Vol. 87, No. 3. (Aug., 1973), pp. 355-374
 - [44] Sulistiani, Marchia, 2013. Analisis Pengaruh Struktur Kepemilikan, Dividend Payout Ratio, *Cash holding* Dan Kualitas Audit Terhadap Nilai Perusahaan. Skripsi
 - [45] Sugiyono, 2009. Metode Penelitian Kualitatif Kuantitatif dan R&D. Bandung : Alfabeta
 - [46] Sunarto, S., Trijono, A. L., & Oktaviani, R. M., 2020. The Effect of Liquidity, *Leverage*, and Profitability on Company Value: The Moderating Effect of Dividend Policy. *Talent Development & Excellence*, 12, 3326 – 333.
 - [47] Susanti, R., 2010. Analisis Faktor-faktor yang Berpengaruh terhadap Nilai Perusahaan (Studi Kasus pada Perusahaan Go Public yang Listed Tahun 2005–2008). Skripsi Sarjana Ekonomi, Program Sarjana Universitas Diponegoro, Semarang
 - [48] Swan, T. 1956. Economic growth and capital accumulation. *Economic Record* 32: 334–361.
 - [49] Yudha Aru Putra, & Listyorini Wahyu Widati, 2022. Profitabilitas, Struktur Modal, Ukuran Perusahaan, dan Kebijakan Dividen terhadap Nilai Perusahaan di BEI. 15(1), 110–121.