



Sudan University of Science and Technology

College of Graduate Studies

Applicability of Earned Value Technique in the Construction Industry In Sudan

امكانية تطبيق تقنية القيمة المكتسبة في صناعة البناء والتشييد في السودان

**A Research Submitted in Partial Fulfillment of the Requirements for the
Degree of M.Sc. in Civil Engineering (Construction Management)**

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DEDICATION

Dedicated to my beloved parents for their everlasting support and encouragement to complete the course of studies, and to my dear brother, sister and my dear wife.

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Praise is to Allah, the most gracious and most Merciful who has created the mankind with knowledge, wisdom and power. Thanks to Allah because I finally accomplish my research.

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ABSTRACT

The construction industry is one of oldest industries in the world and Sudan especially construction industry transform physical resources into useful structure. There are many parties involved in the construction industry in Sudan. Therefore construction is one of the challenging industries. Before commencing with the projects, proper planning have to be carried out first. It is very important for project manager and contractors to understand and use the project management tools and techniques in management projects and one of these techniques is Earned Value Management Techniques.

The research problem is lacking of using adequate methods of analyzing and controlling the performance of construction projects in the world general and especially in Sudan .Analyzing and controlling the performance of construction projects plays important role in managing the success completion of a project in the world general and especially in Sudan.

The objectives of the study are to identify the elements of the success of the projects, to identify the level of understanding of using Earned Value technique (EV) in construction project in Sudan, To identify the frequency of using Earned Value technique (EV) in construction project in Sudan , To identify the importance of using project management in analyzing and controlling the performance of construction projects in Sudan and finally to identify the advantage and disadvantage of using Earned Value technique (EV) in construction project in Sudan. At the end, it was concluded and suggested that stronger implementations of the principles of EVM result in greater levels of project success in Sudan.

المستخلص

صناعة التشييد هي واحدة من أقدم الصناعات في العالم بصفة عامة والسودان خاصة، وهي صناعة تحول الموارد المادية والمالية الي منظومة متكاملة مفيدة وتظهر في صوره مشاريع تنمويه وصناعيه وخدمية . هناك العديد من الأطراف التي تشارك في صناعة التشييد في السودان. لذلك صناعة التشييد تعد من الصناعات المعقدة مهمة جدا. قبل البدء في تنفيذ المشاريع، يجب التخطيط الجيد اولا للمشروع ومن ثم الفهم الجيد لنظم ادارته المشاريع واستخدام أدوات وتقنيات إدارة المشاريع بصورة جيده ومناسبة وهذا يجعل تطبيق تقنيات القيمة المكتسبة في صناعة التشييد من اهم تقنيات الاداره بصفة عامة .

مشكله البحث هي ضعف في استخدام الوسائل الكافية لتحليل ومراقبة أداء المشاريع الإنشائية في السودان وهي واحدة من المشاكل في صناعة التشييد في العالم بصورة عامة وفي السودان بصورة خاصة . تحليل ومراقبة أداء المشاريع الإنشائية يلعب دورا هاما في إدارة اكتمال نجاح أي مشروع في العالم بصورة عامة والسودان بصورة خاصة .

أهداف الدراسة هي التعرف على عناصر نجاح للمشاريع، وتحديد مستوى فهم تقنية القيمة المكتسبة، وتطبيقها في مشروعات صناعة التشييد في السودان وايضا تحديد وتيرة استخدام تقنية القيمة المكتسبة في مشاريع صناعه التشييد في السودان، و تحديد أهمية استخدام إدارة المشروع في تحليل ومراقبة أداء المشاريع الإنشائية في السودان، وأخيرا التعرف على مميزات وعيوب استخدام تقنية القيمة المكتسبة في مشاويح التشييد و البناء في السودان. في النهاية، تم التوصل إلى أن تطبيقات تقنيات القيمة المكتسبة EVM تؤدي إلى مستويات عالية من فرص نجاح المشاريع في السودان.

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LIST OF ABBREVIATIONS

ACWP	Actual Cost of Work Performed
ANSI	American National Standards Institute
AC	Actual Cost
BCWS	Budgeted Cost of Work Scheduled
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost Work Scheduled
BAC	Budget at Completion
CPI	Cost Performance Index
CPM	Critical Path Method
C/SCSC	Cost/Schedule Control Systems Criteria
DHS	Department of Homeland Security
DOE	Department of Energy
DOT	Department of Transportation
DoD	Department of Defense
EAC	Estimate at Completion
ETC	Estimate to Complete
EVM	Earned Value Management
EVMS	Earned Value Management System

LIST OF ABBREVIATIONS

EV	Earned Value
FAA	Federal Aviation Administration
GDP	Gross Domestic Product
HHS	Health and Human Services
NASA	National Aeronautics and Space Administration
OTB	Over Target Baseline
OBS	Organization Breakdown Structure
PMI	Project Management Institute
PM	Project Manager
PC	Percentage Completed
PERT	Program Evaluation and Review Technique
PV	Planned Value
SV	Schedule Variance
SPI	Schedule Performance Index
SOW	Statement of Work
SPSS	Statistical Package for Social Sciences
WBS	Work Breakdown Structure