

**The Value Relevance of Enterprise Resource
Planning Information**

Presented By

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STATEMENT OF SOURCES

To the best of my knowledge and belief, the work presented in this dissertation is original, except as acknowledged in the text. All sources used in the study have been cited and no attempt has been made to project the contributions of other researchers as my own. Further, the material has not been submitted, either in whole or in part, for a degree at this or any other university.

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THESIS ABSTRACT

The value of information technology investments is becoming a topical issue for corporate governance under the recent regulations enacted in the US (*Sarbanes Oxley Act*, US Congress, 2002). Increasingly, it is becoming clear that the absence of a definitive approach to evaluating IT investments is an impediment to the governance of corporations.

Enterprise Resource Planning (ERP) information systems are a key IT implementation that has been promoted in both vendor and practitioner communities alike as a panacea for *informed* enterprise performance management. This research sets out a methodology for the evaluation of ERP's contribution to enterprise value.

This issue is important because billions of dollars of corporate funds have been invested in these systems since the early 1990s. Shareholders and management require a justification of ERP based upon its proven contribution to enterprise and shareholder value.

The study develops a theory for the value relevance of ERP information by showing how ERP meets the requirement of a management and organizational innovation. Such an innovation promotes enterprise operations, improves enterprise performance, supports value creation, and increases shareholder wealth.

A model is presented for testing the value of ERP adoption. Empirical testing proceeds in two phases. The first phase develops a model for forecasting normal performance. Performance is shown to be a function of autoregressive earnings moderated by macroeconomic factors impacting operations. The latter are associated with the business cycle. The estimated coefficients of the model are used for predicting the earnings performance of the firm. The residuals of actual earnings less the predicted represent abnormal performance. This represents the unique improvement in performance over the prior year after adjusting for macroeconomic effects.

The second phase tests the value relevance of ERP information. A returns–earnings model developed by previous research is adapted with ERP–earnings interaction terms representing the ERP system's effect on performance.

Two classes of tests are performed on the model: tests of performance relevance of ERP systems, and tests of value relevance. The former tests ERP performance across several

accounting metrics identified as indicators of firm performance level change. The latter tests the market response to these changes in a bid to determine if, in the perception of the market, the changes in the performance level attained to by the firm are associated with ERP adoption. These tests are performed for each year of a 5-year period following adoption.

The results of the tests of performance relevance show that ERP-adopter firms do not achieve significant abnormal earnings in years 1 and 2 of the test period. They realize significant, negative, abnormal earnings in year 3. In years 4 and 5, they attain significant, positive, abnormal earnings. The tests of value relevance show that the market responds significantly to ERP adoption in year 2 of the test, but not in other years. The early response immediately after the year of adoption would seem to indicate a significant early expectation from these systems. However, this does appear to translate into long-term value relevance for ERP.

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ABBREVIATIONS

Abbreviation	Replacement Text
AASB	Australian Accounting Standards Board
ABM	Activity Based Management
ACF	Auto–Correlation Function
APICS	American Production & Inventory Control Society
APS	Advanced Planning & Scheduling/ Advanced Planning Systems
ASX	Australian Stock Exchange
ATO	Asset Turnover Ratio
B2C	Business–to–Consumer (e–Commerce)
BI	Business Intelligence
c-Commerce	Collaborative Commerce
e-Commerce	Electronic Commerce
COGS	Cost of Goods Sold
CPFR	Collaborative Planning, Forecasting & Replenishment
CPM	Corporate Performance Management
CRP	Capacity Requirements Planning
CRM	Customer Relationship Management
EAI	Enterprise Application Integration
EBIT	Earnings Before Interest and Tax
EPS	Earnings Per Share
ERC	Earnings Response Coefficient
ERM	Enterprise Resource Management
ERP	Enterprise Resource Planning
ERP II	Enterprise Resource Planning (second wave)
EVA	Economic Value Added
FMS	Flexible Manufacturing Systems
GB	Gigabyte(s)
GIC	General Industry Classification
4GL	4 th Generation Language
GLS	Generalised Least Squares
GM (%)	Gross Margin (%)
GMM	Generalized Method of Moments
GUI	Graphical User Interface
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IEEP/ES	Integrated Extended Enterprise Planning/Execution System
IRM	Information Resources Management
IS	Information System(s)
ISACA	IS Audit and Control Association
IT	Information Technology
ITGI	IT Governance Institute
KMS	Knowledge Management System
MES	Manufacturing Execution Systems
MESA	MES Association
MFP	Multi–Factor Productivity

MIS	Management Information System(s)
MPC	Manufacturing Planning & Control
MPD	Mean Paired Difference
MPS	Master Production Schedule
MRP	Material Requirements Planning
MRPII	Manufacturing Resources Planning
NPAT	Net Profit After Tax
NPV	Net Present Value
OLAP	On Line Analytical Processing
OLS	Ordinary Least Squares
PCA	Principal Components Analysis
PEC	Persistence of Earnings Coefficient
P/E	Price–Earnings Ratio
PLM	Product Lifecycle Management
RAM	Random Access Memory
RAID	Redundant Arrays of Independent Disks
RBV	Resource–based View (of the firm)
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROIC	Return on Invested Capital
ROP	Re-Order Point System
ROS	Return on Sales
SBU	Strategic Business Unit
SCE	Supply Chain Execution
SCM	Supply Chain Management
SCO	Supply Chain Optimization
SCP	Supply Chain Planning
SFA	Sales Force Automation
SFC	Shop Floor Controls
SG&A	Selling, General & Administration Expense
SIC	Standard Industry Classification
SMP	Symmetric Multiprocessing
SQL	Structured Query Language
SR	Sales Revenue
SRM	Supplier Relationship Management
TCE	Transaction Cost Economics
TMS	Transportation Management Systems
TRS	Total Returns to Shareholders
VBM	Value–Based Management
WACC	Weighted Average Cost of Capital
WMS	Warehouse Management Systems