



The Journal of **ARSYM**

A Publication of Students' Research of the
Annual Research Symposium in Management

The Journal of ARSYM

*A Publication of Students' Research of the
Annual Research Symposium in Management*

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The Journal of ARSYM (JARSYM) is a refereed journal published bi-annually by the Faculty of Business Studies & Finance, Wayamba University of Sri Lanka. The aim of the JARSYM is to disseminate high-quality research findings on a variety of timely topics generated by the undergraduate and postgraduate researchers in the Wayamba University of Sri Lanka. Furthermore, it opens up avenues for the undergraduates involved in the industry to share their inventions, state-of-the-art discoveries and novel ideas. The main philosophy behind the JARSYM is to enhance the research culture within the faculty, thereby within the Wayamba University. All research articles submitted are double blind reviewed prior to publishing. Views expressed in the research articles are not the views of the Faculty of Business Studies and Finance, Wayamba University of Sri Lanka or the Editorial Board.

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Aims and Scope

The Journal of ARSYM (JARSYM) is a refereed bi-annual journal committed to publish undergraduate research papers of the Faculty of Business Studies and Finance, Wayamba University of Sri Lanka. The JARSYM publishes theoretical and empirical papers spanning all the major research fields in business studies and finance. The aim of the JARSYM is to facilitate and encourage undergraduates by providing a platform to impart and share knowledge in the form of high quality and unique research papers.

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- Publication in the Journal of ARSYM is based upon the editorial criteria cited and the evaluation of the reviewers (each manuscript will be sent two reviewers).
- Priority is given for novelty, originality, and to the extent of contribution that would make to the particular field.

The journal welcomes and publishes original articles, literature review articles and perspectives and book reviews describing original research in the fields of business studies and finance. The core focus areas of the journal include;

- Accounting
- Banking
- Economics
- Entrepreneurship and Small Business
- Finance
- E-Commerce & Business Communication
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THE IMPACT OF THE ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM ON THE ROLE OF ACCOUNTANTS: EVIDENCE FROM PUBLIC LISTED COMPANIES IN SRI LANKA

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ABSTRACT

Modern-day business setups have widely accompanied Enterprise Resource Planning Systems as a tool of competitive strategy. Successful implementation of ERP systems within organizations streamline the business processes and bring about changes in different aspects. The accounting process is one such procedure which is affected by an ERP system. Accountants are one of the key personnel involved in the process of accounting in any organization. Past literature claims that an ERP system can reduce the accounting personnel required in the organizational setting due to the probability of integrations. The purpose of this research is to determine the impact of the implementation of ERP systems on the role of accountants in Sri Lanka while providing implications for accountants in performing their functions in an ERP environment. This study adopted the quantitative approach, using a questionnaire survey, distributed among 108 accountants covering both financial and management accountants based on the public listed companies. The results revealed that with the implementation of ERP systems, the degree of operations of management accountants had been increased, whereas there had been a decrease in the extent of the operations, performed by the financial accountants. Further, it was found out that the significance of operations of education and training, financial analysis, and communication and coordination had been increased for both financial accountants and management accountants even though taxation planning, risk management, participation in management decision making, and the integration of cost data related operations are not significantly affected with the implementation of ERP systems. The requisites of human thinking towards the performance of these operations can be viewed as the cause which ERP system cannot influence these operations. The overall conclusion highlights that the implementation of ERP systems affects the role of accountants. Additionally, the accountants do need to enhance presentation skills, analysis ability, Information Technology (IT) skills, communication and coordination skills, and system design skills to make themselves fit into the ERP environment.

Keywords: *Enterprise Resource Planning System, Role of Accountants, Public Listed Companies*

1. INTRODUCTION

The need for innovative business ideas has been risen in the current business world to face vast competition and achieve competitive advantages. Introduction of new Information Systems (IS) can be viewed as such an innovative solution used by business organizations to retain their goals. ERP systems are one type of information systems driven by information technology. Implementing of ERP systems causes business process reengineering in organizations (Davenport, 2000). It confirms the operational activities of the organization are entirely integrated (Maguire et al., 2010). ERP systems are also considered as technological solutions which streamline the operations of organizations and create more flat, flexible organizations (Davenport, 1998).

ERP systems have become a vital business tool in information management and implemented by a lot of enterprises in their business practices. According to Francoise et al. (2009), in the last two decades, ERP systems have become the best technological solution for information management within the organizations. All business information relevant to various processes is deposited and transferred to a repository in an ERP system. Since accounting function utilizes the information generated from almost all the business processes, accounting field has implications from the implementation of ERP systems. Accountants are the key personnel in charge of the accounting function in any organization, and there is a tendency that role played by the accountants get affected in an organizational setting where an ERP system is implemented.

When referring to the related literature of ERP systems, it can be observed that many scholars have argued on the impacts that an ERP system can create to the accountants. It has been proclaimed that the ERP systems have consolidated many functions of accountants and the nature of job role has been changed (Chen et al, 2012). Among the literature sources in the global context, a large number of efforts have been made to show the impacts that ERP systems create on the role of management accountants. Scapens and Jazayeri (2003) have pointed out that ERP systems create a more expansive role for management accountants. Etemadi and Kazeminia (2014) have also contended that management accountants' role and skills have been upgraded with ERP system introductions. The requirement for testing the nature of the impact of ERP on both management and financial accountants were obvious with the analysis of the literature. Sri Lanka is experiencing a penetration of ERP systems to boost the operations and improve the competitive edge. In the current background, the organizations in Sri Lanka have commenced ERP projects for achieving the benefits

that any other system cannot afford in their business milieu (Wickramaarachchi & Jayasiri, 2015). There is plenty of room for technology-based researches in Sri Lanka like ERP systems because the country is experiencing a suitable phase for development due to the factors such as the end of civil war, availability of human labor with low cost despite huge global competitiveness (Wickramaarachchi & Jayasiri, 2015). However, in Sri Lankan IS literature, there is a shortage of researches which were undertaken regarding the impact of ERP system on the role of accountants, specifically both management and financial accountants. This research tries to address this gap by undertaking ERP technology-based analysis in relation to the accountants in Sri Lankan companies and by giving attention to both the positions of management and financial accountants in Sri Lanka. The researcher has undertaken this research to make aware the accountants in Sri Lanka the possible consequences of ERP to their job and to make them realize the skills that they need to be inculcated to face the new ERP environment. Accordingly, the objectives of this study are to investigate the impact of the implementation of ERP systems in the organizational context to the role played by the accountants and identify the skills that accountants need to enhance after ERP system implementation in their respective organizations.

This paper contributes to the existing literature by adding new findings and validating previous ideologies on the impact of ERP systems on the role of the accountants by adhering to Sri Lankan context. The need of understanding the nature of job of accountants in Sri Lanka after ERP system implementations are bridged by this research. The established talk on management accountants and ERP systems are refined by bringing on financial accountants along with management accountants in relation to ERP system in this study. It makes accountants realize what are the skills required by them to enhance after an ERP system is introduced in business surroundings. Therefore, the Sri Lankan companies and the accountants get worthy information about an ERP background and its implications to the role of accountants by this research.

2. LITERATURE REVIEW

Implementation of ERP systems has been a talking point for many scholars worldwide and various approaches, concepts towards the implementation of ERP systems has been put forwarded by them. According to Jagoda & Samaranayake (2017), an ERP system is a business software package that ensures the organizations business functions are integrated, common data is shared within the organization, critical business processes are automated and real time information is generated by using a single database. According to Task Oriented Transient Organization (TOTO) theory developed by Raymond et al. (2004) ERP system is described as a single system which encloses the logistic approach to the entire organization by providing basic information, ensuring interdependency and self-reference. In other words, an

ERP system controls and manages another complete system which is existed in an organization. ERP system implementation in an organization has improved its competitive advantage and operational performance (Ketikidis et al., 2008; Hunton et al., 2003; Davenport, 1998). Moreover, Gargeya and Brady (2005) suggest that ERP system improves the productivity and financial cycle of an organization. On the other hand, Oliver (1999) indicates that ERP systems have been able to create solutions to the systems which were outdated and inadequate for the functioning of organizations.

An abundance of researchers has explored the success and failure factors of the ERP system implementation procedures. Grabski and Leech (2007) summarize that the management of the project, management of change, alignment with the business process, proper consultation and change management are the basic success factors of ERP system implementation which were introduced by previous literature. Moreover, Grabski and Leech (2007) identify that inadequate training, inadequate consulting, poor selection of the ERP system, lack of required business process reengineering and lack of involvement of the key staff are the factors which would result in failure of ERP system implementation. Samaranayake (2006) has analyzed ERP system implementation with a broad view including aspects of pre-implementation and post-implementation and concluded that implementation methodologies needed to be changed by adhering all the parts of implementation cycle for successful ERP systems in organizations.

According to Chen et al. (2012), the implementation of ERP system brings about changes in the operations of business and nature of the job of accountants. Desormeaux (1998) suggests that after ERP system implementation the accountants' role shift from data recorders to financial statement makers. They presume in the tasks of analysis of information and presentation to the management within a very short time. Further, Vemuri and Palvia (2006) point out that accountants do need to provide the management with up-to-date information as a support for decision making. Grabski et al. (2009) affirms that ERP system alternate the role of management accountants by switching into operations like inventory control, ensuring overall data quality and supporting management decision making. Moreover, Granlund and Malmi (2002) confirms the idea that after ERP system implementation the routine tasks of the accountants gets reduced and more time is consumed to handle sophisticated analysis. As per the previous literature, ERP systems in the accounting operations is crucial and it is imperative to investigate the impact caused by an ERP system to the role of the accountants in Sri Lankan context.

3. METHODOLOGY

Review of the literature shaped the conceptual framework for this study. The model of Granlund and Malmi (2002) has been used as the basis for this framework where ERP system is the independent variable and the role of accountants is the dependent variable. After reviewing the previous literature, general accounting transactions, data input, data compilation and filling, data adjustment and amendment, education and training, providing financial reports, financial analysis, cost data integration relevant to operations, computer auditing, management decision making, enterprise risk assessment, enterprise risk management, ERP system maintenance, ERP system evaluation were identified as the operations of accountants (Desormeaux, 1998; Cheng, 2001; Saharia et al., 2008; Sangster et al., 2009; Grabski et al., 2009; Chen et al., 2012).

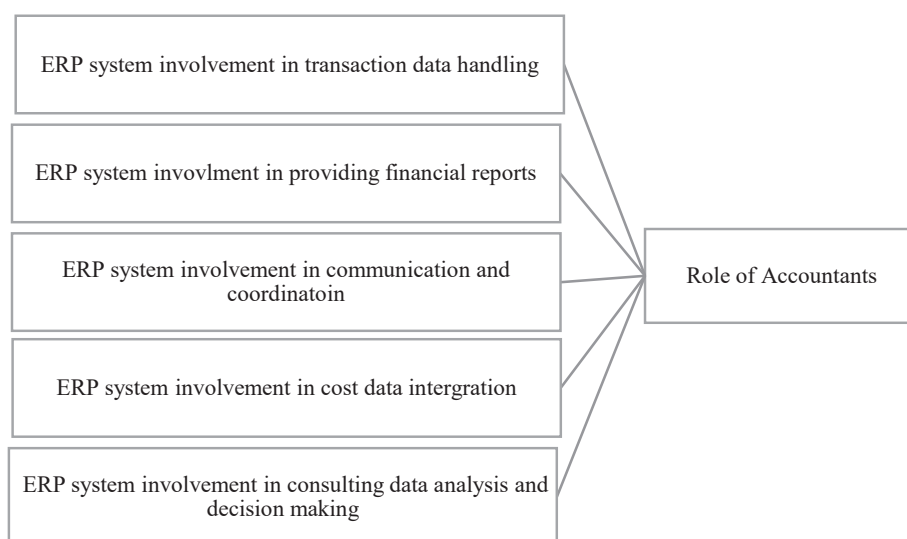


Figure 01: Conceptual Framework

Based on the conceptual framework, this study develops the following five hypotheses.

H1: ERP system involvement in transaction data handling significantly affect the role of the accountants.

H2: ERP system involvement in providing financial reports significantly affect the role of the accountants.

H3: ERP system involvement in communication and coordination significantly affect the role of accountants.

H4: ERP system involvement in cost data integrations significantly affect the role of accountants.

H5: ERP system involvement in consulting data analysis and decision making significantly affect the role of accountants.

The regression model was developed based on the hypotheses of the study as follows.

$$RA = \beta_0 + \beta_1TDH + \beta_2PFR + \beta_3CAC + \beta_4CDI + \beta_5CAD + \varepsilon$$

Where

β_0 = Intercept

$\beta_1 - \beta_5$ = Coefficients

RA = Role of the accountants

TDH = ERP system involvement in the transaction data handling

PFR = ERP system involvement in the provision of financial reports

CAC = ERP system involvement in the communication and coordination

CDI = ERP system involvement in the cost data integration

CAD = ERP system involvement in the consulting data analysis and decision making

E = Error term

Primary data were used in this study, employing a structured questionnaire, and 108 accountants attached to 108 public listed companies responded out of the 120 questionnaires sent to financial and management accountants. Sample companies constituted of public listed companies from six sectors of manufacturing, food beverage and tobacco, finance and insurance, agriculture, chemical and pharmaceuticals and other in Colombo Stock Exchange (CSE). Stratified random sampling technique was used in selecting the sample. The number of companies from each sector was selected proportionately to the total number of companies in those sectors out of all companies in Colombo stock exchange. The selection of companies within the sectors was done randomly.

The questionnaire had major parts which included respondent and organization profiles, ERP implementation in major roles conducted by accountants, operations of accountants and effect of ERP implementation on the role of accountants. Five-point Likert Scale ranging from very great extent (5) to very less extent (1) is used to analyze the data after compounding. Value in relation to each variable was calculated

by using SPSS statistical package considering the mean value of scores. Therefore, mean was used as an analysis tool along with inferential statistical tools of regression and paired sample t test. Literature sources claim that ERP system accompanies changes in the role performed by an accountant.

4. RESULTS AND DISCUSSION

Reliability of the questionnaire was tested by using Cronbach's alpha test. The output of the test was 0.858, which confirmed that the internal consistency of the questions in the questionnaire is high. As per the results, the highest used ERP system according to the responses of the respondents was the SAP ERP system. The second most used ERP system was oracle ERP system. 80% of the companies where respondents attached to had implemented all the modules of the ERP systems. Majority of the implementations of ERP systems in their respective organizations had been taken place in the period of 2018 to 2020.

Table 01 portrays the results of the analysis of job content of the accountants before and after ERP system implementation. Questionnaire included 15 major operations of accountants by referring to literature sources.

Table 01: Operations of Accountants Before and After ERP System Implementation

Operation of Accountant	Implementation			t - test	
	Before	After	Change	t	p
Data input	54%	41	-13%	7.329	.000
General accounting transactions	54%	42	-12%	3.932	.000
Data compilation and filling	57%	52	-5%	3.464	.001
Review of front-end data mapping	60%	52	-8%	3.855	.000
Data adjustment and amendment	60%	54	-6%	3.584	.001
Providing financial statements	73%	73	-	2.517	.013
Financial analysis	60%	71	9%	-5.134	.000
Taxation planning	40%	42	2%	-1.580	.117
Enterprise risk assessment	45%	48	3%	-1.804	.074
Risk management	44%	45	1%	-.618	.538
Communication and coordination among the	46%	54	8%	-3.462	.001
Integration of cost data related to operations	42%	40	-2%	1.421	.158
Computer auditing	44%	49	5%	-.851	.417
Participation in management decision making	37%	38	1%	-4.002	.000
Education and training	48%	60	12%	-9.683	.000

(Source: Author constructed)

The extent of traditional operations such as data input, general accounting transactions, review of front-end data mapping, data adjustment and amendment, and data compilation and filling have decreased by a significant level. But still,

accountants need to perform these operations which shows that there is a need for traditional accounting knowledge in ERP environment. This complies with the idea that accountants still need knowledge of accounting in ERP environment (Chen et al., 2012). Prominence of operations such as education and training, financial analysis, and communication and coordination among the departments have increased since ERP implementation. These results comply with previous literature which emphasizes that ERP implementation causes more analysis functions for accountants (Desormeaux, 1998; Scapens & Jazayeri, 2003). Further, results highlight that after the ERP implementation there is no significant change in the extent of operations of providing financial statements, taxation planning, enterprise risk assessment, risk management, integration of cost data related to operation, and participation in decision making since these operations requires the involvement of human thinking and analytical skills.

Table 02: Operations of Management and Financial Accountants Before and After ERP Implementation

Operation of accountant	Management accountants			t test		Financial accountants			t test	
	Before	After	% Change	t stat	p value	Before	After	% Change	t stat	p value
Data input	43%	37%	-6%	2.346	0.026	58%	43%	-15%	7.051	0.00
General accounting transactions	46%	40%	-6%	2.073	0.048	57%	43%	-14%	3.324	0.000
Data compilation and filling	47%	45%	-2%	0.571	0.573	61%	48%	-13%	4.079	0.00
Review of front - end data mapping	63%	55%	-8%	1.425	0.165	59%	51%	-8%	3.651	0.000
Data adjustment and amendment	58%	56%	-2%	0.593	0.558	61%	54%	-7%	4.013	0.000
Providing financial	56%	76%	20%	-9.189	0.000	79%	67%	-12%	8.582	0.00
Financial analysis	62%	81%	19%	-7.616	0.000	59%	67%	8%	-2.991	0.004
Taxation planning	40%	41%	1%	-0.701	0.489	40%	42%	2%	-1.423	0.15
Enterprise risk assessment	48%	55%	7%	-2.262	0.032	44%	45%	1%	-0.390	0.69
Risk management	45%	48%	3%	-0.891	0.380	43%	44%	1%	-0.148	0.88
Integration of cost data related to operations	45%	42%	-3%	1.000	0.326	41%	39%	-2%	1.029	0.306
Communication and coordination	41%	56%	15%	-3.520	0.001	48%	51%	3%	-2.602	0.043
Computer auditing	39%	48%	9%	0.812	0.424	44%	49%	5%	-1.423	0.15
Participation in management decision making	37%	37%	-	-2.774	0.010	37%	38%	1%	-3.033	0.033
Education and training	47%	60%	13%	-7.085	0.000	49%	60%	11%	-7.315	0.00

(Source; Author constructed)

According to table 02, when considering the operations of management accountants, the extent of providing financial reports, financial analysis, communication and coordination, and education and training have been increased. The importance of education and training has increased for both management and financial accountants, and this falls in line with the argument that management accountants have to ensure training of the staff to maintain the efficiency of the ERP system (Chen et al., 2012). In contrast, the extent of routine operations like data input, general accounting transactions, data compilation and filling, and providing financial statements show a trend of decreasing for financial accountants after ERP system implementation. This is due to the fact that a higher level of performance of those operations can be computerized with the involvement of ERP systems.

Table 03 manifests that the importance of presentation skills, analysis ability, IT skills, communication and coordination skills, and system design skills have increased according to the view of accountants after ERP system implementation. However, the traditional accounting skills such as tax advisory skills, strategic thinking skills, and professional management accounting skills have not loosened their importance in the eyes of accountants. These skill requirements had shown some deviations when it was analyzed separately for the positions as management and financial accountants.

Table 03: Enhancement of Accountant's Skills after ERP System Implementation

Enhancement of accountants' skills after ERP implementation	Management Accountants	Financial Accountant	Accountants (in
Tax advisory skills	46%	46%	46%
strategic thinking skills	40%	43%	42%
Professional management accounting skills	53%	38%	42%
IT skills	64%	66%	65%
system design skills	62%	51%	64%
communication and coordination skills	66%	67%	66%
Analysis ability	66%	68%	67%
Presentation ability	68%	68%	68%

(Source; Author constructed)

The three principal changes in the extents of operations of financial and management accountants are summarized in the table 04 given below. It highlights that as an overall view the extent of operations of management accountants have been increased while the extent of operations of financial accountants have been decreased due the implementation of ERP systems.

Table 04: Top Three Changes in the Extent of Operations of Management and Financial Accountants after ERP System Implementation

Rank	Management Accountants	Financial Accountants
1	(+) Providing financial statements	(-) Data input
2	(+) Financial analysis	(-) General accounting transactions
3	(+) Communication and coordination	(-) Data compilation and filling
Note; (+) operation increase, (-) operation decrease		

(Source: Survey data 2020)

The model summary of the regression analysis to test the impact of ERP system implementation on the role of accountants is given in the table 05 below.

Table 05: Model Summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.876 ^a	.767	.756	.39196	.767	67.266	5	102	.000

(Source: survey data 2020)

The overall model R squared is 0.767 and adjusted R squared 0.756. The results show that the data fit the regression model used in this study. 76.7% of change in the role of accountants is explained by ERP implementation measured by five variables namely ERP involvement in transaction data handling, provision of financial reports, communication and coordination, cost data integration, consulting data analysis and decision making. The summary of coefficients of the regression analysis is given in the table 06 given below. It presents the significance of impact of each variable tested.

Table 06: Coefficients

Variable	Hypotheses	Coefficient	Std error	t statistic	Prob
C		.461	.162	2.845	.005
TDH	H1	.263	.061	4.296	.000
PFR	H2	.116	.046	2.550	.012
CAC	H3	.202	.053	3.826	.010
CDI	H4	.021	.047	0.884	.643
CAD	H5	.292	.059	4.901	.000

(Source: Survey data 2020)

Based on the results of the regression analysis research model is estimated as follows;

$$RA = 0.461 + .263TDH + .116PFR + .202CAC + .021CDI + .292CAD + \varepsilon$$

According to the results, H1, H2, H3, and H5 are accepted, whereas H4 is rejected. Hence, ERP system involvement in transaction data handling, ERP involvement in providing financial reports, ERP system involvement in communication and coordination, and ERP system involvement in consulting data analysis and decision making are the variables which significantly affect the role of accountants while ERP system involvement in cost data integration is not significantly affecting to the role of accountants.

5. CONCLUSION

The study was conducted with the objective of investigating whether there is an impact of ERP systems on the role of accountants. The survey strategy was applied with a structured questionnaire to collect the primary data from both management and financial accountants. Responses were received from 108 accountants out of 120 questionnaires distributed. Though an extensive amount of past literature had focused on the management accountants after ERP system implementation, in this paper accountants in general are analyzed along with an analysis of operations from two positions as management and financial accountants.

According to the results, it is evident that certain operations of accountants have been influenced after ERP system implementation. It could be observed from the analysis of changes in the extent of operations, that in general there is an increment in the extent of operations performed by management accountants after ERP system implementation while the extent of operations of financial accountants has been decreased with the implementation of ERP systems. The study also revealed that with the implementation of ERP systems, the importance of operations of education and training, financial analysis, and communication and coordination has been increased for both financial accountants and management accountants instead of the deviations in their duties and functions. However, there were some operations such as taxation planning, risk management, participation in management decision making, and integration of cost data related to operations performed by both management accountants and financial accountants which had not changed significantly owing to the implementation of ERP systems.

When locating the overall findings of this paper, it can be concluded that the ERP system implementation causes impact to the role of accountants. This study supports the proposition of Chen et al. (2012) which highlights that ERP system affects the role of accountants. It also generalizes the model put forwarded by Garlund & Malmi (2002) which states that the ERP system influence the management accountants.

Moreover, it was found that accountants have perceived the importance of enhancing the analyzing skills, presentation skills, IT skills, communication and coordination skills, and system design skills after ERP implementation in the work environment.

Results of this study pave guidance for the companies in addressing their job requirements related to accountants after ERP system implementation. Accountants can use the findings of this study to comprehend themselves by acquiring the required skills in an ERP environment. Since the study is limited to the public listed companies in Sri Lanka, there is an absence of the perceptions of accountants in different business settings. This limitation could be acknowledged by future researchers, replicating the study using other organizational environments to ensure the consistent nature of perception of accountants in Sri Lanka.

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