# Contents

1 **Chapter One**
   1.1 Introduction 1
   1.2 The Research problem and its importance 3
   1.3 Research objectives and aims 8
   1.4 Research questions 9
   1.5 Research hypothesis 10
   1.6 Data collection and methodology 10
   1.7 Presentation of the study 12
2 **Chapter Two** - Cost of quality
   2.1 The prevention, appraisal, failure model 22
   2.2 The process cost model 35
   2.3 The quality loss model 45
3 **Chapter Three** - Literature review
   3.1 Quality in business 61
   3.2 Use of quality costs by companies 67
   3.3 Accounting and quality costs 80
   3.4 Concern for quality in Sudan 94
4 **Chapter Four** - Methodology
   4.1 Population 103
   4.2 Study sample 105
   4.3 Research tools 109
   4.4 Statistical tools 114
   4.5 Limits of the Study 115
5 **Chapter Five** - Results, analysis and conclusions & recommendations
   5.1 Analysis of results 117
   5.1.1 Questions relating to quality 118
   5.1.2 Questions relating to cost of quality 128
   5.2 Comment on the use of accounting information 147
   5.3 Statistical analysis and test of hypothesis 151
   5.4 Recommendations 157
   5.5 Areas for further research 161
   References 162
Acknowledgments

I am greatly indebted to my supervisors, Professor Dr. Ali Abdalla Alhakem (Co-Supervisor) and Dr. Mohamed Farah Abdalhaleem for their rigorous sophisticated guidance and help throughout the study period.

Professor Dr. Ali Alhakem first gave me valuable guides on how to present the study in an academic way and he thoroughly reviewed the first draft enabling the study to appear in a better shape.

Dr. Mohamed Farah, generously and patiently responded to my weekly inquires and gave me precious long hours that positively added to every part of this work.

As for Dr. Abdelrhman Alansari, may his soul rest in peace and ALLA grant him Paradise, he guided me in questionnaire design, sample size and method of analysis.

Special thanks are extended to lecturer Abdullah M. Sulaiman in the Institute of Public Administration (Kingdom of Saudi Arabia) for introducing me to his colleagues in the quality department of the Institute and facilitating my use of the
Institute Library. Thanks are also due to my colleagues and students in various accounting departments of companies selected in the sample for their response to my questionnaires and help in fixing interview times with managers and quality officers.

Ustaza Haneefa owes special thanks for devoting some of her time for prove reading of this research as a native speaker of English.

Within my family I appreciate my wife Dr Amna Fediel, encouragement, enthusiasm and support.

Last but not least, I should thank the vice chancellor of Sudan University of Science & Technology, Dean of the Graduate College and the Research Committee of College of Business Studies for giving me the opportunity to carry out this research.
COST OF QUALITY SYSTEMS AND ITS PLACE AND PRACTICES IN SUDANESE PRIVATE SECTOR COMPANIES

A Thesis submitted to the Graduate College of Sudan University of Science & Technology in fulfillment of the requirements for the degree of Doctor of Philosophy in Accounting.

By:
Abdelaziz Mahmoud Abdelmageed
BSc, Kartoum Polytechnic, 1979
MSc., University of Stirling, U.K 1988

Supervised by:
Dr. Mohammed Farah Abdalhaleem
Professor Dr.Ali Abdalla Alhakem (Co-Supervisor)

July 2004
Abstract

This study examines the existence or non-existence of cost of quality systems in Sudanese private sector companies. The study points out the importance of cost of quality systems as a tool in flagging quality problems and measuring performance and process improvement.

The study consisted of five chapters, the first chapter pointed out the research problem of identifying the existence and use of quality cost systems in Sudanese private sector companies. The hypotheses that there are cost of quality system in Sudanese private sector companies and that the lack of cost of quality systems is due to inadequate quality management system, are tested by the study. The second chapter discussed the theoretical framework of the subject. Literature in the subject was reviewed in chapter three. Chapter four explained the methodology adopted. Analytical survey method plus interviews with managers, finance managers and quality engineers were used to collect information from the study sample. A brief description of the
developments concerning quality management in Sudan is shown in chapter five. Results, conclusions and recommendations were showing in chapter five.

The study found that cost of quality systems are not common in Sudanese private sector companies, the main reason for that being inadequate quality management systems. However more research is needed in the area of usage of accounting information in improvement.
ملخص

هذه الدراسة تدرس وجود أو عدم وجود محاسبة تكاليف الجودة والنوعية في بعض شركات القطاع الخاص السودانية.

وضعت الدراسة أهمية تكاليف الجودة والنوعية كوسيلة لإظهار مشاكل الجودة وقياس الأداء وتطوير المراحل.

ينحتوي الدراسة على ست فصول:

- الفصل الأول إلى مشكلة الدراسة والمتمثلة في تحديد وجود واستخدام نظام محاسبة تكاليف الجودة والنوعية في بعض شركات القطاع الخاص السودانية.
- وبينت الدراسة الافتراضات التي بحثتها الدراسة وتتمثل في افتراض وجود نظام محاسبة تكاليف الجودة والنوعية في بعض الشركات السودانية وأن عدم وجودها يعزى عدم وجود إدارة متكاملة للجودة بالإضافة إلى أن هناك علاقة بين إدارة الجودة ونظام محاسبة تكاليف الجودة.
- ناقش الفصل الثاني الاطار النظري للدراسة بينما بين الفصل الثالث الدراسات السابقة في مجال المادة.
لخص الفصل الرابع تاريخ إدارة الجودة الشاملة والتطور في السودان ووضحت منهجية البحث في الفصل الخامس وارتكزت المنهجية على جمع المعلومات بواسطة استبانة البحث بالإضافة إلى مقابلات مع المديرين ومديري الجودة والمالية بالشركات الممثلة في عينة الدراسة وتحليل هذه المعلومات.

النتائج والخلاصة التوصيات نوقشت في الفصل السادس.
Dediccaton

To.........

- The Soul of my father

- My mother

- My wife and Children

- The Soul of Dr. Abdulrhman Alansari

- And Relatives, friends & students

List of tables

<table>
<thead>
<tr>
<th>Table Number</th>
<th>Description</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Cost of Model for a Personnel Department</td>
<td>40</td>
</tr>
<tr>
<td>2-2</td>
<td>Cost of Model for a Manufacturing Department</td>
<td>41</td>
</tr>
<tr>
<td>4-1</td>
<td>Sudan – Turnover &amp; No. of Employees</td>
<td>106</td>
</tr>
<tr>
<td>5-1</td>
<td>Commitment to Quality</td>
<td>119</td>
</tr>
<tr>
<td>5-2</td>
<td>Existence of a Quality Control Department</td>
<td>121</td>
</tr>
<tr>
<td>5-3</td>
<td>Existence of a Quality Policy</td>
<td>122</td>
</tr>
</tbody>
</table>
List of Figures

<table>
<thead>
<tr>
<th>Figure number</th>
<th>Page number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>42</td>
</tr>
<tr>
<td>2-2</td>
<td>44</td>
</tr>
<tr>
<td>2-3</td>
<td>44</td>
</tr>
<tr>
<td>2-4</td>
<td>47</td>
</tr>
<tr>
<td>5-4</td>
<td>125</td>
</tr>
<tr>
<td>5-5</td>
<td>126</td>
</tr>
<tr>
<td>5-6</td>
<td>127</td>
</tr>
<tr>
<td>5-7</td>
<td>129</td>
</tr>
<tr>
<td>5-8</td>
<td>133</td>
</tr>
<tr>
<td>5-9</td>
<td>137</td>
</tr>
<tr>
<td>5-10</td>
<td>138</td>
</tr>
<tr>
<td>5-11</td>
<td>140</td>
</tr>
<tr>
<td>5-12</td>
<td>142</td>
</tr>
<tr>
<td>5-13</td>
<td>144</td>
</tr>
<tr>
<td>5-14</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td>Turnover in Sudanese sample companies</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>4-1</td>
<td>Turnover in Sudanese sample companies</td>
</tr>
<tr>
<td>4-2</td>
<td>Number of employees in Sudanese sample companies</td>
</tr>
</tbody>
</table>