

*DEDICATED TO*

*My Parents;*

*My father too Mohammed. Basheer Suleiman;*

*My grandma with Invocations;*

*My Family with love and respect;*

*My brothers;*

# ACKNOWLEDGEMENT

Most importantly to God without whom our lives are meaningless, and I wish to express my thanks and sincere gratitude to my supervisor Dr. EL-amin EL-hussein Mohammed for his assistance, guidance, encouragement and endless help throughout the steps of this work.

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## ABSTRACT

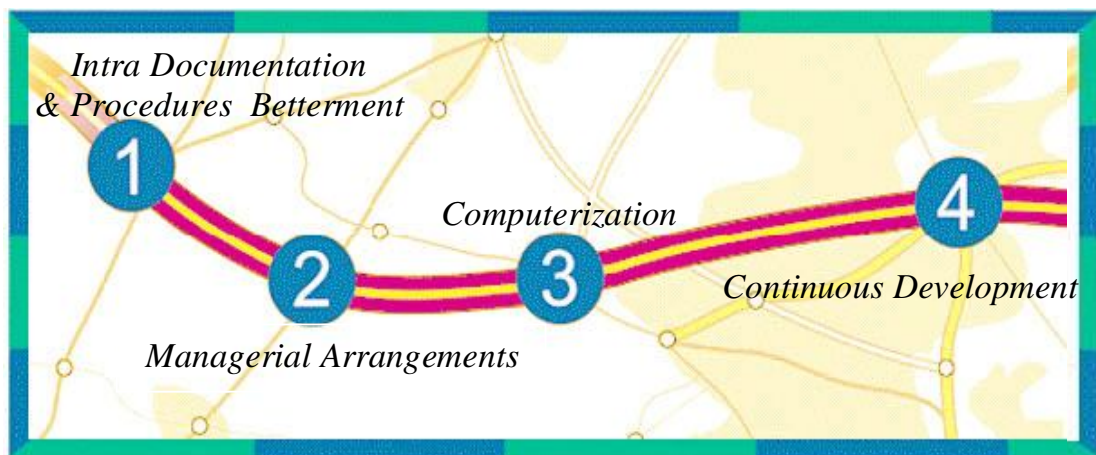
The scope of this research covers the Engineering Department at Wafrapharma Laboratories for medicine .It focuses on machine maintenance processes and seeks possible improvement potentials.

The methodology used in this research is (BPR) Business Process Reengineering methodology that developed at Saarland University in Germany by IDS Scheer Company. ARIS Toolset supports the methodology itself.

The maintenance process within the scope documented using ARIS Toolset including the organization structure, technology used, documents and all other parts that participate in the process. These processes analyzed to identify the main weak point, and then according to the used methodology, a scenario for the To Be process suggested.

Calculated production losses and profit only by downtime cost because no data about losses of materials, time in case of remanufacturing, cleaning, and lubrication

As a conclusion, a road map provided to implement a new Maintenance System that can solve of the problems of the current one. The new system defines a base for the documentation of the processes and the continuous process development.



## تجربة

يصف البحث حالة عمل الإدارة الهندسية بمعامل ورفارما - لصناعة الدواء- في مجال صيانة الماكينات العاملة بالمصنع ويدرس إمكانية تطوير أداءها مستخدما في ذلك منهجية IDS Scheer الألمانية لإعادة هندسة الإجراءات وكذلك استخدمت برمجيات ARIS Toolset المتخصصة وتعد المنهجية والبرمجيات هي الأفضل في العالم في هذا المجال.

تم دراسة وتحليل حالات الأعطال بأقسام المصنع وتحديد أكثرها تأثرا، وكذلك تم توصيف برامج الصيانة المعمول بها وإجراءاتها وطريقة إدارتها وتحديد نقاط ضعفها وكذلك أسلوب إدارة الاسبيرات.

قدرت تكلفة الخسائر الناتجة من التوقفات الغير مبرمجة تقريبا، ولعدم وجود بيانات عن الفاقد من المواد والوقت في حالات إعادة التصنيع وأعمال النظافة والتزييت تعذر حساب باقي التكاليف المتعلقة بأعمال الصيانة.

خلصت الدراسة إلى تقديم مقترح كخارطة طريق لنظام صيانة من شأنه معالجة القصور في النظام المستخدم، كما يتضمن المقترح وضع أسس لنظام التوثيق والمتابعة وتدفق المعلومات للمساعدة في التطوير المستمر.



## **TABEL OF ABBREVIATIONS**

| <b>Abbreviation</b> | <b>Meaning</b>  |
|---------------------|---|
| <b>ARIS</b>         | <b>Architecture of Integrated Information Systems</b> |
| <b>BPM</b>          | <b>Business Process Management</b>                    |
| <b>BPR</b>          | <b>Business Process Reengineering</b>                 |
| <b>CAP</b>          | <b>Capsules section</b>                               |
| <b>CMMS</b>         | <b>Computer Maintenance Management System</b>         |
| <b>CMPO</b>         | <b>Control Maintenance Planning Office</b>            |
| <b>CMWS</b>         | <b>Central Maintenance Workshop</b>                   |
| <b>DRS</b>          | <b>Dry suspension</b>                                 |
| <b>ES</b>           | <b>Electrical Service</b>                             |
| <b>GM</b>           | <b>General Maintenance</b>                            |
| <b>IE</b>           | <b>Industrial Engineering</b>                         |
| <b>INS</b>          | <b>Instrumentation Service</b>                        |
| <b>IT</b>           | <b>Information Technology</b>                         |
| <b>MCC</b>          | <b>Maintenance Control Center</b>                     |
| <b>MRP</b>          | <b>Materials Requirement Planning</b>                 |
| <b>MMIS</b>         | <b>Maintenance Management Information Systems</b>     |
| <b>MMMP</b>         | <b>Maintenance Management Master Plan</b>             |
| <b>MTBE</b>         | <b>Mean Time Between Failures</b>                     |
| <b>PL</b>           | <b>Planning</b>                                       |
| <b>QC</b>           | <b>Quality Control</b>                                |
| <b>TAB</b>          | <b>Tablets</b>  |
| <b>SRP</b>          | <b>Syrups section</b>                                 |
| <b>SPMS</b>         | <b>Spare Parts Management Stores Service</b>          |
| <b>VACD</b>         | <b>Value Added Chain Diagram</b>                      |

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