

الآية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى:

(ولقد ارسلنا رسلنا بالبينات وانزلنا معهم الكتاب والميزان ليقوم الناس بالقسط وانزلنا الحديد

فيه بأس شديد ومنافع للناس وليعلم الله من ينصره ورسله بالغيب ان الله قوي عزيز)

صدق الله العظيم

(الحديد:25)

Dedication

To,,,

My father soul,

My mother

My Little daughter

Our brothers and sisters,

Our Teachers,

Our friends,

And

For all who stand beside me and help me to come to
this level which is honor and blessing to me.

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ABSTRACT

The iron and steel industry is an important basic industry of Sudan national economy and plays a vital role in the process of industrialization and urbanization. Prosperity in steel sector reflects positively in national income. Steel industries have many challenges in production processes that hinder improvement of productivity and hence to decrease in efficiency, to notice these challenges facing production of steel industry Dubai steel factory in Sudan was taken as a sample of steel factories .The objective of this study was to define the steel production problems, this was done through construction of comprehensive questionnaire, this questionnaire was design to display the problems based on the analysis of the data.. The questionnaire was divided to two parts one for labors and Foremen, and the other for Engineers and Administrators. The questions were oriented to any part according to their knowledge and also to get correct answers and make strategic plan. Modification routinely used formula in steel bar industry was applied by adding silicon and manganese alloy for bar steel manufacturing, this was done by considering all the variation that effect on steel specification to render it more flexible with high quality and less time for treatment. Three hundred and three reports (have specifications of melting) were taken to study the relationship among all the elements in the report to determine the relation between the elements and the amount of alloy added to melting, the new formula was used in the production line of steel bar. Strategic plan made according to questionnaires data analysis to raise the productivity and finally calculation the productivity for materials, labors and machines. Calculation of productivity for labors, materials and machines

will help Dubai steel factory in Sudan to assess the production and gives three levels of productivity.

The results after analysis by SPSS (statistical package for the social sciences) for questionnaires showed that there were deficiency in machinery, unsatisfactory salary, not up to date technology, materials shortage and less skilled employees. In conclusion managerial sector was found to be the most barriers facing Dubai steel factory in Sudan development. The analysis of result by SPSS showed that modifying formula used to produce steel bar has seven variations better than routinely used which had two variations, newly obtained formula had been tested three times in steel bar production process, the result was acceptable compared with routinely used in the factory after analysis the final product. This modifying formula due to its reduced cost of used amounted (silicon and manganese) alloy, less time for treatment and with high quality, is highly recommended to apply in steel bar production, strategic plan made according to data analysis to be matched with existences problems. Productivity calculations for materials, labors and machines provide levels for control the production process and also contribute to make decision in short time.

المستخلص

تعتبر صناعة الحديد مهمة للدخل القومي للسودان، وتلعب دور حيوي في عمليات التصنيع والتمدن والازدهار. صناعة الحديد تواجه عدة تحديات غي عمليات الانتاج وهذه التحديات تعيق تحسين الانتاجيه وبالتالي تخفيض الكفاءة، لمعرفة هذه التحديات التي تواجه الانتاج في صناعة الحديد اخذ مصنع دبي للحديد كعينة لمصانع الحديد. الهدف من هذه الدراسة التعرف على المشاكل في انتاج الحديد وهذا تم من خلال عمل استبيان وهذا الاستبيان قد صمم لعرض المشاكل، وقد قسم الاستبيان الى قسمين الأول للعمال والمشرفين والثاني للمهندسين والأداريين . الأسئلة وجهت لكل قسم حسب معرفتهم للحصول على الاجابة الصحيحة وعمل الخطة الاستراتيجية. تعديل المعادلة المستخدمة في صناعة حديد التسليح والمستخدمه لحساب كمية سبيكة السيليكون والمنجنيز المضافة مع الأخذ بالاعتبار كل المتغيرات التي تؤثرعلى خواص الحديد لجعل المنتج اكثر مرونة مع جودة عالية،تخفيض التكلفة وزمن اقل للمعالجة. تم اخذ 303 تقرير يوضح مواصفات المصهور لدراسة العلاقة بين العناصر في التقرير لحساب العلاقة بينهما في المصهور.الخطة الاستراتيجية عملت حسب تحليل البيانات لرفع الانتاجية , واخيرا تم حساب الانتاجية للعمال والمواد والاليات يساعد مصنع دبي للحديد في السودان لتقييم الانتاج ويعطي ثلاث مستويات للانتاجية.

النتائج بعد التحليل بواسطة برنامج اس بي اس اس للاستبيان اظهر عدم عمل الاليات بالكفاءة المطلوبة , عدم الرضا عن المرتبات ,عدم اتباع التكنولوجيا الحديثة ,مشاكل في توفر المواد الخام, عدم وجود عمال مهرة.وفي الختام الجانب الاداري كان الجانب الاكثر احتواءا للمشاكل الموجودة في مصنع دبي للحديد في السودان حسب تحليل البيانات.

التحليل للبيانات ايضا اظهر ان المعادلة الجديدة التي تم تعديلها في هذا البحث تحتوي على 7 متغيرات مقارنة بالمعادلة المستخدمة حاليا في المصنع التي تحتوي على متغيرين فقط وقد طبقت ثلاث مرات واظهرت نتائج مرضية ومقبولة مقارنة مع المعادلة المستخدمة حاليا بعد عمل الاختبارات للمنتج النهائي , وذلك من خلال تقليل كمية السبيكة المستخدمة اقل,والزمن المطلوب للمعالجة اقل وتحسين جودة المنتج النهائي, لذلك نوصي بشدة بتطبيقها كل مصانع حديد التسليح في السودان.

الخطة الاستراتيجية تمت بناءا على نتائج تحليل بيانات الاستبيان وذلك لضمان مطابقتها مع المشاكل الموجودة.

حسابات الانتاجية للمواد,العمال والاليات تساعد في قياس الاداء عقب كل عملية انتاج مما يوفر مؤشر سريع لقياس الانتاجية للمواد,العمال والاليات واتخاذ قرار سريع للسيطرة على الانتاج.

Abbreviations

U S	United state
JIT	Just in time
CAD/CAM	Computer aided manufacturing
CIM	Confidential information memorandum
MRP	Material requirement planning
SCM	Soft configuration management
TQM	Total quality management
ILO	International labour office
TPS	Toyota productive system
BOS	basic oxygen steelmaking
BC	Before Christ
AC	After Christ
SCOOP	Steel cost optimization
LMP	Liters per minute
WFD	Water framework direction
SWOT	Strengths ,weakness, opportunities, and threats
SME s	Medium-sized enterprises
LSS	Lean six alphabetic character
TPM	Total productive maintenance
MPC	Model prophetic management
PDCA	Plan, do, check, act
5S	Sort, set in older , shine, standard, sustain
DMAIC	Define, measure, analyze, improve, control
Mtoe	Mega tonnes of oil equivalent
CTQ	Critical to quality

SPSS	Statistical package for the social sciences
DF	Degree of freedom
R	Coefficient correlation
SIG	Significant value
F	Test
B	Autoregressive
Beta	coefficient of variables

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