

## The Role of Quality Improvement Factors in Improving Quality Based Operational Performance: Applied Study in Private Hospitals in Jordan

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### **Abstract**

*This study examines the influence of quality improvement factors (QIF) (management commitment, human resource, and information systems) in operational performance within 30 private hospitals in Jordan listed in Private Hospitals Association in Jordan. The results of this study revealed a strong positive significant correlation between QIF and operational performance. Also, management commitment and human resources emerged as the two significant variables that affect internal quality results and management commitment and information systems are the two significant variables that affect external quality results. This study contributes to a better understanding of the influence of quality improvement factors on in operational performance among private hospitals in Jordan.*

**Keywords:** Quality improvement factors, Jordanian private hospitals, Quality improvement, Operational performance

### **1. Introduction**

As we enter the new millennium, healthcare organizations are facing new challenges and must continually improve their services to provide the highest quality at the best cost. Pressures to increase the quality and lower the cost of healthcare are coming from accreditation boards, the media, and comparisons with other facilities, HMOs and government agencies

Quality Improvement (QI) has been used in the manufacturing world more extensively than in the healthcare field. However, the underlying foundation of medicine is in fact quite closely tied to the principles of QI. This includes the observation of a phenomenon, isolating variables and changing the process, observing the results and taking action. If the results are beneficial, continue with the change and look for the next area to improve. If the results are adverse, discard them and try something else. Continue to observe the results until a pattern of foreseeable results emerges from performing certain actions.

QI is easy for healthcare professionals to learn since it is based on this basic scientific model of discovery. As healthcare professionals learn the concepts and strategies behind QI, they will infuse their scientific background and experience into the program. Innovative measures and positive results follow quickly. These results include higher quality of service delivered, happier patients and customers, and lower costs. Quality Control has proven time and again to cut costs dramatically. Leaders in every field constantly strive for improvement, working toward the highest quality possible. In no field can the rewards of this effort be greater than in healthcare.

Improved quality not only can improve the quality of life, it can actually give life, extend life and permit life! In no other domain can the benefits of quality improvement prove so beneficial and the lack thereof is so costly (Statit Quality Control First Aid Kit, 2012)

Quality improvement as a management method seeks to develop the organization in a new way so that, in an orderly and planned fashion, everyone at all levels can play an active and critical role in understanding problems and the processes of improvement that underlie them, collecting and analyzing data on those processes, generating and testing hypotheses about the causes of flaws, and designing, implementing, and testing remedies (Ader et al.; Berwick et al, 1990).

The improvement in health care quality will depend not only on traditional methods like excellence in education, continuing education, professional standards and principled practice behavior, as important as they are. It will also depend on our developing the science of clinical practice, on our taking a fresh look at ways of measuring and improving care, and on our holding both the practice of medicine and the practice of quality improvement to the same levels of scrutiny and evidence as we hold technical clinical innovations. (Agency for Healthcare Research and Quality, 2012)

The target purpose of this study is to examine the impact of quality improvement factors in operational performance, so it concerned with answering the following questions (1) What are the factors that contribute in improving the quality of services offered by the private hospitals in Jordan? (2) To what extent do the quality improvement factors positively affect the operational performance in the Jordanian private hospitals?

## **2. Literature Review**

### **2.1 Quality Improvement**

Quality improvement is an approach to quality that originated in industry and has received increasing attention from the health care system. It is a management philosophy and system which involves management, staff and health professionals in the continuous improvement of work processes to achieve better outcomes of patient/client/resident care. It involves the application of statistical methods and group process tools to reduce waste, duplication, and unnecessary complexity in work. The goal of QI is to consistently meet or exceed the needs of patients, families, staff, health professionals and the community" (Harrigan, 2000).

According to Juran trilogy summarize the activities in companies that assure quality can be grouped in three processes: quality planning, quality control and quality improvement (Goetsch & Davis, 2013). This paper will focus on the last process, quality improvement. It consists of the systematic and proactive pursuit of improvement opportunities in production processes to increase the quality to unprecedented levels ('breakthrough'). The improvement process is a series of thoughts and peaks. At certain points in the process, the situation will arise that while a considerable amount of organizational resources are being devoted to improvement activities little progress appears to be being made. (Dale et al., 2007)

Quality improvement (QI) is a continuous process involving assessment of quality and efforts to increase quality, with follow-up reassessment of quality and further efforts to improve it if needed. In the past, the acronym CQI (continuous quality improvement) was often used to reflect the continuous nature of the process. Performance improvement (PI) is sometimes used as a synonym for QI.

The Accreditation Coalition, a group of organizations supported by the Robert Wood Johnson Foundation and the Centers for Disease Control and Prevention, has recognized the need for a common definition of QI in public health to promote public health accreditation and quality improvement. In response, a subcommittee was charged with crafting a definition of quality improvement for public health departments and practitioners. In early 2009, after reviewing the appropriate literature and existing definitions, the subcommittee proposed the following definition of QI: Quality improvement in public health is the use of a deliberate and defined improvement process, such as Plan-Do-Check-Act, which is focused on activities that are responsive to community needs and improving population health. It refers to a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality in services or processes which achieve equity and improve the health of the community (Riley et al., 2010).

Literature has identified the key factors for successful quality improvement implementation. These factors have been provided by contributions from quality leaders (Deming, 1982; Juran, 1982), formal evaluation models (EQA, MBNQA, Deming Award) and measurement studies (Flynn et al., 1994; Sarah et al., 1989). This theory has identified the quality improvement practices. The soft factors are the behavioral aspects of management or the “human factors”, such as leadership, human resource management (HRM), employee involvement and empowerment (Rahman, 2004).

## **2.2 Quality improvement factors and operational performance**

### **2.2.1 Management Commitment**

Chrusciel and Field (2003) defined top management commitment as an active and visible support or commitment from the management of the organization, often in the form of a champion for the application. Top management commitment and support addresses the critical role of management in driving company-wide quality management and improvement efforts (Parast, Adams & Jones, 2011; Ahire & O’Shaughnessy, 1998). In the literature two different statements exist regarding management commitment. First it is referred to as allocation of resources like funding and staffing (Stelzer & Mellis, 1999). Second, it is defined in terms of motivating others and bringing passion and excitement (Senge, 1990). For this study, management commitment defined in terms of providing resources and active involvement in process improvement. Active involvement refers to monitoring QI activities and developing personal interest in process improvement initiative that ultimately brings up energy, passion and excitement among employees (Ahmad, 2007)

### **2.2.2 Human Resource Management**

#### **1. Employee involvement**

Employee involvement (EI): refers to any activity by which employees participate in work-related decisions and improvement activities, with the objectives of tapping the creative energies of all employees and improving their motivation (Evans & Lindsay, 2002). By total involvement, employees at all levels in the organization are empowered to improve their outputs by coming together in new and flexible work structures to solve problems, improve processes, decision making, and satisfy customers at all levels in the organization (Mohrman et al., 1996).

#### **2. Employee Training**

Training refers to a planned effort by a company to facilitate employees’ learning of job-related competencies and these competencies include knowledge, skills, or behaviors that are critical for successful job performance. Therefore, training is important for continual updating and improvement in organizations. Many research results revealed that training is one of the most important elements (factors) in a successful implementation of quality improvement (Mondy & Mondy, 2013; Bin Abdullah et al., 2008).

#### **2.2.3 Quality Information System**

- 1. Quality information availability:** refer to the availability of quality information for effective and efficient quality management and improvement practices (Taylor and Wright, 2006).
- 2. Quality information usage:** indicates how much quality information is used by managers in making improved decisions (Parast, Adams, & Jones, 2011; Taylor & Wright, 2006)

#### **2.2.4 Operational Performance**

Operational performance (OP) is the alignment of all business units within an organization to ensure that they are working together to achieve core business goals.. Operational Performance, also referred to as Business Performance (BP), Corporate Performance (CP) and Enterprise Performance (EPM), is the combination of a set of processes and an improvement methodology that together help organizations optimize their business performance. It is a framework for organizing, automating and analyzing business methodologies, metrics, processes and systems that drive business performance. This study measures operational performance by using of the following variables: (1) **Internal quality results** determines how much quality management practices have affected internal quality measures, such as defect rates, reprocessing rate, production lead time, and productivity (Deming, 1986; De Ceiro, 2003). And (2) **External quality results** which refers to the improvement of external performance of the firm, which is measured by competitive market position, and profitability (Deming, 1982; Deming, 1986).

## 2.3 Related Work

1. **Parast, Adams & Jones (2011)**. The purpose of this paper is to investigate empirically the effects of quality management practices on operational and business performance. The results indicate that top management support, employee training, and employee involvement are significant variables explaining the variability of operational performance. The study also shows that customer orientation is not a significant predictor of business performance in the petroleum industry. In addition, focus on practices associated with human resource management (employee training and employee involvement) is critical in improving operational performance.
2. **Real, & Poole (2009)**, investigate that one of the primary means of improving quality in organizations is to implement effective quality improvement (QI) programs in work units. However, while much research has focused on organization-wide implementation of QI, there has been little empirical research on the factors that contribute to the success of the implementation of QI programs at the work unit level. The goal of this project is to identify factors determine the adoption and effective implementation of QI programs by work units and teams. The study evaluated structural, process and communication models of the adoption and implementation of QI in work units in a state agency. Dependent variables were level of participation in QI, willingness to undertake QI, and attitudes toward QI. A survey was conducted in a state agency regional office which had adopted a number of quality initiatives. Results of the study indicated that four structural variables—control over decisions, unit independence, task interdependence, and rate of change in unit procedures—three process variables—vigilance, boundary spanning, and efficiency—two job stress variables—job frustration and job stress and two communication variables—communication quality and communication network—predicted one or more of the outcomes. Results also suggested modifications to the original model. Implications for QI implementation in state agencies are discussed.
3. **Pavletic, & Sokovic (2009)**, this paper expresses base for an operational quality improvement model at the manufacturing process preparation level. A numerous appropriate related quality assurance and improvement methods and tools are identified. Main manufacturing process principles are investigated in order to scrutinize one general model of manufacturing process and to define a manufacturing process preparation level. Development and introduction of the operational quality improvement model is based on a research conducted and results of methods and tools application possibilities in real manufacturing processes shipbuilding and automotive industry. Basic model structure is described and presented by appropriate general algorithm. Operational quality improvement model developed lays down main guidelines for practical and systematic application of quality improvements methods and tools.
4. **Bin Abdullah et al., (2008)**, this study examines the influence of four selected soft factors (management commitment, employee involvement, training and education, and reward and recognition) on quality improvement within 255 Malaysian electrical & electronics (E&E) firms. Despite extensive research on quality management and quality improvement, very little empirical research has examined this area of study specifically in the E&E sector. The results of this study revealed that management commitment, employee involvement, training and education, and reward and recognition are significantly positively associated with firms' quality improvement practice. Also, employee involvement was perceived as a dominant soft factor for quality improvement; it was associated with significant improvements in firms' quality improvement. This study contributes to a better understanding of the influence of soft factors on organizational quality improvement among firms within the context of the Malaysian E&E sector. Suggestions for future research are discussed.
5. **Khattab et al., (2007)**, a continuous quality improvement programmed for the care of registered diabetes patients was introduced in 16 government-affiliated primary health care centers in Dubai. Quality improvement teams were formed, clinical guidelines and information systems were developed, diabetes nurse practitioners were introduced and a team approach was mobilized. Audits before and after the introduction of the scheme showed significant improvements in rates of recording key clinical indicators and in their outcomes.

6. **Kunkel, Rosenqvist & Westerlin (2007)**, quality systems can help departments do the right things and do things right, but organization and design need to be considered. The aim was to analyze whether quality systems that include certain quality improvement designs differ with regard to organizational factors and degrees of organization. The results showed that quality systems that included certain quality improvement designs differed with regard to the organizational factors available resources, administration, culture, cooperation, and goal achievement. The results also showed that departments with quality systems of different organizational degrees used different quality improvement designs. Some quality improvement designs may require a quality system with a high degree of organization to support a successful implementation.
7. **Seddon (2006)**, This Special Series attempts to define what a high-quality healthcare system would look like for New Zealand. The Series focuses on the dimensions of a quality service—safety, access, equity, effectiveness, efficiency, and patient centeredness—not only elucidating in plain language what these dimensions are, but how they might be measured and improved. The central premise is that clinicians need to become involved in measuring and improving the quality of healthcare provided. To assist clinicians, the Series will cover ways to measure the effectiveness of care they provide with articles on clinical audit and clinical indicators, and also to examine the pros and cons of the measures of efficiency used by the funders—organizational performance indicators, and benchmarking. The Series will wrap up with a vision of how we might continue to improve quality through embedding clinical governance into District Health Boards, so that their performance is measured in both quality and fiscal terms.

### **3. Methodology**

#### **3.1 Study Population and Sample**

The target population for this study comprised all the top managers working in private hospitals in Jordan listed in Private Hospitals Association in Jordan which include 36 member hospitals. A total number of (90) manager and vice managers were chosen randomly from the targeted population. We received 74 usable questionnaires indicating a response rate of 82%. Focus on a single industry enables the researcher to better understand the processes and practices which facilitates comparison among firms (Tsikriktsis, 2007)

#### **3.2 Research Method**

**Secondary data** was collected based on the findings of published papers, articles, books, prior studies, and the World Wide Web. The **primary data** collection was carried out using a self-designed questionnaire; this adopted instrument comprises three sections: the first section covers the **demographic variables** (Gender, Age, Education, Experience, and Current Position). The second section contains (30) items measuring **quality improvement factors – independent variables** - (management commitment, human resource, and information systems), the researchers relied on some variables that presented by Bin Abdullah et al., (2008), and they added another variable which is information systems. The third section contains (20) items measuring **operational performance – dependent variable** – (internal quality results, and external quality results), the researchers relied on variables that presented by (Parast, Adams & Jones, 2011), Five Likert-type scales were used to score the responses. The participants are asked to indicate their agreement about the existence of the measured variables in their hospitals.

#### **3.3 Hypotheses**

Based on the previous literature review, the researchers extracted the main hypothesis as clarified below:

1. There is a significant relationship between quality improvement factors and the operational performance.
2. There is a significant impact for quality improvement factors in operational performance.

The sub-hypotheses that can be derived from the previous hypothesis are:

*H2a There is a significant impact for the management commitment in internal quality results*

*H2b There is a significant impact for the human resources in internal quality results*

*H2c There is a significant impact for the information systems in internal quality results*

*H2d There is a significant impact for the management commitment in external quality results*

*H2e There is a significant impact for the human resources in external quality results*

*H2f There is a significant impact for the information systems in external quality results*

### **3.4 Empirical validation and reliability**

To ensure the content validity of the instrument tool, it has been developed based on extensive review of the literature, and it has been reviewed by scholars and practitioners from Jordanian universities. The referees displayed their constructive comments and suggestions, which were taken into consideration. The reliability test measure indicates the extent to which is conducted without bias (error free) and ensures the consistency of measurement across time and across the various items in the instrument. In other words, the reliability of measurement is an indication of the stability and internal consistency with which the instrument measures the concept and helps to assess "the goodness" of a measure. The reliability of data collected instrument was measured using Cronbach's alpha coefficient; the reliability test was conducted to check for inter-item correlation in each of the variables in the questionnaire. The closer Cronbach's alpha is to one, the higher the internal consistency reliability (Sekaran, 2010). The test results are as follows: Cronbach's alpha for Quality Improvement Influencing Factors 0.87, Cronbach's alpha for operational performance = 0.89, Cronbach alpha for over all instruments = 0.89 which approached to the acceptable limit.

### **3.5 Data analysis Methods**

Statistical Package for Social Sciences (SPSS) was used to analyze the data. Descriptive techniques such as; frequencies, percentages, means, and standard deviation (Std.) were used to describe the variables. Spearman correlation and multiple regression analysis were used to test hypothesis of the study.

## **4 Empirical Results**

### **4.1 Sample Characteristics**

Table 1 presents the profile of the study participants. Of the 74 managers and vice managers participated in the survey, 95% were male. Roughly, 64% of them had a bachelor's degree, 16% had master degrees, and interestingly 7% of them had PhD degrees. 97 % had more than five year of work experiences with an average age of 35 years, that is to say participants were middle-aged and highly educated people. As for Experience in title, 39% from the participants were 3-less than 5 years, and 82% of the participants specialized in medicine, and only few specialized in management, this indicates that most private hospitals in Jordan rely on medicine specialization for assigning managerial positions.

### **4.2 Results Description**

The mean and standard deviation of the study variables related to Quality Improvement Influencing Factors are summarized in table (2). Table (2) shows the results that represent quality improvement influencing factors, and it appeared as follow: the most important factor were: Challenges and Rewards (4.33), Management Commitment (4.31), Employee involvement (4.26). The less important items were: Training (3.46), and Information usage (3.14). The standard deviation lies between (0.38-0.61), this indicates more concentrated, or homogeneous the data and less spread out or dispersed.

As for dependent variable which is operational performance, the results shows that both internal quality results and external quality results had high scores of mean at (4.73) and (4.59) respectively, indicating that quality improvement is critical to improve internal operational performance, as well as, external operational performance. The standard deviation lies between (0.61-0.52), this indicates homogeneous data and less spread out or dispersed.

### **4.3 Hypotheses Testing**

The hypotheses of this study are aimed to examine the relationship between quality improvement factors and operational performance on one hand, and on the other hand to examine the impact of quality improvement factors in operational performance (OP).

#### **4.3.1 Correlation between QIF – Operational Performance**

The results of data analysis and hypotheses testing are summarized in Table 3. As seen in Table 3, the output indicates that there is a strong positive significant correlation ( $R= 0.8$ ) at ( $P \leq 0.05$ ) between QIF and quality internal results, which implies that the higher the private hospitals in Jordan interested in maximizing its quality improvement factors (QIF), the higher the opportunity to achieve high levels of quality internal results.

The correlation between quality improvement factors and external quality results is presented in Table (4). The findings appear that quality improvement factors are significantly correlated with external quality results ( $R=0.71$ ) at ( $P\leq 0.05$ ). This implies that the higher the private hospitals in Jordan interested in maximizing its quality improvement factors (QIF), the higher the opportunity to achieve high levels of external quality results.

#### 4.3.2 Impact of QIF in Operational Performance

Multiple regression analysis was conducted to test the hypotheses. Multiple regression identifies how much of the variance in the dependent variable (OP) will be explained when a set of variables is able to predict a particular outcome.

**Multiple regression analysis on internal quality results:** Table 5 shows the results of a multiple regression analysis on internal quality results. After running a regression analysis, management commitment (MC) and human resources (HR) emerged as the two significant variables.

From the coefficient of determination  $R^2$  of the regression path: MC-QIR, it can be seen that the highest percent (71%) of the total variance in QIR was interpreted by MC. (H2a) sub-hypothesis was confirmed as a positive ( $\beta = 0.725$ ) significant ( $P < 0.05$ ) impact for management commitment in quality internal results.

A higher-but not the highest- percent (66%) of the total variance in QIR was interpreted by HR as can be seen from the coefficient of determination  $R^2$  of the regression path: HR-QIR. (H2b) sub-hypothesis was confirmed as a positive ( $\beta = 0.843$ ) significant ( $P < 0.05$ ) impact for human resources in quality internal results.

The results show that there is no significant impact for information systems in internal quality results

**Multiple regression analysis on external quality results:** Table 6 shows the results of a multiple regression analysis on external quality results. Results show that management commitment and information systems emerged as the two significant variables.

From the coefficient of determination  $R^2$  of the regression path: MC-QER, it can be seen that the highest percent (53%) of the total variance in QER was interpreted by MC. (H2d) sub-hypothesis was confirmed as a positive ( $\beta = 0.175$ ) significant ( $P < 0.05$ ) impact for management commitment in quality internal results.

A higher-but not the highest- percent (48%) of the total variance in QER was interpreted by IS as can be seen from the coefficient of determination  $R^2$  of the regression path: IS-QIR. (H2f) sub-hypothesis was confirmed as a positive ( $\beta = 0.683$ ) significant ( $P < 0.05$ ) impact for information systems in external quality results.

The results show that there is no significant impact for human resources in external quality results

## 5 Conclusions

After analyzing the data and testing the hypotheses, the following major conclusions were reached, (1) Quality improvement factors (Challenges and Rewards, Management Commitment, and Employee involvement) are provided in high percentages with a mean (4.33, 4.31, 4.26) respectively. This agrees with the opinion of some researchers, who also found that management commitment, and employ involvement are critical factors in improving quality (Parast, Adams & Jones, 2011; Bin Abdullah, et al., 2008), indicating that from the participant's point of views, more challenges and rewards, top management support, and increasing employee participation in decision making process help in achieving quality improvement. While Information Systems are relatively low with a mean equal (2.33) for information system availability and (3.02) for information system usage compared with the expected mean which is (3.5), this agrees with the opinion of some researchers (Khattab et al., 2007). (2) There is a strong positive significant correlation at ( $P\leq 0.05$ ) between QIF and operational performance, which implies that the higher the private hospitals in Jordan interested in maximizing its quality improvement factors (QIF), the higher the opportunity to achieve high levels of quality based operational performance. This results agree with (Parast, Adams & Jones, 2011; Kunkel, Rosenqvist & Westerlin, 2007). (3) Results show a significant impact for Management commitment and human resources in internal quality results, while there is no significant impact for information systems in internal quality results. (4) Management commitment and information systems are the two significant variables that have impact in external quality results, while the results show no significant impact for human resources in external quality results.

## 6 Recommendations

The findings of this study have the following practical implications for managers:

1. The Jordanian private hospitals are highly encouraged to adopt quality improvement as a strategy to improve its operational performance that will leads to achieve considerable advantage.
2. Top managers of the Jordanian private hospitals are invited to use several dimensions of quality improvement in planning, setting, and achieving the competitive strategies.
3. Jordanian private hospitals is extremely encouraged to analyze the effect of quality improvement factors on achieving organizational goals and objectives.
4. Top managers of the Jordanian private hospitals should support all the required activities that contribute in improving quality which resulted in advanced operational performance, such as employ motivation and involvement
5. Jordanian private hospitals should build interrelated information systems that support the improvement of operational performance, such as decision support system, customer service system.

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**Table (1): Sample Description (N = 74)**

Variable		Frequency	Percentage
Gender	<b>Male</b>	70	0.95
	<b>Female</b>	4	0.05
Education	<b>Bachelor</b>	47	0.64
	<b>Master</b>	12	0.16
Age	<b>Phd</b>	5	0.07
	<b>Less than 30 years</b>	3	0.04
Experience	<b>30-40</b>	35	0.47
	<b>41-50</b>	13	0.18
	<b>More than 50</b>	23	0.31
	<b>Less than 3 years</b>	---	---
Experience in title	<b>3 – less than 5</b>	2	0.03
	<b>5 – less than 10</b>	54	0.73
	<b>More than 10</b>	18	0.24
	<b>Less than 3 years</b>	18	0.24
Specialization	<b>3 – less than 5</b>	29	0.39
	<b>5 – less than 10</b>	17	0.23
	<b>More than 10</b>	10	0.14
	<b>Medicine</b>	61	0.82
	<b>Management</b>	2	0.03
	<b>Other</b>	11	0.15

**Table 2: The results of the Quality Improvement Influencing Factors**

Variables	Mean	Std.
Independent Variables (QIF)		
1. Management Commitment	4.31	0.44
2. HRM		
- Employee involvement	4.26	0.57
- Employee Training	3.46	0.59
- Challenges and Rewards	4.33	0.38
3. Information Systems		
- Quality Information Availability	2.33	0.55
- Quality Information Usage	3.02	0.41
Dependent Variables (OP)		
1. Internal Quality Results	4.37	0.61
2. External Quality Results	4.59	0.52

**Table 3: Correlation between QIF and Quality Internal Results (QIR)**

QIF	R	Sig. (2-Tailed)
1. Management Commitment	0.84	0.02
2. HR	0.81	0.00
3. Information Systems	0.71	0.01
QIF	0.80	0.00

**Table 4: Correlation between QIF and Quality External Results (QER)**

QIF	R	Sig. (2-Tailed)
1. Management Commitment	0.73	0.00
2. HR	0.67	0.00
3. Information Systems	0.69	0.02
QIF	0.71	0.00

**Table 5: Correlation and Regression for QIF – Quality Internal Results (QIR)**

(QIF)	$\beta$	$\beta$ Sig.	$R^2$	Standard Error	Sig.
1. Management Commitment	0.725	0.00	0.71	0.233	0.00
2. HR	0.843	0.00	0.66	0.141	0.02
3. Information Systems	0.637	0.07	0.50	0.062	0.09

**Table 6: Correlation and Regression for QIF – Quality External Results (QER)**

(QIF)	$\beta$	$\beta$ Sig.	$R^2$	Standard Error	Sig.
1. Management Commitment	0.175	0.00	0.53	0.109	0.01
2. HR	0.683	0.09	0.45	0.127	0.07
3. Information Systems	0.683	0.00	0.48	0.163	0.00