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Analysis of the Benefits of SAP S/4 HANA Cloud IT/Is Investment in the Case of PT XYZ

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Abstract. PT XYZ is one of the largest telecommunication companies in Indonesia. In 2020, PT XYZ implemented a digital transformation to increase its excellence by investing in industry telecommunication and information systems (IT/IS) enterprise resource planning software called SAP (System Application and Processing) S/4 HANA Cloud. The study aims to analyze the benefits of these IT investments made in PT XYZ. The results are carried out using the Comparative Analysis of Financial Statements followed by Business Value and Financial Feasibility Analysis and the Cost Benefit Analysis (CBA) method between 2018 and 2021. It can be revealed that the SAP S/4 Hana Cloud investment benefits the company's operations, which are identified in the form of 5 sub-categories that fall into required categories based on Ranti's Generic IT/IS Business Value.

Keywords: IT Investments, Financial Statements, Ranti's Generic IT/IS Business Value, Cost Benefit Analysis (CBA), SAP S/4 Hana Cloud

Introduction

Information technology significantly impacts various sectors; with existing progress, the technology requires every agency or company to keep going and innovate so they can compete [1]. It is also felt in the telecommunication industry, where competition between industry telecommunication and information system (IT/IS) increase service and speediness in an operating company and service to consumers [2]. There is progress in information technology to support and facilitate the company in making decisions about the right business fast and efficiently. Investment in technology is a new strategy for operating a business. Information technology investment could be used to reflect the company's response to the changes efficiently. That IT investment could increase position, accelerating the competition and reducing costs [3]. Enterprise resource planning (ERP) is a system management accessible business integrated and used for operating part of business functions [4]. An ERP software that is almost 80% used company in Indonesia is SAP (Source Enterprise Power). SAP is an integrated ERP software solution in various modules such as sales distribution, material management, financial

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and controlling, and human resources [5]. Companies operating in the field of business telecommunications that implement SAP is namely PT XYZ.

PT XYZ was founded in 1996, a private firm moving into Indonesia's service telecommunication and network cell field. Currently, XYZ already owns 57.9 million composed customers from total customer prepaid and postpaid throughout Indonesia. XYZ has two GSM product lines: XYZ Prepaid and XYZ Postpaid. Besides that, XYZ also provides service corporations, including internet service providers (ISP) and VoIP. In 2020, PT XYZ took digital transformation as a deep strategy step to increase superiority company as well as become the first provider in Southeast Asia in Internet of Things (IoT) effectiveness, data governance, retrieval decisions, and operational with information technology investment devices of SAP, e.g., S/4HANA Cloud.

SAP S/4HANA Cloud is based on cloud computing that delivers applications in the database and has data models, omits redundancies, delivers superior competitive as automates business processes prominent throughout the organization and improves performance as well as helps the employee in do the job. As for the investment made by PT XYZ in adopting SAP S/4 Hana Cloud, i.e., 20% of the company's Capex funds or 1.5 trillion rupiahs. The magnitude score investment made by PT XYZ then needed analysis of information technology investment to know the resulting benefits from an investment compared with the issued value. A suitable research method for analyzing information technology investment at PT XYZ is Ranti's Generic IT/IS Business Value for the benefits without differentiating tangible and intangible assets [6]. Cost Benefit Analysis for measuring the level of return-on-investment capital based on the benefits obtained [7], and comparative analysis of financial statements for annual financial statements component.

1. Theoretical Background

Information Technology (IT) is a general term for technology that helps to create, modify, store, and communicate or spread information [8]. Investment in information technology is a decision made by the company to use increased source power to reach the targeted goal. In information technology investment [9], two kinds of characteristics of the benefits to be obtained are tangible benefits, i.e., benefits that can, in a manner live, significant to profit changes, and intangible benefits that the source company can obtain from utilization information technology, which is no live related with company profits. Despite the fact that TI investments are growing rapidly, the impact on corporate operations is unknown [10]. However, this study [11] demonstrates empirically that each IT management profile is associated with a distinct contribution via a combination of IT business value areas. Ultimately, the study concludes that IT business value domains contributes to firms' business value.

Ranti's Generic IT/IS Business Value is a framework that identifies possible benefits obtained from IT investment without differentiating tangible and intangible benefits [12]. Ranti's Generic IT/IS Business Value method is an analysis method developed by Benny Ranti in 2008 with take studies cases in Indonesia [13]. The results researched by Ranti showed there are 13 categories and 74 sub-categories that benefit IT/IS business. Based on the results, Ranti 's research has three benefits of unique IT/IS business for Indonesia compared with developing countries other. The benefit of

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the business is, e.g., reducing costs of selected raw materials or subscription costs of employees, complying with regulations and using branded systems.

Financial and accounting approaches might provide fascinating data on a specific IT project [14]. The financial data that will be used to analysis is obtained from financial statement. A financial statement is a note about the company in the period of accountancy as well as describes the performance of the company. Financial Statements are the results of an accounting process [15]. As for purpose, the financial statement provides information from the financial position and performance of possible finances used in decision economics [16]. Financial statements are: (1) Statements of financial position, (2) Statements of profit and loss, (4) Statements of cash flows and (4) Notes to the financial statements. Based on financial statement data, it can be used to analysis information technology investment by conducting cost benefit analysis and financial statement comparison analysis.

Cost Benefit Analysis (CBA) is a method with the use approach in a systematic aim to obtain recommendations for possible policies and an analysis to compare financial policies [17] . The CBA method combines existing calculations so that the manager can choose which alternative will be used considering the benefits and costs that will be issued [18]. As including: Return on investment (ROI), Net present value (NPV), Payback period (PP) and Benefit cost ratio (BCR). This aggregated impact structure enables the definition of a single overarching target parameter, such as ROI, by which the entire benefit of the IT system may be measured [19]. Consider a project that has both intangible and tangible benefits; the basis of CBA is benefit analysis using previous information about IT requirements and implementation [7]. To assess the overall business value of the IT system, each leaf impact must be quantified and turned to monetized values. In addition, comparative analysis of financial statements is a process that considers the purpose of evaluating a financial position. Comparative analysis of financial statements can be classified into the horizontal and vertical analysis [20].

2. Sample and Methods

Data collection techniques used in a study are documentation based on the literature. The type of data used in a study is qualitative and quantitative data. The data source in this study is secondarily obtained through the annual report of PT XYZ (2018– 2021). The methods used in the study are comparative analysis of financial statements, analysis of Ranti's Generic IT/IS Business Value, and cost benefit analysis (CBA).

2.1. Ranti's Generic IT/IS Business Value

Ranti's Generic IT/IS Business Value is a framework that identifies possible benefits obtained from IT investment without differentiating tangible and intangible benefits [12]. Ranti's Generic IT/IS Business Value method is an analysis method developed by Benny Ranti in 2008 with take studies cases in Indonesia [13]. The results researched by Ranti showed there are 13 categories and 74 sub-categories that benefit IT/IS business.

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2.2. Cost Benefit Analysis

Cost Benefit Analysis (CBA) is a method with the use approach in a systematic aim to obtain recommendations for possible policies and an analysis to compare financial policies [21]. The CBA method combines existing calculations so that the manager can choose which alternative will be used considering the benefits and costs that will be issued [18]. As including: Return on investment (ROI), Net present value (NPV), Payback period (PP) and Benefit cost ratio (BCR).

2.3. Comparative Analysis of Financial Statements

Comparative analysis of financial statements is a process that considers the purpose of evaluating a financial position. Comparative analysis of financial statements can be classified into the horizontal and vertical analysis [20].

3. Results and Discussion

3.1. Comparsative Analysis of Financial Statements

Horizontal method analysis was carried out by comparing financial statements in several periods for known developments and trends [22]. The comparative analysis of PT XYZ's financial statements for four years started in 2018.

3.1.1 Statements of Profit and Loss.

Tables 1 and 2 show the statements of profit and loss of PT. XYZ from 2018 to 2021.

The analysis method used in this study is a horizontal analysis method that aims to compare financial statements for several periods.

PT XYZ
STATEMENTS OF PROFIT OR LOSS
For The Years Ended 31 Desember
(Expressed in millions of Rupiah)

Description	2018	2019	2020	2021
Revenue				
Data revenue	14.891.218	19.288.144	21.385.473	22.692.576
Non Data revenue	5.194.642	3.662.513	2.827.282	2.113.958
Revenue from interconnection services	1.317.627	1.112.614	773.286	621.636
Revenue from leased towers	315.435	316.485	126.641	45.923
Revenue from Leased lines	236.269	196.404	195.695	212.900
Other Revenue	1.045.876	574.321	709.849	1.079.341
Discount revenue	(62.255)	(17.853)	(9.131)	(12.284)
Total Revenue	**22.938.812**	**25.132.628**	**26.009.095**	**26.754.050**
Operational Expense				
Depreciation expenses	(11.473.609)	(9.471.130)	(12.432.846)	(9.956.227)
Infrastructure expenses	(8.452.928)	(7.330.432)	(7.973.636)	(7.989.540)
Interconnection and ther direct expenses	(2.421.268)	(1.970.279)	(1.805.207)	(2.566.963)
Sales and marketing expenses	(2.038.624)	(1.914.297)	(1.560.744)	(1.536.159)
Salaries and employee benefits expenses	(1.037.244)	(1.279.376)	(1.274.264)	(1.075.801)
General and administrative expenses	(476.441)	(531.193)	(335.218)	(298.802)
Amortisation expenses	(147.711)	(32.763)	(21.842)	0
Foreign exchange (loss)/ gain - net	337.634	671.331	2.026.747	658.844
Total Operational Expense	**(25.710.191)**	**(21.858.139)**	**(23.377.010)**	**(22.764.648)**
Operating Profit	**(2.771.379)**	**3.274.489**	**2.632.085**	**3.989.402**
Finance Cost & Income	(1.624.901)	(2.130.372)	(2.485.874)	(2.281.862)
Profit / (Loss) Before Income Tax	**(4.396.280)**	**1.144.117**	**146.211**	**1.707.540**
Income / (Expense) tax benefit	1.099.390	(431.538)	225.387	(419.733)
Profit / (Loss) For The Year	**(3.296.890)**	**712.579**	**371.598**	**1.287.807**

Table 1. Statements of Profit and Loss (2018 – 2021)

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PT XYZ STATEMENTS OF PROFIT OR LOSS For The Years Ended 31 Desember (Expressed in millions of Rupiah)			
Description	Comparative in percentage %		
	2019	2020	2021
Revenue			
Data revenue	29,5	10,9	6,1
Non Data revenue	(29,5)	(22,8)	(25,2)
Revenue from interconnection services	(15,6)	(30,5)	(19,6)
Revenue from leased towers	0,3	(60,0)	(63,7)
Revenue from Leased lines	(16,9)	(0,4)	8,8
Other Revenue	(45,1)	23,6	52,1
Discount revenue	(71,3)	(48,9)	34,5
Total Revenue	9,6	3,5	2,9
Operational Expense			
Depreciation expenses	(17,5)	31,3	(19,9)
Infrastructure expenses	(13,3)	8,8	0,2
Interconnection and ther direct expenses	(18,6)	(8,4)	42,2
Sales and marketing expenses	(6,1)	(18,5)	(1,6)
Salaries and employee benefits expenses	23,3	(0,4)	(15,6)
General and administrative expenses	11,5	(36,9)	(10,9)
Amortisation expenses	(77,8)	(33,3)	(100,0)
Foreign exchange (loss)/ gain - net	98,8	201,9	(67,5)
Total Operational Expense	(15,0)	6,9	(2,6)
Operating Profit	(218,2)	(19,6)	51,6
Finance Cost & Income	31,1	16,7	(8,2)
Profit / (Loss) Before Income Tax	(126,0)	(87,2)	1.067,9
Income / (Expense) tax benefit	(139,3)	(152,2)	(286,2)
Profit / (Loss) For The Year	(121,6)	(47,9)	246,6

Table 2. Comparative Analysis of Profit and Loss Statements (2018 – 2021)

The comparative analysis table of the income statement above shows that income movement tends to increase, although only slightly. The movement of income tends to increase but not significantly. Even though income tends to increase yearly, the trend of income comparison has decreased from 2019 to 2021. If the percentage difference in income from year-to-year decreases, the company will experience a loss. However, on the other hand, profit growth for the year experienced a significant increase in 2021 by 246%, namely from Rp. 371,598 to Rp. 1,287,807 (in millions of rupiahs).

3.1.2 Statements of Financial Position

Following Table 3 of financial position statements from PT. XYZ from 2018 to 2021. The analysis method used in this study is a horizontal analysis method that aims to compare financial statements for several periods.

PT XYZ STATEMENTS OF FINANCIAL POSITION As at 31 December (Expressed in millions of Rupiah)				
Description	2018	2019	2020	2021
Current Assets				
Cash and cash equivalents	1.047.115	1.603.445	2.965.589	2.664.387
Trade receivables	569.240	662.944	450.362	524.505
Other receivables	62.325	101.556	109.762	85.509
Inventories	189.063	74.608	143.377	156.440
Prepaid taxes	448.820	91.951	117.993	139.662
Prepayments	3.814.077	3.966.614	3.493.843	3.795.549
Other assets	928.012	644.530	290.197	367.139
Total Current Assets	**7.058.652**	**7.145.648**	**7.571.123**	**7.733.191**
Non-Current Assets				
Fixed assets	36.759.530	42.081.680	47.162.250	51.912.214
Intangible assets	5.766.948	5.734.185	5.716.426	5.712.558
Goodwill	6.681.357	6.681.357	6.681.357	6.681.357
Other assets	1.347.467	1.082.372	613.641	713.962
Total Non-Current Assets	**50.555.302**	**55.579.594**	**60.173.674**	**65.020.091**
Total Assets	**57.613.954**	**62.725.242**	**67.744.797**	**72.753.282**
Total Current Liabilities	15.733.294	21.292.684	18.857.026	20.953.921
Total Non-Current Liabilities	23.537.562	22.310.592	29.750.405	31.710.616
Total Liabilities	**39.270.856**	**43.603.276**	**48.607.431**	**52.664.537**
Equity	18.343.098	19.121.966	19.137.366	20.088.745
Total Liabilities and Equity	**57.613.954**	**62.725.242**	**67.744.797**	**72.753.282**

Table 3. Financial Position (2018 – 2021)

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Based on the comparative analysis table of statements of financial position on top, one could see that component in the statements of financial position tend to experience increase, movement the post that is Amount Current Asset, Total Non-Current Asset, Total Assets, Total Liabilities, and Equity experience enhancement from 2018 to 2021.

3.2. Ranti's Generic IT/IS Business Value

Ranti is a method for displaying information technology purposes according to each category or sub-categories. The Benefit of information technology investment on PT XYZ-based Generic IS/IT Business Value is displayed in Table 4 below:

Code	Category	Information
APR-06	Speed up the payment process for debts/bills	Device SAP S/4 Hana Cloud software used by PT XYZ company is a tool ERP software in progress that could make the performance company productive and efficient. Integrating SAP with the system makes it easier for companies to analyze debts and process payments more quickly.
IRE-03	Increase income caused by the trust in customer	PT XYZ's customer trust is proven by a steady increase in the number of customers compared to straight with an increase in quality and better income.
IIM-04	Improving the Image caused by using a well-known brand	In 2021, PT XYZ received an award as the Best Data Governance Enterprise Data Protection Excellence by the Indonesian Big Data Association; where this award was received for successful telecommunication that uses SAP S/4 Hana Cloud Enterprise resources planning (ERP) technology for providing a single source of veracity for corporate finance and data. Using awards (from institution famous) can increase a company's reputation in society.
APR-08	Speed up the process of the retrieval process decision	The implementation of SAP S/4 Hana Cloud in companies creates a simpler and more efficient IT infrastructure, capable of providing a single source for financial or other operational data, which supports management in making more strategic decisions through input from financial dashboards that provide real-time insights and are more agile in responding to the market.
RCO-10	Reducing the cost of printing documents	The cost of printing documents is experiencing a decline because of the use of SAP, an integrated system adopted by International Financial Reporting Standards (IFRS) 16 in 2020. So those reports can be opened in PDF, CSV, and EXCEL format. On form prints, reports can be arranged in location or width to be more efficient in printing documents.

Table 4. Ranti's Generic IT/IS Business Value

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3.3. Cost Benefit Analysis (CBA)

Cost benefit analysis identifies, determines, and measures score-related elements with information technology or project investment that has a role in costs incurred and the accepted benefits. Following the cost benefit analysis method:

3.3.1. Net Present Value (NPV)

Net present value is a method used to compare a company's total expenditure with the company's total receipts at a specific interest level (Table 5). If the NPV is more extensive than 0 or positive, the project/investment is beneficial. If an investment or project generates an NPV less than 0 or negative, it will produce a loss — discount rates calculated with the Bank Indonesia annual treasury bills.

Year	**Cash flow (In million Indonesia Rupiah/IDR)**	**Discount Rates**
1	5,497,947	6.75%
2	6,930,963	

Table 5. Net Present Value

$$NPV = \frac{C1}{(1+r)^1} + \frac{C2}{(1+r)^2} + \frac{C3}{(1+r)^3} \cdots \frac{Cn}{(1+r)^n} - C_0$$

$$NPV = \frac{5.497.947}{(1+0{,}0675)^1} + \frac{6.930.963}{(1+0{,}0675)^2} - 1.500.00$$

NPV = 5,150,302 + 6,082,160 – 1,500,000

NPV = 9,732,461

Based on the calculation, *The Net Present Value* (NPV) at PT XYZ obtained a result of 9,732,461. These results indicate that if the NPV > 0 or is positive, with thus the investment in information technology is feasible and could be accepted if the company returns to invest in the same field.

3.3.2. Return on Investment (ROI)

Return on Investment (Table 6) is the ratio for measuring the percentage of the benefits obtained from something compared to investments with the total costs incurred. The results of the calculation of Return on Investment at PT XYZ are the following:

Initial Investment (In million Indonesia Rupiah/IDR)	
Net Profit After Taxes	345,176
Total Assets	67,744,797

Table 6. Return on Investment (ROI)

$$\text{ROI} = \frac{Net\ Profit\ After\ Taxes}{Total\ Asset}\ x\ 100\%$$

$$\text{ROI} = \frac{345.176}{67.744.797}\ x\ 100\%$$

ROI = 0.005095200 = 0.51%

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The ROI yield at PT XYZ is 0.51% based on the abovementioned Return on Investment (ROI) calculation. It indicates that the investment is acceptable because it provides benefits of 0.51% of the total investment cost.

3.3.3. Payback Period (PP)

The payback Period is the return on invested capital in a certain period or full year needed to use the return score investment back. Following the Payback Period calculation in PT. XYZ, in Indonesia Rupiah:

$$Payback\ Period = \frac{Initial\ investment}{cash\ flow} x\ 1\ \text{Year}$$

$$Payback\ Period = \frac{1.500.000.000.000}{5.497.947.000.000} x\ 1\ \text{Year}$$

Payback period = 0.27 (99 days)

Based on calculations ratio *payback period* above is obtained, resulting in a timely return of 0.27 (99 days). Hence, the investment technology carried out by PT XYZ requires less than one year or is fast enough to return capital and show that the investment is worthy of continued.

3.3.4. Benefit Cost Ratio (BCR)

The Benefit Cost Ratio (BCR) is a comparison between income *(benefit)* to the total cost *(Cost)*. BCR determines the appropriateness of a project or investment, whether profitable or not. The calculations *for Benefit Cost Ratio* (BCR) are the follows:

(Expressed in Millions of Indonesia Rupiah/IDR)

Tahun	Pendapatan	Biaya	DF	PV Manfaat	PV Biaya
2020	26.009.095	12.949.069	0,9368	Rp 24.364.492	Rp 12.130.275
2021	26.754.050	13.467.256	0,8589	Rp 22.979.821	Rp 11.567.413
Total				Rp 47.344.313	Rp 23.697.688

Table 7. Benefit Cost Ratio

Source: Annual Report 2020 – 2021

Notes: DF = Discount Factor, PV = Present Value

$$BCR = \frac{PV\ \ Manfaat}{PV\ Biaya}$$

$$BCR \quad = \frac{47.344.313}{23.697.688}$$

BCR = 2.00 > 1 Eligible

Based on the calculation of the *benefit-cost ratio,* the result of 2.00 is obtained, which can be concluded that the investment is feasible, considering the success indicator of BCR > 1.

3.4. Discussion

Our goal in this study was to analyze of information technology investment to know the resulting benefits from an investment compared with the issued value. The study's findings showed that the

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investment is feasible and has several benefits. According to Ranti's Generic IT/IS Business Value analyze result[12], investment in SAP S/4 Hana Cloud technology yielded many benefits based on several system sub-themes listed in Ranti's Generic IT/IS Business Value table [13]. Specifically, boosting income due to client trust, lowering the cost of printing documents, and increasing Image (caused by) employing well-known brands. The findings are in line to this study [11] , which shed light on each profile's contributions and demonstrated empirically that each management profile is related with a specific contribution through a mix of IT business value areas. Ultimately, the study concludes that IT business value domains contributes to firms' business value. In addition, the same result is also found in this study [13] which is with IT investment could increase performance effectiveness and cost efficiency by reducing cost of education and training, improving productivity caused by ease of analysis and increasing revenue caused by widening market statement with total cost of benefit.

Based on this study [19], to assess the overall business value of the IT system, each impact must be measurable and transformed to monetizable assets, such as return of investment (ROI) measurement, by which the entire benefit of the IT system may be determined. This proves that the cost benefit analysis (CBA) we conducted in this study is appropriate. Moreover, in line with the results of this study [7] which state that financial analysis, such as NPV, ROI, and benefit analysis from Cost Benefit Analysis, can assist IT Managers, in determining the viability of IT investments and the economic worth of IT initiatives. Consider a project with both intangible and tangible benefits; the foundation of CBA is benefit analysis based on prior knowledge of IT requirements and implementation. IT managers could use the results of financial calculations utilizing Cost / Benefit Analysis to forecast their future investment.

This study has limitations because it only relies on secondary data, namely the annual financial statements of the company where in the financial statements it is still very difficult to identify the financial value that is really specifically generated from information technology investment. This happens because the majority of investments in information systems are intangible, evaluating them is challenging [19]. Furthermore, there is frequently a significant lag between the moment of investment and the time when earnings are made. Finally, the majority of the effects are difficult to track in the financial accounts of a company. For further research, the data should be complemented by extracting primary data with interviews or surveys that specifically identify the benefits of information technology investment specifically both in terms of financial and other benefits. More detail study also can be taken to know the factors that make those benefits gain by the organizations.

Conclusion

1. Based on the analysis of *Ranti's Generic IT/IS Business Value,* investment in SAP S/4 Hana Cloud technology has obtained several benefits based on several system sub-themes contained in Ranti's Generic IT/IS Business Value table. Namely, speeding up the process of paying debts/bills (APR-06), accelerating the process of decision making (APR-08), increasing revenue due to customer trust (IRE-03), reducing the cost of printing documents (RCO -10) and increasing Image (caused by) using well-known brands (IIM-04).
2. A comparative analysis of the financial statements shows that the company's net income continues to increase, despite insignificant increases. Meanwhile, profit growth for the year experienced a

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significant increase in 2021 by 246%, from Rp. 371,598 (in millions of Indonesia Rupiahs) to Rp. 1,287,807 (in millions of Indonesia Rupiahs). Meanwhile, the company's total assets, liabilities, and equity increased yearly.

3. Based on the calculation of *Cost Benefit Analysis*, the results obtained a yield (*Return on Investment*) of 0.51 % *(Net Present Value*) of IDR 9,732,461. Thus, the *Payback Period* of 0.27 or 99 days and *the Benefit Cost Ratio* of 2.00 proves that the investment made by PT XYZ has good profitability with a payback period of less than one year. It is due to the entire technology investment, not just one type. As such, it usually results in a short payback period with a large amount of technology investment.

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