

PERFORMANCE OF FICO MODULES OF ERP SYSTEM - SOME EMPIRICAL EVIDENCE FROM INDIAN MANUFACTURING FIRMS

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Abstract

The purpose of Accounting Information System (AIS) is to provide relevant and timely information for effective decision making by users of information. In today's information era, where most of the organizations work in Enterprise Resource planning (ERP) system environment, they implement their Accounting Information System through Financial Accounting (FI) and Cost Accounting (CO) modules, forming part of ERP system. ERP system is a management system meant to improve efficiency, agility, and profitability of business organizations in globally competitive world.

Objective of the study - This paper makes an attempt to study the performance of Financial Accounting (FI) and Controlling Operations (CO) modules known as FICO modules of ERP system in helping to improve the agility, efficiency and profitability of the organizations.

Research Methodology- The study is based on primary data collected from 122 manufacturing firms through structured questionnaire. Statistical techniques like mean, standard deviation and multiple regression are applied to test the hypothesis.

Results- As per regression results, FI module is found positively significant on inventory management and ROI, whereas CO module is found significant for all 10 performance measures.

Conclusion-The findings of the study add to the empirical evidence that FICO modules do help in to improve various financial and non financial performance to add agility, efficiency and profitability in select manufacturing firms in India.

Keywords: *ERP system, FICO modules, performance measurement.*

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1. INTRODUCTION

An Accounting Information System (AIS) is a system of collection, storage and processing of financial and cost and management accounting data that is used by decision makers. An accounting information system is generally a computer-based method for tracking accounting activity in conjunction with information technology resources. The resulting statistical reports can be used internally by management or externally by other interested parties including investors, creditors and tax authorities.

In the present information age, the accounting information system is part of integrated Management system known as ERP system which is practiced by Financial Accounting (FI) and Controlling Operations (CO) modules of ERP system in many business firms.

ERP System in Backdrop

Enterprise Resource Planning (ERP) is a firm wide information system that re-engineers and integrates key business processes like Manufacturing, Logistics, Supply Chain Management,

Financials, Accounting, Projects, Human Resources, Customer Relationship Management etc. to improve its efficiency, agility, and profitability. ERP is thus a 'cross-functional enterprise system' that enables free flow of information from different functional units of the firm helping in achieving a dynamic business environment (ERPwire.com).

Overview of Financial Accounting (FI) and Controlling (CO) Modules

FICO modules / ERP system can be purchased or developed in house. SAP is considered leading vendor in ERP system implementation and therefore, this section gives an outline of what is sap FICO modules and how they integrate with other modules of ERP system in an organization.

FI is the term used for Financial Accounting Module There are many sub-modules that streamline and specialize in each aspect of the Financial Accounting Processes like AA – Asset Accounting ; AP – Accounts Payable; AR – Accounts Receivable; BL – Bank Accounting; FM – Funds Management; GL – General Ledger Accounting; LC – Legal Consolidations; SL – Special Purpose Ledger; and TM – Travel Management. Out of the above, FI-AR, FI-AP, & FI-AA are the three sub-modules that send simultaneous postings to FI-GL. Now, the new SAP GL – integrates many streamlined processes to be unified more closely to further alleviate any duplication of live-time tasks. This New General Ledger Accounting in mySAP ERP has some dynamic advantages in comparison to the classic General Ledger Accounting (as used in SAP R/3Enterprise Version) – such as the ability to run real-time reconciliation between Management Accounting (CO) and Financial Accounting (FI) – i.e. – there is a real-time integration with Controlling. Previously time-consuming reconciliations are hence now rendered obsolete. The new SAP GL further allows the management of multiple ledgers within the General Ledger Accounting Module itself. This creates the scope for portraying parallel accounting scenarios within the SAP System (Raj Batni 2008).

Controlling (CO) is the term by which SAP refers to “Managerial Accounting”. The Organizational Elements in CO are Operating Concern, Controlling Area, and Cost Centers. Hence, the SAP CO Module helps management by providing reports on cost centers, profit centers, contribution margins, profitability, etc. It focuses on internal users, in contrast to FI – which focuses on data drawn for external reporting. The transactions posted in FI are transferred to CO for cost accounting processing, analytical reporting, and audit-controlling spectrums.

There can be either a one-to-one relationship or there can be one-to-many relationship between controlling Areas Verses Company Codes. Hence, CO becomes the governing module that oversees the consolidation of costing data whereby management can derive their perspectives for analysis. The SAP Controlling (CO) Module's Components are - Cost Element Accounting; Cost Controlling; Cost Center Accounting; Internal Orders; Activity-Based Costing; Product Cost Controlling; Profitability Analysis; and Profit Center Accounting.

The SAP Control (CO) Module is integrated with FI, AA, SD, PP, and HR. While FI is the main source for data for CO, the others such as SD, MDD, and PP have many integration points with CO. Revenue postings in FI will result in postings in CO-PA & EC-PCA. The HR Module also generates various types of costs to CO. In addition, Planned HR Costs can be passed on to CO as well for CO planning purposes (Raj Batni 2008).

FICO modules are part of ERP system and are implemented in early stage of ERP system implementation which promises many benefits.

Performance Measurement of FICO modules as a part ERP System in Manufacturing Firms

Al-Mashari et al. (2003) classifies changes in performance measures due to ERP system implementations into five categories. The operational category concerns improvements in functional areas leading to cost reductions, cycle time reductions, and productivity improvements. Benefits such as better resource management, improved decision-making, planning, and performance improvements fall into the managerial grouping. Strategic benefits help firms to innovate, build cost leadership, generate product differentiation, and build external links in the supply chain. The firm's IT infrastructure benefits through IT cost reductions and increased IT capacity. Organizational benefits such as business learning and successful organizational changes also accrue to firms.

As per Rajani (1999) the benefits from ERP come in three different forms i.e. in the short term, medium term and long term. When initially implemented in a year of organization going live with ERP, it helps in streamlining the operational areas such as purchase, production, inventory control, finance and accounts, maintenance, quality control, sale and distribution etc. this benefit

is the form of ‘automating’ the transactions which promises accuracy, reliability, availability and consistency of data. The next level of benefits accrues in the medium term after the data in the above area are in place. At this stage, the organization not only gets data but can use it for more meaningful analysis and plan for major resources (material, machine capacity, manpower, and money). At this stage, the organization realizes benefits in terms of reduced working capital (inventory and receivables), better financial forecasts, reduced cycle time for order fulfillment, improved co-ordination between various related processes in the organization etc. He adds that the real benefits of ERP comes in the long-term when the organization is in a position to apply the experience of the best business process involved over years of implementing the ERP for other organizations. At this stage the organization adopts the best business practices such as Total Quality Management (TQM), Just-In-Time (JIT) and Computer Integrated Manufacturing (CIM). In the long-term ERP also enhances the organization’s competitive edge by providing it the ability to change easily.

RESEARCH METHODOLOGY

Research problem

The present study makes an attempt to know improvement in various performances (financial and non-financial) of organization due to implementation of finance and controlling modules as a part of ERP system in select manufacturing firms in India.

2. Objectives of the Study

The objectives of the study are:

1. To know, since how long FICO modules are implemented in select organizations?
2. Does the FI module improve various performances of the organizations?
3. Does the CO module improve various performances of the organizations?

Framework of the Study:

Madapusi (2008) made literature review of 18 studies and identified 10 measures of performance due to implementation of ERP modules/ system. On the similar line the literature review of further studies was carried out and same 10 performance changes were identified.

The ten performance measures considered are information availability, information quality, standardization, inventory management, standardization, information availability, on-time delivery, profitability, return on investment, user satisfaction, customer satisfaction and competitive advantage.

In this study FI and CO modules are independent variables and ten performance measures are dependent variables of the study.

Hypothesis Formulation

The empirical evidence on study of performance of ERP system implementation see e.g. Sandoe et al., (2001), Majed Al-Mashari, et al. (2003) , Gable et.al (2003), Sedera et al. (2004), Ifinedo (2006), Shaio Yan Huang et al. (2009), Ifinedo P. & Nahar N. (2007) , Shang & Seddon (2007) , Madapusi (2008) show that the implementation of ERP modules / system results in improvement in number of non financial and financial performances like information availability, standardization and quality, integration of processes, inventory management, on-time delivery, productivity, customer satisfaction, cost savings, accurate forecasts, and capacity utilization, , inventory management as well better ROI and competitive advantage etc.

Based on the above studies in the field the following hypotheses are formulated:

Null Hypothesis:

Ho1: The implementation of finance modules does not contribute to changes in performance.

Ho2: The implementation of controlling modules does not contribute to changes in performance.

Alternate Hypothesis:

H1: The implementation of finance modules does contribute to changes in performance.

H2: The implementation of controlling modules does contribute to changes in performance.

Data Collection Instrument

The data collection instrument, in the form of a survey questionnaire developed and used by Madapusi (2008), with few changes, has been used for data collection. Changes to the questionnaire are done on the basis of review of literature done mostly from studies available from the year 2004 to 2011. The questionnaire aimed to study various other research questions. The questionnaire included 14 modules. For this study the questions relevant to FICO modules and change in performance are considered.

The modules implemented were measured on the basis of their mean values. The scores assigned to each scale were on basis of their midpoints. For status of NI - Not implemented score assigned was 0, for implementation status of 0 to less than 1 year score assigned was 0.5; for implementation status of more than 1 year but less than 3 years score assigned was 2; for implementation status of 3 years or more but less than 5 years score assigned was 4 and for the last criteria of implementation for 5 years or more score assigned was 6.

The measures of change in performance are considered to measure the ERP system performance. These changes were measured on 7 points Likert scale ranging from Agree to Disagree. The score given to each scale was as follows -Agree:7, Mostly Agree: 6, Somewhat Agree: 5, Neither Agree nor Disagree: 4, Somewhat Disagree: 3, Mostly Disagree: 2 and Disagree: 1.

Data Collection and sample size

The study is based on primary data collected by way of survey questionnaire from Select Indian manufacturing firms belonging to various industries. These firms belong to various manufacturing zones from South Gujarat, Maharastra, Noida, Chandigarh, Punjab and Haryana. In all 122 completed Questionnaire forms the sample of the study. Convenient sampling method is used for the study

Data Analysis

The hypotheses are tested by applying multiple linear regression analysis. Cronbach's Alpha & Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity is

used to measure the reliability of the data. To address the problem of multicollinearity, correlations analysis is applied. For processing the data Statistical Package for the Social Sciences (SPSS) 16.0 is employed.

FINDINGS OF THE STUDY

Objective 1: Since how long FICO modules are implemented in select manufacturing units?

Table 1 shows the mean value and standard deviation of the finance module and controlling module implemented. Finance module has the mean value of 4.87 and SD 1.53 and controlling module had mean value of 4.11 and SD 2.16. All the sample companies of the study have implemented the finance module- 100 % implementation whereas the controlling module is found implemented by 95.08 % companies. The average number of years since FICO modules are implemented is 5 years and more.

Table 1

Mean value of Finance and Controlling module implemented

Particulars	Mean	SD	No of companies implementing the module	% of companies employing the module
Financials (FI)	4.87	1.53	122	100.00
Controlling (CO)	4.11	2.16	116	95.08

Objective 2: Does the FI module improve various performances of the organizations ?

Table 2 shows Mean & Standard Deviation (SD) scores of all performance measurements. Implementations of ERP system modules has given maximum benefit to firms in form of information availability (M: 6.57, SD: 0.67), closely followed by information quality (M: 6.30, SD: 0.79), inventory management (M: 6.28, SD: 0.82), user satisfaction and standardization with (M: 6.25, SD: 0.87 and M: 6.25, SD: 0.84) respectively. Competitive advantage was a performance measure with least score (M: 5.90, SD: 1.20).

Table 2

Mean values of Change in Performance Measures

Particulars	Mean	SD
Information Availability	6.57	0.67
Information Quality	6.30	0.79
Inventory Management	6.28	0.82
User Satisfaction	6.25	0.87
Standardization	6.25	0.84
On-time Delivery	6.04	0.92
Customer Satisfaction	5.99	0.96
Profitability	5.94	1.06
Return on Investment	5.96	1.13
Competitive Advantage	5.90	1.20

Hypothesis testing:

To test the first hypotheses separate regression models are developed for each 10 performance measures and standard linear regression analysis is conducted. The results of which are presented in Table 3, showing the size of standardized regression coefficients (β), coefficients of determination (R^2), and the F ratio's (F) for the fitted models. Only significant parameters estimates are considered and shown in the table.

Table 3**Significant relationship between Implementation Status of Finance module and Change in Performance**

Sr no	Variable	β	R^2	F
1	Inventory Management	.122	.158	1.888***
2	Return on Investment	.125	.016	19.19***

Significance: * $p < .001$; ** $p < .01$; *** $p < .05$. All β values are standardized regression coefficients.

As table 3 shows the results for the financial module were significant for 2 out of 10 measures. It was significant for inventory management (better resource management arising in medium term period) and ROI (better business performance resulting in long term period)

Objective 3: Does the CO module improve various performances of the organizations?

As shown in table 4, controlling module was found to be significant on all the ten performance measures. Showing improvement performance in agility (short term), resource management (medium term) and profitability and competitive advantage (long term).

Table 4**Significant relationship between Implementation Status of Controlling module and Change in Performance**

Sr. no	Variable	β	R^2	F
1	Inventory Management	.154	.026	5.245**
2	Information Quality	.164	.027	3.337***
3	On time delivery	.214	.046	5.753***

4	Standardization	.378	.143	20.058***
5	Profitability	.219	.048	6.067***
6	ROI	.300	.090	11.885***
7	Information availability	.206	.042	5.326***
8	User satisfaction	.064	.040	14.90***
9	Customer satisfaction	.177	.031	3.862***
10	Competitive Advantage	.197	.039	4.839***

Significance: * $p < .001$; ** $p < .01$; *** $p < .05$. All β values are standardized regression coefficients.

DISCUSSION

FI Module: ERP system research indicates that firms are early implementers of FI module and it is one of the basic modules belonging to the intra firm module system. The high mean of implementation status of this module (M-4.87) as well as 100 per cent implementation rate (122/122) support these finding. Financial module suffices the requirements of the firms at local levels to automaton its functions only and therefore does not affect various performance measures directly. Thus the basic functionality of this module, though vast, is limited to the routine management of finances and therefore it contributes indirectly to the overall benefits the firm. Thus as per regression results, this module is found positively significant on inventory management and ROI. Thus it helps in better resource management of material and improving in ROI.

Controlling module: This module is one of the early implemented modules by the firms belonging to intra-firm category. The high mean of implementation status of this module (M-4.11) as well as 95.08 per cent implementation rate (116/122) support these finding. This suggests deployment of this module facilitates proper tighter controls on all the functional activities, which help in managing budgeting and cost structures.

The regression model so constructed shows that controlling is significant for all 10 performance measures. This suggests that as the implementation status of controlling module increases, change in performance for all the 10 measures also increases. Positive impact of controlling module indicate that by better controlling various functions and its integration it helps to bring agility in organization (informational needs - short term advantage), better resource management /efficiency (medium term advantage) and profitability /ROI and competitive advantage (long term advantage).

CONCLUSION

The aim if AIS to help in effective decision making. As the findings suggest FICO modules help in availability of information and thereby help in better resource management resulting into better profitability and competitive advantage. Thus FICO modules are important modules of ERP system in business organizations.

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