



**Maintenance Management Using Smartphones for
Electromechanical Systems**

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**This Thesis is submitted in Partial Fulfillment of the Requirements for
the Master's Degree in Engineering Project Management**

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Isra University

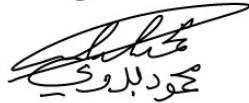
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DEDICATION

To my parents, wife, sons

ACKNOWLEDGEMENT

Praise be to Allah alone, and prayer and peace be upon our prophet Muhammad

(P.B.U.H).

Allah has commanded us to praise and thank him for his infinite grace, for Allah loves his thankful servant.

Firstly, all my thanks and gratitude are due to Allah (S.W.T) who has granted me the privilege of being able to conduct this study and easing the process of this journey, in which a lifetime of thankfulness will not measure.

I wish to extend my appreciation and gratitude to Dr. Sofyan Hayajneh whom was my advisor for this thesis study. Dr. Sofyan Hayajneh expertly provided me with guidance, encouragement, and support to complete this study.

In addition, I would like to thank the examination committee, Dr. Ibrahim Mohammed and Dr. Yousef Jaradat for their valuable comments.

I humbly extend my gratitude to everyone who was concerned about my study, my colleagues and friends who have supported me throughout my journey of conducting my works.

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ABSTRACT

The fast moving in technology for the smartphone and internet applications stimulated and directed us for new thinking by using new technology in modern maintenance management as called E-maintenance management nowadays, the productivity and the efficiency will increase respectively. While the popularity of smartphones has given enormous convenience to our lives.

The main challenges are how to be technologies up to date and to review the whole maintenance management cycle with perfect reporting and meet customer needs, and to increase the level of acceptance for new technologies. Customer satisfaction affects the success of the company. For that, the future of perfect maintenance management system related with using the new technologies in controlling the maintenance cycle.

The aim of this study is to manage the maintenance work orders and to study the effect of this using mobile application through smartphones and tablets. Taking advantage of smartphones to program new smart application to control, manage and monitor the maintenance cycle. Then classify the major points that must be carried out for quality, cost and time control with perfect reporting system. The design of application will be customized based on actual maintenance cycle already adopted by companies and service providers. The resulting of this solution contained reports for all work orders with

perfect monitoring. This solution improves valued data gathered by application and helps the manager to make the right decisions. Also, it will meet the customer needs and increase company profits by increasing the productivity and decreasing the cost and the time lost in reviewing the maintenance cycle.

ARABIC ABSTRACT

إدارة الصيانة للأنظمة الكهروميكانيكية باستخدام الهواتف الذكية

هدفت هذه الأطروحة لدراسة ومعرفة الاثر الايجابي من استخدام التكنولوجيا المعاصرة مثل استخدام تطبيقات الهواتف الذكية والأجهزة اللوحية في ادارة الصيانة للأنظمة الكهروميكانيكية، حيث أن الانتشار السريع في تكنولوجيا الهاتف الذكي وتطبيقات الإنترنت أدى الى ازدياد الحياة المريحة بشكل ملحوظ مما يحفزنا ويرشدنا الى تغيير طريقة التفكير، والتفكير باستخدام تكنولوجيا جديدة في إدارة الصيانة الحديثة لما لها من دور بارز في رفع الكفاءة الانتاجية، أو كما تسمى في الوقت الحاضر الإدارة الالكترونية للصيانة.

من التحديات التي تؤول دون تحقيق أهداف الدراسة، درجة تقبل التكنولوجيا من الذين يعملون في مجال الصيانة أو صعوبة متابعة التطور التكنولوجي، ومن جهة أخرى الوصول الى ارضاء العملاء وتلبية احتياجاتهم مما يؤثر على نجاح الشركة، وأخيرا اعداد التقارير المثالية.

لذلك، فإن نجاح ومثالية نظام إدارة الصيانة يرتبط في التحكم في عمليات أنظمة الصيانة باستخدام التقنيات الجديدة، ويجدر الذكر انه للوصول الى ادارة فعالة للجودة والتكلفة والوقت يجب أن يكون هناك مقدره عالية على التحكم ومراقبة وادارة الصيانة بشكل فعال، حيث يتحقق باستخدام واستحداث تطبيق يعمل على الاستفادة من خواص الهواتف الذكية ويتم برمجته بما يزيد فعالية تقارير الصيانة أيضا، حيث تم برمجة التطبيق بما يناسب أغلب الشركات العاملة بمجال ادارة الصيانة.

وتوصلت هذه الدراسة الى تحقيق الأهداف المرجوة من خلال النتائج التي تم التوصل اليها، ومنها تلبية احتياجات العملاء وزيادة أرباح الشركة من خلال زيادة الإنتاجية وخفض التكلفة والوقت الضائع في عمليات الصيانة، وتسهيل أخذ القرارات الإدارية الصائبة والمبنية على قواعد البيانات المخزنة والمراقبة الكترونيا.

وأوصت الدراسة بضرورة تصميم برامج توعوية تهدف الى زياد وعي العاملين في مجال الصيانة من جهة، ومدراء المشاريع الذين لهم علاقة بأعمال الصيانة من جهة أخرى بمفهوم تقبل التطور والتكنولوجيا الحديثة المستخدمة في عمليات ادارة الصيانة، الامر الذي يعود على الشركات بالأرباح وقلة التكاليف الناتجة عن اهمال ادارة الصيانة.

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LIST OF ABBREVIATIONS

| | |
|-------------|--------------------------------------------|
| APP | Application |
| CMMS | Computerized Maintenance Management System |
| GPS | Global Positioning System |
| MM | Maintenance Management |
| MMRs | Maintenance Management Requirements |
| MMS | Maintenance Management System |
| PM | Preventive Maintenance |
| PrM | Predictive Maintenance |
| SMAP | Smart Application |
| SPSS | Statistical Package for Social Sciences |
| WO | Work Order |
