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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

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HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

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ACKNOWLEDGMENTS

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APPENDIX/ANNEXURE

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BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

ERP APPLICATION IN INDIAN INDUSTRIES: AN ANALYSIS WITH RESPECT TO MANUFACTURING UNITS IN PONDICHERRY

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ABSTRACT

This study examined the extent of ERP adoption and its benefits in Indian context. The two companies have been selected for this study, and the survey was conducted in Hindustan Computer Limited and Sundaram Fasteners. Primary data was collected through interviews and structured questionnaires were distributed among 79 respondents in both the companies. From the recent literatures we get the impression that many an author expects the introduction and utilization of ERP results in fundamental changes and also it contains many case studies of an organizations and empirical research that have implemented ERP systems successfully. This study found that the companies could not get any benefit from the present intensity of ERP adoption in Human Resource Management, Field Service and Accounting Management. This study concludes that the extent of ERP adoption differ significantly between companies with different activities but benefits from ERP adoption is similar and do not differ by nature of business of the companies in Indian Context.

JEL CODE
P42, P49.

KEYWORDS
ERP, ERP adoption, Functional areas.

INTRODUCTION

ERP(Enterprise Resource Planning) is a computer-based system that places company's major activity areas under an umbrella. ERP system is a software package of different modules and each module has a specific business process. Companies choose to adopt ERP for many reasons. From a technological perspective, there is a need for a common platform and an integration of several information systems or simply a replacement of an existing IT infrastructure, which enhances single-data entry and information consistency across the system. From an organizational perspective, ERP is attractive as it promises to cut down operating costs, better data visibility and process improvement. From the strategic perspective, it is appealing because of cost reductions gained through more efficient systems, improvements in productivity, decision-making, overall quality and support in business growth. An ERP system is considered as one of the crucial IT innovations of the 1990s.

Enterprise Resource Planning (ERP) (Alexis Leon 2002) is an expanded effort to integrate marketing, financial, manufacturing and human resources in a single system. Standardized record keeping permits information sharing throughout the organization. An ERP system helps the organization in sharing data and knowledge between departments, reducing costs, and improving management effectiveness in business processes. Enterprises, instead of investing lots of money in to small software applications are moving towards ERP solutions which can be more appropriate according to their day to day needs.

STATEMENT OF THE PROBLEM

The basic idea of implementing an ERP solution is to get tangible business benefits that would improve the performance of the organization and achieve certain business objectives. This could be in terms of inventory reduction, faster time to market, reducing manufacturing and order processing cycle times, etc. It is amazing but true that not a single ERP implementation in India has reached the stability or maturity so far to deliver these business benefits in significant manner. Most of them still seem to be in a half-backed stage where the organizations have been unable to respond to the stringent demands and discipline required by the requires tremendous effort in enforcing change in management coupled with the inability of these firms to respond to that challenge have further compounded their problems. So it has become critical to deliver value out of these implementations in a reasonably short time, so as to justify the large investment involved. This brings us to a very basic question- how do we maximize the return on IT investment? What are the factors in an ERP implementation that could maximize the Return on Investment (ROI)?

SCOPE OF THE STUDY

Every Company must be competitive and have strategies to survive in the market and protect its shareholders. Those strategies are related to factors such as effort and reduced cost and increase efficiency and productivity, expansion of the business and organizations frontiers, and dealing with the business organizations as a leading and inter connected system. Thus, ERP is directly applied to reduced costs to provide product improvement and services with better quality, to supply include services and convenience to customers and to allow the integration of suppliers and customers operations. In this context the adoption of an ERP System can raise a series of organizational changes, the companies' relationship with buyers, customers and suppliers and also its product and services. Hence studying the subject you have a lot of course for many organizations interesty adopting ERP.

OBJECTIVES OF THE STUDY

This study is aimed at fulfilling the following objectives
1. To evaluate the extent of ERP adoption in Indian Companies
2. To find out whether there is positive reaction among the Employees about Adoption of ERP in their organization.
3. To elicit whether Adoption of ERP is highly beneficial to the organization or not.

HYPOTHESIS

For the present study, the following hypotheses have been framed:
1. There is no significant difference in ERP adoption between companies with different activities.
2. There is no significant difference in benefits from ERP adoption between companies with different activities

3. Employees' perception about ERP adoption and ERP benefits differ significantly by their social characteristics.
4. Adoption of ERP in Indian companies is highly extensive in all functional areas
5. Benefits from ERP adoption are not significantly related to the extent of ERP adoption in Indian companies.

METHODOLOGY

To find out the extent of ERP adoption and its benefits in Indian context, this study uses survey method. Two companies, Hindustan Computer Limited (HCL) and Sundaram Fasteners Limited are selected for the survey as only these two companies in this (Pondicherry) region have permitted the researcher to do the survey. Between the companies, HCL is IT based company and Sundaram Fasteners limited is Non-IT based. The respondents are employees from these two companies at clerical, supervisor and managerial level. A questionnaire with Likert type scale items for measuring the ERP adoption and ERP benefits is prepared for the survey. The questionnaire includes 15 scale items for measuring ERP benefits and 35 scale items for measuring ERP adoption in the selected companies. The questionnaires were distributed to employees of all cadres in both the companies in person by the researchers. The data collected from the survey were analysed using various statistical techniques such as reliability analysis, factor analysis and multiple regression analysis.

LIMITATIONS OF THE STUDY

- The present study is limited to analyze two organizations due to time constraints also many firms have been lethargic to provide the information in order to preserve management system and other activities.
- The data in the ERP applications is not integrated with other enterprise or division systems and does not include external intelligence.

REVIEW OF LITERATURE

Christopher P. Holland et. al. (1999) this study demonstrates the organizational and technical complexity of ERP implementation in a multinational textile group and identifies the factors that determines the total cost of the system. The case was compiled on the basis of material from two personal interviews with the key informants of the global ERP project. Interview data were supplemented by documentary evidence collected over a three year period starting from the European IT strategy review and through to the live implementation of the project. Documentary evidence included IT and business plans, internal company presentations and briefings, consultancy reports and annual accounts. The firm was also operating in a turbulent market and involved in a series of mergers and acquisitions which had led to massive cultural and structural changes including staff reductions throughout the firm. There was a feeling of unease amongst the employees. Further it adds that in the European context, it was not viable for organization to retain national structures and systems, and the pattern of organizational change outlined. The study concludes that the organization is undergoing a transformation which will reduce overheads and increase customer responsiveness and customer service are various levels throughout the firm.

De Vaan and Barendrecht (2000) argued that the introduction and utilization of ERP will result in radical changes. Based on the empirical (Leeuwen, O.C. van and P. Wemmenhove 2001) research they came to the conclusion that ERP does not nearly have such a large impact on the roles and the position of the controller as suggested in literature. In general, introducing ERP causes a gradual evolution rather than a drastic revolution.The study identified that the improvement in efficiency of daily activities, the more explicit focus on customers and the greater speed in providing information are regarded as major advantages of ERP. It is also notifiable that it usually takes a lot of time and money to introduce and utilize ERP.

G. Colin Ash et. al. (2001) examined the state of e-business developments within ERP environments worldwide. Data were collected through structured interviews. The findings were analyzed according to an established research framework from Business Process Change. The IT managers were interviewed to obtain a basic insight into each organization's of the use of Internet Technology (web, intranets, extranets, and e-mail). They were questioned about "the benefits and barriers arising from extending their R/3 business processes on to the Internet". Analysis of the findings from interviews of ten overseas SAP sites, highlighted consideration of the environmental conditions and management of e-business change, when implementing e-business projects. The study was an exploratory investigation into the benefits from extending enterprise wide business systems beyond the organization. The findings of the preliminary investigation of local Australian SAP sites confirmed the existence of the three generic business-to-business models: (i) B2B- to support information processing and communication, (ii) B2E – to support knowledge sharing, (iii) B2C- to support customer interaction on demand. This study suggests a rich field for future research study regarding the sues of e-ERP projects.

Kai Reimers (2002) conducted a study to identify the crucial ERP implementation process and context variables which warrant closer attention in the study of IT-enabled organizational change in a SAP R/3 user companies in China. The study had adopted an in-depth questionnaire survey and collected information from both IT managers of foreign controlled company and a Chinese Company. It applied statistical tools like Correlation analysis, Product moment correlation co-efficient, Spearman correlation, Least-square Regression etc. It concludes that (i) centralized decision making in the steering committee may lead to some delay in the decision making process thus causing schedule and possible budget overruns. (ii) Seniority-base decision making enables senior management to unilaterally change some project parameters. (iii) Modern management system may simply be more compatible with the philosophy underpinning an ERP system which enables decentralized decision making.

Fiona Fui – Hoon Nah (2003) covered the management, social and organizational issues involved in ERP implementations. An ERP system is a multi-module application software package system that integrates key business and management process across an enterprise. It serves as a backbone for the enterprise and helps to manage the important aspects of a business, including procurement, order tracking, material management, product planning, manufacturing, human resources, and financial management. The study listed for important attributes of ERP, It facilitates to

- Automate, standardize and integrate an organization's business process
- Share common data and practices across the entire enterprise
- Generate and access information in real-time.

Morley et. al. (2004) identified the role and magnitude of ten dimensions of service quality as antecedents of satisfaction and dissatisfaction in a B2B service environment from the perspective of the customer. The results of this study indicated that some dimensions of service quality are associated with satisfaction: some are more aligned with dissatisfaction. The most important dimensions are responsiveness and understanding the customer.

Ashok Soni (2005) provided an overview into the future direction of enterprise systems and related applications. The applications will cover areas such as advanced planning and scheduling systems, customer relationship management systems, supplier relationship management systems and the impact of technologies.

V.K. Jain et. al (2013) evaluated the perception of executives working in the area of supply chain management and ERP towards the role of ERP on improving supply chain effectiveness. The study is conducted on about 20 executives working with the automobile, tyre manufacturing and pharmaceutical firms and found that the ERP implementation positively contributes towards some parameters of supply chain effectiveness.

ANALYSIS AND INTREPRETATION

In many industries in India, the ERP system is adopted, to change, i.e. modernize, the way the organization operates. An attempt has been made to empirically analyze the employees' perception on the installation of ERP in two leading organizations in Pondicherry. Hindustan Computer Limited (HCL) and Sundaram Fasteners that have adopted ERP system to get an aerial view of the extent of ERP adoption and its benefits in Indian companies.

INTERNAL CONSISTENCY (RELIABILITY) OF SCALES ITEMS

The internal consistency of scale items in the questionnaire that measures the extent of ERP adoption and its benefits in selected companies (HCL and Sundaram) in Pondicherry region were tested using Reliability Analysis with 'Cronbach Alpha Coefficient'. As this reliability analysis (T.R. Bhatti 2005) with Cronbach Alpha Coefficient is being widely used by many researchers for evaluating the success of the implementation of ERP systems in firms. It measures, how well the items making up the scale 'go together'; and how consistent they are with each other. For scale items measuring certain concept to be consistent

with each others, a Cronbach alpha value between 0.7 and 0.8 is regarded as 'Good', between 0.8 and 0.9 as 'Very good' and value of 0.90 and above is regarded as 'Excellent'.

The presented Tables are the evidence collected through Interviews, Questionnaires.

INTERNAL CONSISTENCY OF ITEMS MEASURING ERP ADOPTION

The results of the reliability analysis for scale items measuring the extent of ERP adoption are presented in Table 1

TABLE 1: ITEM TO TOTAL CORRELATION AND CRONBACH ALPHA COEFFICIENT FOR SCALE MEASURING ERP ADOPTION

Item No	Scale Items Measuring ERP Adoption	Item to Total Correlation
A1	Accounting management	0.31
A2	Automated workflow	0.55
A3	Barcode / Data collection technique	0.41
A4	Customer relationship management	0.36
A5	To provide best customer service	0.65
A6	To help electronic business	0.44
A7	To provide field service	0.53
A8	In Manufacturing execution system	0.52
A9	To facilitate the product data management	0.43
A10	To make good quality control	0.49
A11	Sales force automation	0.64
A12	Warehouse management	0.70
A13	Accounts payable management	0.29
A14	Accounts receivable management	0.53
A15	To prepare standard budget	0.63
A16	In capacity planning, scheduling & reporting	0.54
A17	To enhance estimating & quoting processes	0.31
A18	General ledger maintenance	0.44
A19	Payroll management	0.30
A20	To make international business easier	0.56
A21	Inventory management	0.56
A22	To prepare item / part master data	0.52
A23	For controlling lot & serial number	0.52
A24	Master item scheduling	0.60
A25	Material planning	0.59
A26	To make order entry easier	0.36
A27	For price fixation	0.57
A28	Preventive maintenance	0.55
A29	To make good product configuration	0.47
A30	For product costing	0.54
A31	For making bill of material	0.51
A32	Purchasing and receipts of goods from other means	0.49
A33	Sales forecasting	0.56
A34	Warranty tracking / service	0.62
A35	To connect various work centres	0.59
Cronbach Alpha Coefficient		**0.93**

From the Table, it can be observed that the calculated Cronbach alpha coefficient for scale items measuring the extent of ERP adoption is 0.93, indicating all 35 items are 'Excellent' scale measuring the above concept. Also, most of the items in the scale contribute much to the measurement of ERP adoption as the item-to total correlation is well above 0.30 for almost all of the items. So, all items are used in Factor analysis to ascertain the underlying characteristics of ERP adoption in Indian companies.

TABLE 2: NAME ASSIGNED TO UNDERLYING STRUCTURES OF ERP ADOPTION

Extracted Factor	Assigned Name
F1	Preventive maintenance and Production costing
F2	Manufacturing Execution System
F3	Human Resource Management
F4	Material Management
F5	Field Service
F6	Accounting Management
F7	Automated Workflow
F8	Inventory and Sales Management
F9	General Functions
F10	Customer Relationship Management

INTERNAL CONSISTENCY OF SCALES MEASURING ERP BENEFITS

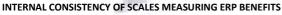The results of the reliability analysis for scale items used for measuring ERP benefits are portrayed in Table 3

TABLE 3: ITEM TO TOTAL CORRELATION AND CRONBACH ALPHA COEFFICIENT FOR SCALE MEASURING ERP BENEFITS

Item No	Scale Items Measuring ERP Benefits	Item to Total Correlation
B1	Support in finding strategy	0.52
B2	Improved early recognition / warning system	0.53
B3	Helps for transparency of business processes	0.52
B4	Support of a systematic continuous improvement process	0.55
B5	Improvement of resource efficiency	0.43
B6	Cost reduction	0.48
B7	Linking of strategic and operative management	0.58
B8	Improved planning / budgeting processes	0.42
B9	Systematic performance indicator collection	0.51
B10	Development of non-financial indicators	0.57
B11	Support documentation and reporting process	0.44
B12	Improved personnel management	0.45
B13	Improved measurement of strategy implementation	0.47
B14	Holistic control instrument for management	0.61
B15	Internal / external performance comparison made possible	0.55
Cronbach Alpha Coefficient		**0.86**

It is seen from the table that the correlations of all items to total sum scale are at remarkable level and calculated Cronbach alpha coefficient is as high as 0.86. This reveals that all 15 items in the scale measuring ERP benefits are 'Very good' scale and highly reliable for measuring the above concept (ERP benefit). Therefore, all 15 items are used further in Factor analysis to uncover the underlying characteristics of benefits from adoption of ERP in Indian companies.

TABLE 4: NAME ASSIGNED TO UNDERLYING STRUCTURES OF ERP BENEFITS

Extracted Factor	Assigned Name
F1	Non-financial Performance Evaluation
F2	Improvement in Performance Efficiency
F3	Improvement in Business Process
F4	Improved Measurement of Strategy Implementation

EXTENSIVENESS OF ERP ADOPTION AND FUNCTIONAL AREAS

The extent of adopting ERP in 10 different functional areas has been viewed with the help of mean perception scores of employees in both selected companies.

TABLE 5: LEVEL OF EXTENSIVENESS OF ERP ADOPTION IN FUNCTIONAL AREAS

Functional Areas	Mean	SD	Rank
Preventive maintenance and Production costing	4.13	0.70	6
Manufacturing Execution System	4.13	0.68	7
Human Resource Management	3.61	0.88	10
Material Management	4.17	0.69	3
Field Service	3.90	0.81	9
Accounting Management	4.17	0.63	4
Automated Workflow	4.13	0.66	5
Inventory and Sales Management	4.24	0.61	1
General Functions	4.07	0.59	8
Customer Relationship Management	4.20	0.79	2

From the Table 5, it is understood that the employees have rated 'inventory and sales management' as the functional area in which ERP has been extensively adopted by both companies together (Mean = 4.24; Rank = 1). This is followed by the functional areas – 'Customer Relationship Management' with rank 2 (Mean = 4.20) and 'Material Management' with Rank 3 (Mean = 4.17). Extensiveness in adopting ERP in Accounting Management, Automated Workflow and Preventive Maintenance and Production Costing has been ranked at 4th, 5th and 6th position respectively. The adoption of ERP has been at low extent in Manufacturing Execution System, General Function and in Field Service and it has been at very low extent in Human Resource Department in selected companies. Hence, it is found from the above interpretation that; Adoption of ERP at high extent in 'Inventory and Sales Management', Customer Relationship Management' and 'Materials Management', at moderate extent in 'Accounting Management', 'Automated Workflow' and in 'Preventive Maintenance and Production Costing' and at low extent in all other functional area.

TABLE 6: COMPARISON OF LEVEL OF EXTENSIVENESS OF ERP ADOPTION IN FUNCTIONAL AREAS BETWEEN TWO SELECTED FIRMS

Functional Areas	HCL	SF	't' Value
Preventive maintenance and Production costing	3.93	4.29	-2.32**
	(0.76)	(0.61)	
Manufacturing Execution System	3.98	4.24	-1.72*
	(0.72)	(0.63)	
Human Resource Management	3.62	3.60	0.09
	(0.92)	(0.86)	
Material Management	3.82	4.44	-4.47***.
	(0.78)	(0.46)	
Field Service	3.82	3.96	-0.71
	(0.72)	(0.88)	
Accounting Management	3.83	4.43	-4.77***
	(0.60)	(0.52)	
Automated Workflow	4.09	4.17	-0.52
	(0.66)	(0.67)	
Inventory and Sales Management	4.20	4.27	-0.56
	(0.78)	(0.46)	
General Functions	3.83	4.24	-3.28***
	(0.66)	(0.45)	
Customer Relationship Management	4.12	4.27	-0.83
	(0.95)	(0.65)	

HCL – Hindustan Computer Limited; SF – Sundaram Fasteners Limited

Degrees of freedom is 77 for all 't' values.

*Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.

The results of 't' test showing the significant difference in level of extensiveness of ERP Adoption in 10 functional areas between HCL and SF have been presented in Table 1. It can be observed from the results that the level of extensiveness in ERP adoption is significantly higher in Sundaram Fasteners Limited (Mean Scores are comparatively higher) than that of in Hindustan Computer Limited in the following functional areas – Preventive Maintenance and Production Costing (t value = -2.32, $p < 0.05$), Manufacturing Execution System (t value = -1.72, $p < 0.10$), Materials Management (t value = -4.47, $p < 0.01$), Accounting Management (t value = -4.77, $p < 0.01$) and in General functions (t value = -3.28, $p < 0.01$). Since two firms are distinct in nature of business, that is one is IT firms (HCL) and other one is Non-IT firm, the above difference in various functional areas can be attributed to type of business. In other words, it can be interpreted that the ERP adoption in IT firm is significantly less compared to that of in Non-IT firm.

Extensiveness of the ERP adoption in 10 major functional areas in the selected organizations as has been perceived by the employees is analysed with respect to employees' various social characteristics in order to know whether all employees, irrespective of their personal attributes have given same viewpoint or different viewpoint as this would lead the researcher to arrive at strong conclusion about extensiveness of ERP adoption in these organization.

EXTENT OF BENEFITS FROM ERP ADOPTION

The extent of benefits from ERP adoption in the 10 different functional areas have been analysed using the opinion scores of the employees of these organizations**.**

TABLE 7: EXTENT OF BENEFITS FROM ERP ADOPTION IN SELECTED COMPANIES

Benefits From ERP	Mean	SD	Rank
Non-financial Performance Evaluation	3.81	0.61	3
Improvement in Performance Efficiency	3.99	0.65	1
Improvement in Business Process	3.75	0.71	4
Improved Measurement of Strategy Implementation	3.85	0.62	2

Table 7 presents the extent of benefits from ERP adoption in the sample companies. The table discloses that among the four major benefits, 'improvement in performance efficiency' is ranked first with mean score of 3.99 followed by 'improved measurement of strategy implementation' (Mean = 3.85; Rank = 2) and 'Non-financial performance evaluation (Mean = 3.81, Rank = 3). Improvement in business process is ranked 4 with mean score of 3.75. The above results indicate that the primary benefits from ERP are "Improvement in Performance Efficiency" and next "Improvement Measurement of Strategy Implementation". Non-financial performance evaluation and Improvement in business process are considered to be additional benefits from ERP adoption. Comparison of mean perception between employees of two companies, as has been presented in Table 8, reveals that their level of opinion about extent of benefits is almost similar in both companies.

Only in respect of 'Improved measurement of strategy implementation' two employee groups differ significantly in their perception (t value = 1.81, $p < 0.10$). This may be due to the fact that two selected firms are distinct in nature in respect of their activities. With regard to all other benefits as well as to Total Benefits from ERP, the employee groups from both companies have perceived in a similar manner.

TABLE 8: COMPARISON OF EXTENT OF BENEFITS FROM ERP ADOPTION BETWEEN THE TWO FIRMS

Benefits From ERP	HCL	SF	't' Value
Non-financial Performance Evaluation	3.84	3.78	0.42
	(0.71)	(0.52)	
Improvement in Performance Efficiency	4.00	3.99	0.10
	(0.75)	(0.57)	
Improvement in Business Process	3.81	3.71	0.61
	(0.79)	(0.64)	
Improved Measurement of Strategy Implementation	3.99	3.74	1.81*
	(0.60)	(0.61)	
Total Benefits from ERP	3.91	3.80	0.95
	(0.62)	(0.36)	

Degrees of freedom is 77 for all 't' values.

*Significant at 10% level.

Therefore, it is found from the above results that the extent of benefits from ERP adoption is same in both the companies irrespective of their distinct nature of business. The extent of benefits from ERP as has been perceived by employee groups with different job status (Clerks, Supervisor and Manager) from selected companies have been compared using one way Analysis of Variance (F test) in order to know whether the responses about extent of benefits is consistent among employees of all job status.

RELATIONSHIP BETWEEN "EXTENSIVENESS OF ERP ADOPTION AND ERP BENEFITS"

The effect the Extensiveness of ERP adoption on the extent of benefits from ERP adoption has been analysed. In this regard, multiple regression technique is used. The ERP benefits are treated as dependent variable and 10 functional areas are considered as independent variables.

TABLE 9: REGRESSION RESULTS SHOWING THE EFFECT OF EXTENSIVENESS OF ERP ADOPTION ON 'TOTAL BENEFITS FROM ERP' IN SELECTED COMPANIES

Independent Variable	Model 1	Model 2	Model 3
Intercept	1.1258***	1.0786***	1.1531***
	(2.88)	(2.86)	(3.12)
Preventive maintenance and Production costing	-0.1946**	-0.1977**	-0.1958**
	-(2.28)	-(2.37)	-(2.35)
Manufacturing Execution System	0.1046	0.0915	0.0922
	(1.32)	(1.19)	(1.20)
Human Resource Management	0.0557	0.0487	
	(1.12)	(1.00)	
Material Management	-0.1074	-0.1209	-0.1245
	-(1.18)	-(1.41)	-(1.46)
Field Service	-0.0404		
	-(0.66)		
Accounting Management	-0.0392		
	-(0.42)		
Automated Workflow	0.1521**	0.1479*	0.1517**
	(1.97)	(1.94)	(1.99)
Inventory and Sales Management	0.4605***	0.4418***	0.4574***
	(4.47)	(4.44)	(4.65)
General Functions	0.1392	0.1273	0.1289
	(1.43)	(1.39)	(1.41)
Customer Relationship Management	0.1232**	0.1277**	0.1319**
	(2.01)	(2.14)	(2.22)
R^2	0.5088	0.5037	0.4966
Adjusted R^2	0.4365	0.4470	0.4469
F Value of the Model	7.04***	8.88***.	10.01***
Degrees of Freedom	10,68	8,70	7,71

Figures in brackets indicate 't' values for respective beta coefficients
*Significant at 10% level; **Significant at 5% level; Significant at 1% level.

Regression results indicate the effect of extensiveness of ERP adoption in 10 functional areas on 'total benefits from ERP adoption' and presented in Table 4. From the table it is understood that the model 3 is the best fitted model as the F value, 10.01 (p < 0.01) is greater and the difference between R^2 and adjusted R^2 is less than that of the other two models. Hence, the model 3 is considered as final model for interpretation. Observation of the results of the mode 3 shows that the coefficients of 'Manufacturing Execution System' and 'General functions' are positive and coefficient of 'Material Management' is negative but all these coefficients are insignificant. On the other hand, the beta coefficients of all the remaining variables in the model 3 are significant at required hypothetical level. But, as far as the sign of coefficients are concerned, it is negative for 'Preventive maintenance and Production costing' and positive for other remaining significant variables. The above results have shown that the overall benefits from ERP adoption decreases significantly with increase in extensiveness of ERP adoption in functional areas such as – 'Preventive maintenance and Production costing' and increases significantly with increase in ERP adoption in functional areas, namely, 'Automated Workflow', 'Inventory and Sales Management' and 'Customer Relationship Management'. Also, the contribution to 'overall benefits' through adoption of ERP in Manufacturing Execution System is positive and that of 'Material Management' is negative when they join together with extensiveness of ERP adoption in other significant functional areas. The results also envisage that the companies could not get any benefits from present intensity of ERP adoption in 'Human Resource Management', 'Field Service' and 'Accounting Management'.

FINDINGS

1. It is found that ERP has been adopted in 10 major functional areas, namely, Preventive maintenance and Production costing, Manufacturing Execution System, Human Resource Management, Material Management, Field Service, Accounting Management, Automated Workflow, Inventory and Sales Management, General Functions and Customer Relationship Management.
2. It is found that the major benefits from ERP adoption in Indian context are (1) Non-financial Performance Evaluation, (2) Improvement in Performance Efficiency, (3) Improvement in Business Process and (4) Improved Measurement of Strategy Implementation.
3. Adoption of ERP is high in 'Inventory and Sales Management', Customer Relationship Management' and 'Materials Management', moderate in 'Accounting Management', 'Automated Workflow' and in 'Preventive Maintenance and Production Costing' and low in 'Manufacturing Execution System', 'General Functions', 'Field Service' and 'Human Resource Management.
4. This study found that the ERP adoption in IT firm is less significantly compared to that of Non-IT firm.
5. This study found that the primary benefits from ERP adoption are improvement in performance efficiency and improved measurement of strategy implementation.
6. It is found from the above results that the extent of benefits from ERP adoption is at same level in selected companies irrespective of their distinct nature of business.
7. The overall benefits from ERP adoption in selected companies decreases significantly with increase in extensiveness of ERP adoption in functional area – 'Preventive maintenance and Production costing'.
8. The overall benefits from ERP adoption increases significantly with increase in ERP adoption in functional areas, namely, 'Automated Workflow', 'Inventory and Sales Management' and 'Customer Relationship Management'.
9. The contribution to 'overall benefits' through adoption of ERP in Manufacturing Execution System is positive and that of 'Material Management' is negative when they join together with extensiveness of ERP adoption in other significant functional areas.
10. It is finally found that the companies could not get any benefit from the present intensity of ERP adoption in 'Human Resource Management', 'Field Service' and 'Accounting Management'.

SUMMARY

This study is aimed at eliciting the extent of ERP adoption and its benefits in Indian context. For the above purpose, the two companies, one in IT sector (Hindustan Computer Limited) and other in Non-IT sector (Sundaram Fasteners Limited) have been selected for the study. The extensiveness of ERP adoption in various functional areas and benefits of ERP adoption have been ascertained through opinion survey from the employees of these companies at clerical, supervisor and managerial level. For the survey, a well defined questionnaire was prepared with Likert type scale items for measuring the extensiveness of ERP adoption and its benefits. The Questionnaire had 15 items for measuring ERP benefits and 35 items for measuring extent of ERP adoption. The questionnaires were distributed to employees of all cadres in both companies in person by the researcher.

The data collected from the survey were tested using reliability analysis to know the reliability of scale items used in the questionnaire. It is found from the analysis that scale items measuring both ERP adoption and ERP benefits are consistent with each other and reliable measures. After ascertaining that the scale items are reliable, the study administered factor analysis on the data to find out underlying dimensions of ERP adoption and ERP benefits in the selected companies. The underlying dimensions that are uncovered from data measuring ERP adoption were given appropriate names and are considered as major functional areas of ERP adoption. Similarly, the underlying dimensions of ERP benefits were identified with suitable name and considered as major benefits from ERP adoption in the selected companies. The mean perception scores of the respondents for each major functional areas and each major benefit are compared by firms as well as by respondents' (employees') job status, job experience, education and age to known consistency of the ERP adoption and ERP benefits. Finally, the relationship between extensiveness of ERP adoption in major functional areas and major benefits have been analysed using Multiple regression technique.

CONCLUSION

This study concludes that the extent of ERP adoption differ significantly between companies with different   activities but benefits from ERP adoption is similar and do not differ by nature of business of the companies in Indian context. All the employees irrespective of their job status, job experience, education and age are consistent in agreeing that the ERP adoption in 10 major functional areas, namely Preventive maintenance and Production costing, Manufacturing Execution System, Human Resource Management, Material Management, Field Service, Accounting Management, Automated Workflow, Inventory and Sales Management, General Functions and Customer Relationship Management has benefited their companies in improving Non-financial Performance Evaluation, Performance Efficiency, Business Process and Measurement of Strategy Implementation. It is further concluded from the study that the extent of ERP adoption in 'Automated Workflow', 'Inventory and Sales Management' and 'Customer Relationship Management' play a significant role in improving the overall efficiency of the companies under study. This study further envisaged that though the extent of ERP adoption is high in 'Human Resource Management', 'Field Service' and 'Accounting Management' it has failed to bring any benefit to the companies under study.

REFERENCES

1.   Alexis Leon (2002), **Enterprise Resource Planning**, *TATA McGrew-Hill Publications, New Delhi,*
2.   Ashok Soni (2005), **Enterprise Systems and Applications: The Future –** *A panel Discussion, POMS OM Frontiers: Winds of Change.*
3.   Bhatti, T.R. (2005), **Critical Success Factors For The implementation of Enterprise Resource Planning (ERP: Empirical Validation,** *The Second International Conference on Innovation in Information.*
4.   Christopher P. Holland and Ben Light (1999), **Global Enterprise Resource Planning Implementation**, *Proceedings of the 32nd Hawaii International Conference on System Sciences.*
5.   Colin Ash, G. and Janice, M. Burn, (2001), **E-ERP: A Comprehensive Approach to E-Business,** *IRMA International Conference,* pp. 112-116.
6.   De Vaan M.J.M. and Barendrecht, R.A (2000), **ERP-wereld verander tingrijpend, Tijdschrift Voor Inkoop & Logistic,** November, Vol. 103, pp. 462-468.
7.   Fiona Fui-Hoon Nah, (2003), **Enterprise Resource Planning and its Implementations,** *International Journal of Human-Computer Interaction,* Vol.16, Issue No.1, pp. 1-3.
8.   Jain, V.K. and Bhakar, S.S. (2013), **Role of ERP in Improving Supply Chain Effectiveness: A Perpetual Study,** *ICFAI Journal of Supply Chain Management,* Vol. 3, No.2.
9.   Kai Reimers, (2002**) Implementing ERP systems in China,** *35th Hawaii International Conference on System Sciences.*
10. Leeuwen, O.C. van and Wemmenhove, P. (2001), **Trends in Finance & Control, Maandblad voor Accountancy en Dedrijfseconomie,** Vol. 78, pp. 435-444.
11. Morley and Roy Ph.D., (2004),**Customer based antecedents of satisfaction an dissatisfaction in business to business services,** *The University of Western Ontario (Canada),* pp. 225.
12. Rosemann. M, (1999), **ERP Software: characteristics and consequences,** *7th European Conference on Information Systems.*

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