

# ENTERPRISE RESOURCE PLANNING (ERP) IMPLEMENTATION AND COMPANY FINANCIAL PERFORMANCE: A STUDY ON TELECOMMUNICATION COMPANIES IN SRI LANKA

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## Abstract

There is currently plenty of research that can be found the Enterprise Resource Planning and company performance. However, there is a research gap in the Sri Lankan context. This study examines the effect of ERP system implementation and company financial performance in the Sri Lankan context. Two prominent organisations have been selected in the Sri Lankan in the telecommunication sector. The return on assets (ROA), asset turnover (ATO), return on sales (ROS) and return on investment (ROI) financial indicators are used to find the financial performance of each firm separately while incurring the secondary data using published annual reports. The analysis showed that the ERP implementation does not affect the organisation's financial performance. However, external factors such as ERP vendor support, country's economic factors, and customer and supplier capability are not considered for evaluation. Future scolars can conduct the same research for other sectors in Sri Lanka and can do the same research to find the other non-financial performances and organisation capabilities.

**Keyword;** ERP implementation, Company financial performance, Sri Lanka context, and Telecommnicatio sector.

## 1. Introduction

Companies have used information systems to increase or maintain their competitiveness due to intense global business competition, mainly to improve customer service, shorten cycle times, and keep costs down. Organisations or businesses are considered communities that attempt to meet their creators' expectations (Syofyan & Putra, 2020). According to Sofyan et al.(2020), as owners, investors hope that their investments will impact the company's success. Investing in information technology can help with one of these purposes. Investment in information technology is required to maintain organisational vitality and competitiveness, and it is becoming increasingly important for the survival and growth of businesses (Lu & Jinghua, 2012). Investing in information technology in a company leads to high expense and arrives with a high risk. On the other hand, investment in information technology can increase efficiency and streamline business processes (Putra & Rahayu, 2020).

The increased popularity of ERP systems has prompted academics to focus their research on the influence of these systems on business performance (Voulgaris et al., 2015). ERP systems offer numerous benefits to the business, and their advantages can be divided into quantifiable and non-quantifiable factors (Fub et al., 2007). An ERP system is a complicated business process integration that uses a central and unified database to computerise the flow of material, information, and financial resources among all functions within the organisation. The few modules are used to control for sales and marketing, human resources, finance and accounting, production and quality assurance. ERP's advantages are customer service, production, distribution, managerial decisions, enhanced quality, and cost reductions (Kakouris & Polychronopoulos, 2005). Therefore, ERP systems can help organisations integrate information flows and process all available resources. As a result, companies that have used ERP systems perform better than those that do not (Voulgaris et al., 2015).

It has been proven that implementing an ERP system improves business performance. Hunton et al.(2003) proved that In 63 organisations in the United States that implemented ERP compared to those that did not, financial performance improved in terms of ROA, return on equity (ROE), and ATO. Kallunki et al.(2011) also proved that ERP adoption affected financial and non-financial performance using 70 business units in Finland. In line with that, Ince et al. (2013) succeeded that ERP systems contributed to the company performance.

This study's primary objective is to carry out empirically investigate the impacts of ERP systems implementation effected to financial performance in the Sri Lankan context. According to the previous studies, accounting measures is used (Balakrishnan et al., 1996; Hunton et al., 2003; Mabert et al., 2000; Stedman, 1999) such as ROI, ROA, ATO and ROS for evaluating financial performance.

The following section provides the literature review for ERP implementation and company performance, and section 3 presents the sample selection and evaluation. The final two sections consist of the conclusion and limitation with future findings.

## **2. Literature review of the implementation of ERP system and financial performance.**

ERP systems can be referred to using the general word 'IT,' or information technology. According to theory, IT investments should increase production; nevertheless, the earliest empirical research in the field (between 1980 and 1990) found that organisations who invested in IT saw no incremental productivity gains. The 'productivity paradox' is the name given to this phenomenon. On the other hand, recent studies reveal that IT can improve productivity (Maroofi, 2011). Even though some researchers believe there is a relationship between IT and company performance, others argue that IT (or ERP specifically) does not enhance financial performance (Pavlou et al., 2005). Finally, research indicates a mixed situation about the effect of IT on business performance, with some studies indicating a positive relationship and others indicating that organisations adopting ERP did not perform financially better than non-adopting companies (Elragal & Al-Serafi, 2011).

The researchers tried to identify the source of this problem and find possible characteristics that could result in a positive relationship between IT and business performance. Organisational change, innovation, and increasing staff skills were identified as factors (Pilat, 2004; Sanda et al., 2013; Voulgaris et al., 2015). False output measures to determine productivity, economy-wide measurement errors due to output rearrangements, and mismanagement are possible factors for a negative relationship (Hamilton & Asundi, 2008). Also, Eliashberg & Chatterjee (1985) explained that the productivity paradox could be that price decreases immediately after adopting innovative technologies, while demand increases due to price sensitivity. However, Some factors influencing financial performance include competitive intensity, demand uncertainty, industry heterogeneity, and competitor adoption rate.

The implementation of the ERP system had a significant positive effect on the company's performance and organisational capabilities. The organisation's capabilities also had a significant positive effect on the organisation's performance (Putra et al., 2021). Velcu (2005) conducted an empirical study to determine whether successful ERP adopters had a higher financial performance than unsuccessful ERP adopters. The premise was that a less successful adoption could result in decreased asset utilisation and business process efficiency. The following indicators were used to measure financial performance: ROA, ROI, profit margin, asset turnover, capital turnover, and the ratio of wages / total costs. The findings indicate no

significant difference in the change in financial performance between the two groups of firms following implementation in terms of ROA and ROI. However, successful ERP adopters appear to benefit from better efficiency improvements than unsuccessful ERP adopters in terms of Assets and Capital turnover within the first two years following ERP deployment.

### **3. Methodology**

According to Bharadwaj (2000) and the above literature review, financial statement analysis is one method of evaluating a company's financial performance since it uses traditional accounting measurements based on correlations between different financial statement items. The current study evaluated performance using four different financial indicators in two large ERP adopted organisations in Sri Lanka. The ROA, ROS, ATO, and ROI measurements are employed for the evaluation. Descriptions of the financial indicators are shown in Table 1. Selected companies are Sri Lanka Telecom (SLT) PLC and Dialog Axiata PLC, the leading largest telecommunication service providers in Sri Lanka. Both companies are integrated and automated processes by introducing an ERP system. The paper developed from a review of cases and a synopsis format of literature to determine theoretical content and case-related highlights. Author used secondary sources as the method in the selected research approach and presented a proposition for highlighting the article's essence for use as a learning and teaching note, followed by a concluding remark.

**Table 1 : Financial indicators**

Variable	Description
ROA	Return on assets is income before extraordinary items (available for common stockholders), divided by the average of the beginning and ending total assets. Compustat then multiplies the ratio by 100
ROS	Return on sales is income before extraordinary items (available for common stockholders), divided by net sales for the period
ATO	Asset turnover is net sales for the period, divided by the average of the beginning and ending total assets
ROI	Return on investment is income before extraordinary items (available for common stockholders), divided by the sum of total long-term debt, preferred stock, minority interest and total common equity. Compustat then multiplies the ratio by 100

Sources: (Hunton et al., 2003)

## 4. Sample selection and evaluation

### 4.1 Sample selection

ERP system implementation projects consist of multiple phases that must be considered when evaluating the benefits realised by ERP adopting companies. According to Esteves (2009), the benefits to businesses typically takes one to two years to appear. Another claim was that ERP projects only reach maturity after three years. Similarly, Gattiker & Goodhue (2005) and Matolcsy et al. (2005) emphasise that a minimum of two or more years duration is taken to appear the benefit after ERP “go-live” phase. Two public firms are selected for the evaluation, which are performing in one segment. Also, the Google database is used to find our financial data with required references. Considering all factors, author obtained the data from SLT and Dialog to evaluate the inter-temporal performance comparisons for ERP adaptation, considering three years pre-announcement financial factors and four years post-announcement financial factors.

Sri Lanka Telecom (SLT) is Sri Lanka’s largest broadband and backbone infrastructure services provider. For over 163 years, the company has provided connectivity to the nation through fixed, mobile, and other areas. SLT’s high-speed fibre, copper, and wireless access network serves nearly nine million islanders. The company’s shift into a digital service provider has enabled it to provide services and solutions that cater to a digital lifestyle. SLT connects Sri Lanka to the globe via international submarine cable systems (SLT annual report,

2020). ERP (Oracle) system implementation was completed at the end of 2016. These include financial management, enterprise asset management, human resource management, project management, and supply chain management (SLT annual report, 2017). As mentioned earlier, ERP adaptation is divided into two evaluating periods: pre-adoption and post-adoption. Based on that, annual reports are collected for evaluating the financial factors. As per the description, from the 2014 to 2016 period is considered pre-adoption and from 2017 to 2020 for post-adoption.

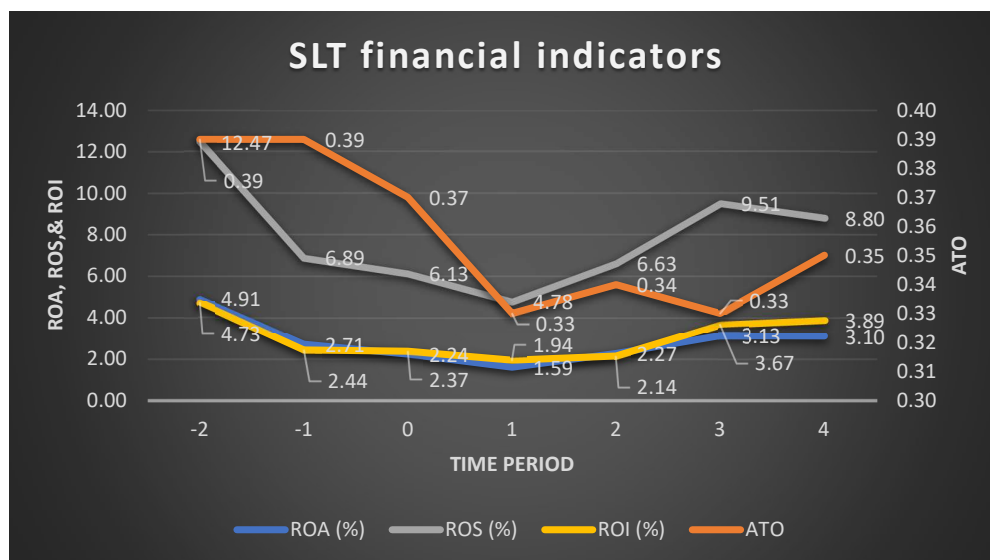
Dialog Axiata PLC is the leading connectivity provider in Sri Lanka. It is a subsidiary of Axiata Group Berhad (Axiata). The company is among the largest listed companies on the Colombo Stock Exchange. Dialog is also Sri Lanka's largest Foreign Direct Investor (FDI), having invested USD 2.8 billion in the country. Since late 1990, Dialog has been at the forefront of innovation and digitisation in Sri Lanka's mobile industry. The company provides advanced mobile telephony and high-speed mobile broadband services to a 16.2 million Sri Lankan user base (Dialog annual report, 2020). Dialog is adopted the ERP (SAP) system in 2006 as the first telecommunication industry in Sri Lanka (Dilaog annual report, 2006). As per the above definition, from 2004 to 2006, consider the pre-adoption period and from 2007 to 2010 for the post-adoption period.

### 4.2 Data evaluation

As per the annual report from 2014 to 2020, Sri Lanka Telecom (SLT) PLC financial indicators were calculated and shown in Table 2. ERP implemented year is considered “0” and gives the positive value for the consecutive post-adopted period years and negative value for the consecutive pre-adopted period years.

Years	2014	2015	2016	2017	2018	2019	2020
Time period (t)	-2	-1	0	1	2	3	4
ROA (%)	4.91	2.71	2.24	1.59	2.27	3.13	3.10
ATO	0.39	0.39	0.37	0.33	0.34	0.33	0.35
ROS (%)	12.47	6.89	6.13	4.78	6.63	9.51	8.80
ROI (%)	4.73	2.44	2.37	1.94	2.14	3.67	3.89

**Table 2: SLT financial indicators**



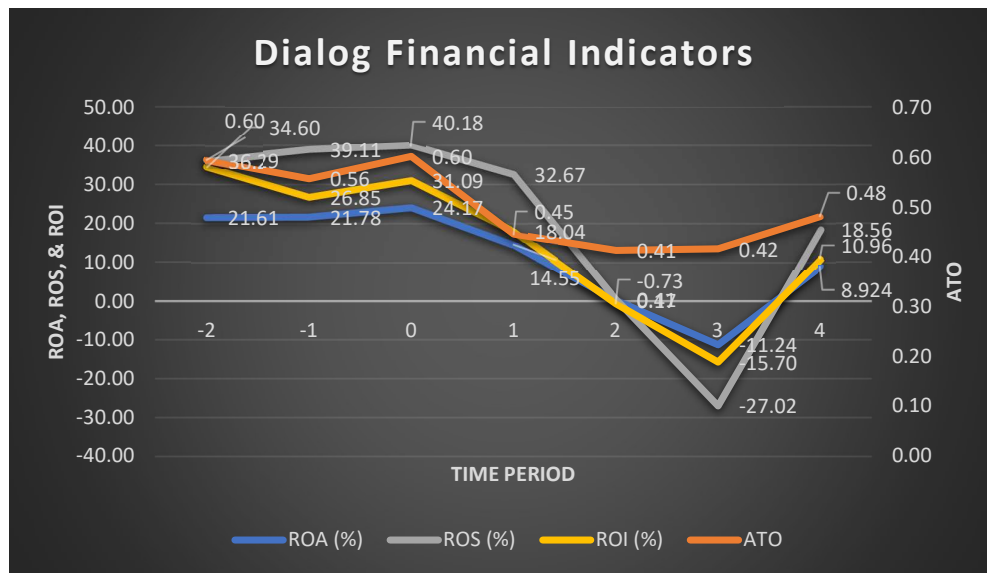
**Figure 1: Variation of SLT financial indicators**

Similarly, financial indicators are calculated for Dialog Axiata PLC using annual reports from 2004 to 2010. Table 3 shows the calculated financial indicators from 2004 to 2010.

Year	2004	2005	2006	2007	2008	2009	2010
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Time Period (t)	-2	-1	0	1	2	3	4
ROA (%)	21.61	21.78	24.17	14.55	0.17	-11.24	8.924
ATO	0.60	0.56	0.60	0.45	0.41	0.42	0.48
ROS (%)	36.29	39.11	40.18	32.67	0.41	-27.02	18.56
ROI (%)	34.60	26.85	31.09	18.04	-0.73	-15.70	10.96

**Table 3 : Dialog financial indicators**



**Figure 2 : Variation of Dialog financial indicators**

Further investigation calculated the average value of financial indicators in the pre-adaption period and found the difference from the final year (4<sup>th</sup> time period) financial indicators value. The pre-adoption period average ROA indicator is considered as AVG ROA (T<sub>0</sub>-T<sub>2</sub>) and similarly defined the other indications AVG ROS (T<sub>0</sub>-T<sub>2</sub>), AVG ROI (T<sub>0</sub>-T<sub>2</sub>), and AVG ATO (T<sub>0</sub>-T<sub>2</sub>). Finally, deducted the pre-adaption period average financial indicators value from 4<sup>th</sup> year of the post-adaption period values. Based on the above requirement, Table 4 and Table 5 are shown the pre-adaption period average financial indicators values different from the 4<sup>th</sup> year financial indications values.

Indicators	AVG (T <sub>0</sub> -T <sub>2</sub> )	T4 value	Different
ROA (%)	3.29	3.10	-0.18
ATO	0.38	0.35	-0.03



ROS (%)	8.50	8.80	0.31
ROI (%)	3.18	3.89	0.71

**Table 4 : Differences of SLT financial indicators**

Indicators	AVG (T0-T-2)	T4 value	Different
ROA (%)	22.52	8.92	-13.60
ATO	0.58	0.48	-0.10
ROS (%)	38.52	18.56	-19.97
ROI (%)	30.85	10.96	-19.89

**Table 5 : Differences fo Dialog financial indicators**

According to Table 4, both ROA<sub>SLT</sub> & ATO<sub>SLT</sub> indicators differences were negative. However, ROS<sub>SLT</sub> and ROI<sub>SLT</sub> indicators got positive values but less than one. Similarly, different of all financial factors of Dialog, such as ROA<sub>DIA</sub>, ATO<sub>DIA</sub>, ROS<sub>DIA</sub>, and ROI<sub>DIA</sub> got negative values. The calculation is shown in Table 5.

## 5. Conclusion

ERP systems have become an essential part of the daily operations of most businesses throughout the world. In the worldwide market, they have a considerable impact on the operating procedures of companies. In addition, they come with a slew of anticipated advantages, but putting them into place can be a major undertaking for many businesses, and if done before the company is ready, it could end up being a waste of money.

This study investigated the company's financial impact after implementing the ERP system in the Sri Lankan context. Through the literature explained that approximately more than two years are taken to perform any firm after implementing the ERP system. Furthermore, discussed the performance could be tangible or non-tangible. Finally, attempt to compare the financial performance of ERP adopters based on ROA, ROS, ATO, and ROI indicators in the pre-adopted period and the post-adapted period.

According to Acar et al.( 2017), Kristianti & Achjari (2017), and Pavlou et al. (2005) the implementation of ERP did not affect the financial performance. Similarly, our findings show no significant improvements in both firms' financial indicators in the 4<sup>th</sup> year with respect to

the post-adopted period. Hence, analysis reveals that ERP adaptation does not affect the financial performance in the telecommunication sector in Sri Lanka.

## 6. Limitation and future findings

Due to the time limitation of the research, author has collected only secondary data for evaluation. Also, not consider the organisation's external factors, such as ERP vendor support, country's economic factors, customer and supplier capability, etc. These factors could affect the financial performance of the organisation.

This study was conducted to find the organisation's financial performance after adapting ERP for the telecommunication sector in Sri Lanka. Other researchers can be carried out the same research for other sectors such as construction, manufacturing, medical and agriculture in the country. Furthermore, some studies can be carryout to analyse the organisation's non-financial factors after ERP implementation (Chand et al., 2005; Velcu, 2007). Putra et al.(2021) explain that ERP implementation positively affects company performance and organisational capabilities. Hence, future studies can be carried out to determine the performance of non-financial factors and organisation capabilities.

## 7. Reference

- Acar, M. F., Zaim, S., Isik, M., & Calisir, F. (2017). Relationships among ERP, supply chain orientation and operational performance: An analysis of structural equation modeling. *Benchmarking: An International Journal*, 24(5), 1291–1308. <https://doi.org/10.1108/BIJ-11-2015-0116>
- Balakrishnan, R., Linsmeier, T. J., & Venkatachalam, M. (1996). Financial benefits from JIT adoption: Effects of customer concentration and cost structure. *Accounting Review*, 183–205.
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, 169–196.
- Chand, D., Hachey, G., Hunton, J., Owoso, V., & Vasudevan, S. (2005). A balanced scorecard based framework for assessing the strategic impacts of ERP systems. *Computers in Industry*, 56(6), 558–572.

- Eliashberg, J., & Chatterjee, R. (1985). Analytical models of competition with implications for marketing: Issues, findings, and outlook. *Journal of Marketing Research*, 22(3), 237–261.
- Elragal, A. A., & Al-Serafi, A. M. (2011). The effect of ERP system implementation on business performance: An exploratory case-study. *Communications of the IBIMA*, 670212, 1–19.
- Esteves, J. (2009). A benefits realisation road-map framework for ERP usage in small and medium-sized enterprises. *Journal of Enterprise Information Management*.
- Gattiker, T. F., & Goodhue, D. L. (2005). What happens after ERP implementation: Understanding the impact of interdependence and differentiation on plant-level outcomes. *MIS Quarterly*, 559–585.
- Hamilton, L. C., & Asundi, R. (2008). Technology usage and innovation: Its effect on the profitability of SMEs. *Management Research News*.
- Hunton, J. E., Lippincott, B., & Reck, J. L. (2003). Enterprise resource planning systems: Comparing firm performance of adopters and nonadopters. *International Journal of Accounting Information Systems*, 4(3), 165–184.
- Ince, H., Imamoglu, S. Z., Keskin, H., Akgun, A., & Efe, M. N. (2013). The Impact of ERP Systems and Supply Chain Management Practices on Firm Performance: Case of Turkish Companies. *Procedia - Social and Behavioral Sciences*, 99, 1124–1133.  
<https://doi.org/10.1016/j.sbspro.2013.10.586>
- Kakouris, A. P., & Polychronopoulos, G. (2005). Enterprise Resource Planning (ERP) System: An Effective Tool for Production Management. *Management Research News*, 28(6), 66–78. <https://doi.org/10.1108/01409170510784878>
- Kallunki, J.-P., Laitinen, E. K., & Silvola, H. (2011). Impact of enterprise resource planning systems on management control systems and firm performance. *International Journal of Accounting Information Systems*, 12(1), 20–39. <https://doi.org/10.1016/j.accinf.2010.02.001>
- Kristianti, C. E., & Achjari, D. (2017). Penerapan sistem enterprise resource planning: Dampak terhadap kinerja keuangan perusahaan. *Jurnal Akuntansi Dan Auditing Indonesia*, 21(1), 1–11. <https://doi.org/10.20885/jaai.vol21.iss1.art1>
- Lu, Z., & Jinghua, H. (2012). The Moderating Factors in the Relationship between ERP Investments and Firm Performance. *Journal of Computer Information Systems*, 53(2), 75–84. <https://doi.org/10.1080/08874417.2012.11645616>
- Mabert, V. A., Soni, A., & Venkataramanan, M. A. (2000). Enterprise resource planning survey of US manufacturing firms. *Production and Inventory Management Journal*, 41(2), 52.
- Maroofi, F. (2011). The impact of enterprise systems on corporate performance. *International Journal of Vocational and Technical Education*, 3(5), 61–70.
- Matolcsy, Z. P., Booth, P., & Wieder, B. (2005). Economic benefits of enterprise resource planning systems: Some empirical evidence. *Accounting & Finance*, 45(3), 439–456.

- Pavlou, P. A., Housel, T., Rodgers, W., & Jansen, E. (2005). Measuring the return on information technology: A knowledge-based approach for revenue allocation at the process and firm level. *JAIS*, 7(4), 199–226.
- Pilat, D. (2004). The Economic Impacts of ICT: A European. *Labour*, 1990, 95.
- Putra, D. G., & Rahayu, R. (2020). Peranan Implementasi Tata Kelola Teknologi Informasi (IT Governance) sebagai Faktor Penting dalam Meningkatkan Kinerja Perusahaan. *Jurnal Inovasi Pendidikan Ekonomi (JIPE)*, 10(1), 01–07. <https://doi.org/10.24036/011077110>
- Putra, D. G., Rahayu, R., & Putri, A. (2021). The Influence of Enterprise Resource Planning (ERP) Implementation System on Company Performance Mediated by Organisational Capabilities. *Journal of Accounting and Investment*, 22(2), 221–241. <https://doi.org/10.18196/jai.v22i2.10196>
- Sanda, A. O., Binuyo, A. O., & Oduyoye, O. O. (2013). ICT adoption and integrationist impact on performance of business units of Universities in South West Nigeria. *Journal of Research and Development*, 187(942), 1–11.
- Sofyan, R., Putra, D. G., & Aprayuda, R. (2020). Does the Information on the Internet Media Respond to the Stock Market? 510–520. <https://doi.org/10.2991/aebmr.k.201126.057>
- Stedman, C. (1999). Survey: ERP costs more than measurable ROI. *Computerworld*, 33(14), 6.
- Syofyan, R., & Putra, D. G. (2020). *The Role of Good Corporate Governance (GCG) Implementation in Indonesian Company*. 819–825. <https://doi.org/10.2991/aebmr.k.200305.148>
- Velcu, O. (2007). Exploring the effects of ERP systems on organisational performance: Evidence from Finnish companies. *Industrial Management & Data Systems*.
- Voulgaris, F., Lemonakis, C., & Papoutsakis, M. (2015). The impact of ERP systems on firm performance: The case of Greek enterprises. *Global Business and Economics Review*, 17(1), 112. <https://doi.org/10.1504/GBER.2015.066536>