A PERFORMANCE MEASUREMENT FRAMEWORK FOR IT SERVICE
MANAGEMENT

Submitted by

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Abstract

The use of Information Technology (IT) has become more pervasive and, progressively, there has been a shift from a technology focus to a service focus in managing IT. The performance measurement of IT service management (ITSM) is a major challenge faced by organisations adopting best practice frameworks. The extensive adoption of ITSM frameworks by organisations may point to the acceptance by IT service managers that best practice frameworks such as Information Technology Infrastructure Library (ITIL®) and standards such as ISO/IEC 20000 can deliver real operational efficiencies, ultimately translating into business benefits. Some organisations implementing ITSM initiatives have reported realisation of benefits in cost savings and standardisations in delivery of IT service.

Despite the appeal and the potential to realise benefits, the implementation of ITSM initiatives is complicated by the complexity in measuring performance. Measurement of the performance of ITSM is critical due to the size of the investment and the crucial importance of IT services to organisations. Few guidelines on the performance measurement of ITSM exist for industry practitioners; and scant academic research has been conducted on the performance measurement of ITSM. The objective of this research is to develop a framework that can be used to measure the performance of ITSM and, hence, contribute to ITSM initiatives in organisations.

To achieve this objective, the study uses a mixed-method and multi-paradigm approach to develop an ITSM performance measurement framework and contingency theory for the performance measurement of ITSM. The study uses a survey of ITSM benefits and performance measurement to identify ITSM performance measurement practices. A survey was conducted on the ITSM performance measurement practices of members of the IT Service Management Forum of Australia (itSMFA). The survey findings were used to identify six ITSM performance measurement exemplar organisations for case study. The case studies provided further insight into ITSM performance measurement practices. The results of the literature review, survey and case studies formed the basis for the design of the ITSM performance measurement framework. The design science approach of Design Science Research Methodology (DSRM) and the design method of Matching
Analysis Projection and Synthesis (MAPS) were used to develop the ITSM performance measurement framework.

The study provides a comprehensive literature review on the performance measurement of ITSM. A review of the existing industry and academic literature showed a gap in theory for performance measurement of ITSM. There was also a lack of a contextualised performance measurement framework for ITSM. The study developed categories for types of organisation level and process level ITSM, and categories for types of ITSM performance metrics. The performance measurement framework developed by the study is structured using the Balanced Scorecard (BSC) and can be used to quantify benefits and link organisational level benefits and metrics with process level metrics. The developed framework includes a consolidated ITSM metrics catalogue structure. The study identified the internal and external organisational factors that influence the selection of ITSM performance metrics and proposes a contingency theory for the performance measurement of ITSM. The study makes theoretical and practical contributions in ITSM performance measurement by extending ITSM performance measurement theory, IS design theory and developing a holistic multi-level ITSM performance measurement framework that can be used by organisations.

This dissertation is a result of a study funded by an Australian Research Council (ARC) linkage project grant in partnership with Queensland Health (QH) and the IT Service Management Forum (itSMF) Australia. The study contributes to the linkage project by addressing the complex interactions of benefits, performance metrics and methods to enable Chief Information Officers (CIOs) and IT service managers to measure the performance of IT service management.
Certification of Thesis

I certify that the ideas, analyses, results, and conclusions contained in this thesis are original and entirely my own effort, except where otherwise acknowledged. I also certify that this work has not been previously submitted for any other award. To the best of my belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

During the course of the research, a number of research papers and a book chapter were published.

I was the primary author of the following co-authored papers:


I was co-author in the following presentations and publications:


Francis Gacenga

Endorsement

Aileen Cater-Steel, Principal Supervisor

Mark Toleman, Associate Supervisor

17 June 2013
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“Ad majorem Dei gloriam”.

(To the greater glory of God) - St. Ignatius Loyola
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<td>ACIS</td>
<td>Australasian Conference on Information Systems</td>
</tr>
<tr>
<td>AGIMO</td>
<td>Australian Government Information Management Office</td>
</tr>
<tr>
<td>AIS</td>
<td>Association for Information Systems</td>
</tr>
<tr>
<td>AMCIS</td>
<td>Americas Conference on Information Systems</td>
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<tr>
<td>ANT</td>
<td>Actor Network Theory</td>
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<tr>
<td>ARC</td>
<td>Australian Research Council</td>
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<tr>
<td>ARC</td>
<td>Australian Research Council</td>
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<tr>
<td>BPMN</td>
<td>Business Process Model and Notation</td>
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<tr>
<td>BSC</td>
<td>Balanced Scorecard</td>
</tr>
<tr>
<td>BYOD</td>
<td>Bring Your Own Device</td>
</tr>
<tr>
<td>CAB</td>
<td>Change Advisory Board</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>CIO</td>
<td>Chief Information Officer</td>
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<tr>
<td>CMDB</td>
<td>Configuration Management Database</td>
</tr>
<tr>
<td>CMMI®</td>
<td>Capability Maturity Model Integration</td>
</tr>
<tr>
<td>CMS</td>
<td>Configuration Management System</td>
</tr>
<tr>
<td>COBIT</td>
<td>Control Objectives for Information and Related Technology</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
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<tr>
<td>CSF</td>
<td>Critical Success Factors</td>
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<tr>
<td>CSV</td>
<td>Comma Separated Values</td>
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<tr>
<td>DESRIST</td>
<td>Design Science Research in Information Systems and Technology</td>
</tr>
<tr>
<td>DMAIC</td>
<td>Define, Measure, Analyse, Improve, and Control</td>
</tr>
<tr>
<td>ECIS</td>
<td>European Conference on Information Systems</td>
</tr>
<tr>
<td>ECRM</td>
<td>European Conference on Research Methodology for Business and Management Studies</td>
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<tr>
<td>EJBRM</td>
<td>Electronic Journal of Business Research Methods</td>
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<td>Abbreviation</td>
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<tr>
<td>EJIS</td>
<td>European Journal of Information Systems</td>
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<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<tr>
<td>GE</td>
<td>General Electric</td>
</tr>
<tr>
<td>GFC</td>
<td>Global Financial Crisis</td>
</tr>
<tr>
<td>GITMA</td>
<td>Global Information Technology Management Association</td>
</tr>
<tr>
<td>GQM</td>
<td>Goal Question Metrics</td>
</tr>
<tr>
<td>HDI</td>
<td>Help Desk Institute</td>
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<tr>
<td>HICSS</td>
<td>Hawaii International Conference on System Sciences</td>
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<tr>
<td>HP® ITSM</td>
<td>HP IT Service Management Reference Model</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resources</td>
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<tr>
<td>IaaS</td>
<td>Infrastructure as a Service</td>
</tr>
<tr>
<td>IBM®</td>
<td>International Business Machines</td>
</tr>
<tr>
<td>IBM® SMRM</td>
<td>IBM Service Management Reference Model</td>
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<tr>
<td>ICIS</td>
<td>International Conference on Information Systems</td>
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<tr>
<td>ICSM</td>
<td>Institute of Certified Service Managers</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
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<tr>
<td>IOSM</td>
<td>Institute of IT Service Management</td>
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<tr>
<td>IS</td>
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<tr>
<td>DSRM</td>
<td>Design Science Research Methodology</td>
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<tr>
<td>ISFS</td>
<td>IS Functional Scorecard</td>
</tr>
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<td>ISO 27001</td>
<td>Information security management system (ISMS) standard</td>
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<tr>
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<td>International Organization for Standardization/International Electrotechnical Commission ITSM standard</td>
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<td>Information Systems Research</td>
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<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>ITIL®</td>
<td>Information Technology Infrastructure Library</td>
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<tr>
<td>ITSCM</td>
<td>IT Service Continuity Management</td>
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<td>ITSM</td>
<td>Information Technology Service Management</td>
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<tr>
<td>itSMF</td>
<td>Information Technology Service Management Forum</td>
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<tr>
<td>itSMFA</td>
<td>Information Technology Service Management Forum Australia</td>
</tr>
<tr>
<td>itSMFI</td>
<td>Information Technology Service Management Forum International</td>
</tr>
<tr>
<td>ITUP</td>
<td>IBM Tivoli Unified Process</td>
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<tr>
<td>JAIS</td>
<td>Journal of Association for Information Systems</td>
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<tr>
<td>JGITM</td>
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<tr>
<td>JIT</td>
<td>Journal of Information Technology</td>
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<td>JMIS</td>
<td>Journal of Management Information Systems</td>
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<td>JSIS</td>
<td>Journal of Strategic Information Systems</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>MAPS</td>
<td>Matching Analysis Projection and Synthesis</td>
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<tr>
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</tr>
<tr>
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<td>Management Information Systems Quarterly</td>
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<tr>
<td>MOF®</td>
<td>Microsoft Operations Framework</td>
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<tr>
<td>NRA</td>
<td>Normatively Regulated Activities</td>
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<tr>
<td>OGC</td>
<td>Office of Government Commerce</td>
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<tr>
<td>OH&amp;S</td>
<td>Organisation Health and Safety</td>
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<tr>
<td>OWL</td>
<td>Web Ontology Language</td>
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<td>PaaS</td>
<td>Platform as a Service</td>
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<td>PACIS</td>
<td>Pacific Asia Conference on Information Systems</td>
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<tr>
<td>PAM</td>
<td>Process Assessment Model</td>
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<tr>
<td>PI</td>
<td>Performance Indicator</td>
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<td>PMBOK</td>
<td>Project Management Body of Knowledge</td>
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<td>PMF</td>
<td>Performance Measurement Framework</td>
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<tr>
<td>PPPT</td>
<td>People, Process, Partners, Technology</td>
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<td>PRINCE</td>
<td>Projects in Controlled Environments</td>
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<td>Process Reference Model</td>
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<tr>
<td>QH</td>
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<tr>
<td>RBV</td>
<td>Resource Based View</td>
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<td>Request for Change</td>
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<td>Return on Investment</td>
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<td>SaaS</td>
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<td>SACM</td>
<td>Service Asset and Configuration Management</td>
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<td>SIGSVC</td>
<td>Special Interest Group on Services</td>
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<td>SLA</td>
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<td>Systematic Literature Review</td>
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<td>Service-Oriented Architecture</td>
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<td>SPM</td>
<td>Service Portfolio Management</td>
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<tr>
<td>SPOC</td>
<td>Single Point of Contact</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences or Statistical Product and Service Solutions</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UML</td>
<td>Unified Modelling Language</td>
</tr>
<tr>
<td>US/USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>USQ</td>
<td>University of Southern Queensland</td>
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# Table of Standards

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<td>ISO9000</td>
<td>Quality management systems standards</td>
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<tr>
<td>ISO/IEC 20000</td>
<td>International standard for IT service management</td>
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<tr>
<td>ISO/IEC15504</td>
<td>Information technology — Process assessment standards</td>
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