

# Infrastructure and Core Quality Management Practices in Higher Education Performance

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**Abstract-** The literature differs by choosing the quality management practices depending on the organization's activities or the type of sector. Meanwhile, there is a differentiation in selecting the best practices, even in the same sector. Malcolm Baldrige National Quality Award has resonated with researchers as the best practices that can conform to the higher education activities. Moreover, the literature discusses the impact of quality management practices on performance through being divided into Core and infrastructure practices. This study proposes methodological framework to discuss any of these practices concerned with the Core-QMPs or Infrastructure-QMPs, influencing the possible relationship between Infrastructure QMPs, Core QMPs, and organizational performance in a clear signal that it has not been studied before, especially in Higher Education context. This study considered a starting point for further studies that related to Infrastructure and Core QMPs in Higher Education.

**Key words:** *Quality management practices, Core-QMPs, Infrastructure-QMPs, Higher education, Performance.*

## 1. Introduction:

The development of economic and international society has resulted in both an expansion and the growth of new types of higher educational institution. There has been an increase in communication among these institutions and the adoption of the new rules that govern their work.

Therefore it is important to enhance cooperation between departments within the institution and to develop ways to determine the best technique for evaluation [1, 2].

From this standpoint, quality and excellence should be the vision of every higher education institution. Acquisition of quality and excellence is the great challenge faced by all higher education institutions [3]. On the other hand, the organization must achieve the maximum benefit through the understanding of the mechanics of the application of quality management. To achieve this point, scholars tried to find one approach that can achieve the maximum benefit by finding a combination of practices that achieves the best organizational performance [4].

In addition, Quality management practices (QMPs) classified either infrastructure or core practices [5]. The first categorizations of QMPs proposed by Flynn, this study categorized the QMPs to core QMPs, and infrastructure QMPs. Core QMPs are all practices that direct implementation to improve the quality, while, infrastructure QMPs are all practices that create the best environment and support for core practices [6].

## 2. The Infrastructure and Core QMPs.

A series of studies is conducted on quality management in Higher education institutes (HEIs), some are theoretical and empirical studies [e.g., 2, 7, 8-11], whereas, others focus on QMPs in HEIs [e.g., 3, 12, 13-18]. QMPs are universal concept. For example, there are studies classified.

QMPs depending on MBNQA [6, 12, 19], in same time, other study classified QMPs into four practices: Human resource, Information analysis, Operation management, and Stakeholders requirement [15] (for more details see Table 1).

**Table 1.** Quality management practices in HEIs

No.	practices	Authors											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Top management (leadership)	√	√		√	√	√	√	√	√	√	√	√
2	Human resource development	√	√	√	√	√	√			√	√	√	√
3	Customer focus	√			√	√	√			√	√	√	√
4	Information analysis	√		√		√	√			√	√	√	√
5	Strategic planning	√				√	√	√	√	√	√	√	√
6	Management of process quality	√	√			√	√			√	√	√	√
7	Operational result	√	√			√	√	√	√	√	√	√	√
8	Vision		√										
9	Program design		√										
10	Quality system improve		√										
11	Recognition and reward		√										
12	Education and training		√		√								
13	Operation management			√	√								
14	Stakeholders requirement			√				√	√				
15	Process management				√			√	√				
16	Continuous improvement				√								
17	Partnership and resource							√	√				
18	Customer, people, society result							√	√				

1) [12] ; 2) [14]; 3) [15]; 4) [13]; 5) [19]; 6) [20]; 7) [21]; 8) [22]; 9) [23]; 10) [24]; 11) [25]; 12) [26].

After reviewing the practices studied by researchers in the educational institutions and determining the differences among them to unify the standards of measurement and optimal selection, Malcolm Baldrige National Quality Award (MBNQA) was selected as the gold standard for understanding the quality management [27]. According to [28], QMPs is a tool utilized to help educational institutions in the world to get high level of quality management.

Furthermore, the literature focuses on QMPs and its effects, whereas, few studies focused on the classification of these practices to the infrastructure, and core practices [e.g., 29, 30]. Similarly, QMPs examined through core and infrastructure in the U.S. industry. They identified three practices as core QMPs: statistical control and feedback, process flow management, and product design process, in addition to five infrastructure QMPs: top management support, customer relationship, supplier relationship, work-force management, and work attitudes [6].

In a related study, top management support, customer focus, supplier management, human resources, and organizational cooperation as infrastructure QMPs to examine the manufacturing industry in Thailand. They also employed three core QMPs namely process control usage, statistical

design, and process management. The study identified human resources as an infrastructure QMPs and process control as a core QMPs [31].

Other study illustrated three core practices (quality information, product design, and process management) and four infrastructure practices (top management support, customer relationship, supplier relationship, and work-force management) in the U.S. manufacturing industry [30]. this study reports three reasons to classify QMPs as core and infrastructure QMPs -first, the differentiation among authors when classifying QMPs, second, the measurement level, for example, some studies measured it based on the organization level, while others measured it according to its effect on the quality level. The final reason is the different statistical tools used to measure the relationships.

Additionally, some other studies focused on core and infrastructure QMPs in manufacturing industries of developed countries [32, 33]. Sometimes core and infrastructure QMPs are called as soft and hard practices respectively [34-37]. The Table 2 summarized the studies that focused on core and infrastructure QMPs.

**Table 2.** Summary of studies that focused on core and infrastructure QMPs

No.	Authors	Sector of study and sample	Core QMPs	Infrastructure QMPs
1	[33]	Manufacturing , USA, 42 plants		<ul style="list-style-type: none"> <li>- Human resource management</li> <li>- JIT</li> <li>- Strategic management/ organizational characteristics</li> </ul>
2	[6]	Manufacturing, USA 75 plants	<ul style="list-style-type: none"> <li>- Statistical control and feedback</li> <li>- Process flow management</li> <li>- Product design process.</li> </ul>	<ul style="list-style-type: none"> <li>- Top management support</li> <li>- Customer relationship</li> <li>- Supplier relationship</li> <li>- Work-force management</li> <li>- Work attitudes.</li> </ul>
3	[29]	Plastic transforming , Tunis 133 companies	<ul style="list-style-type: none"> <li>- Quality system improvement</li> <li>- Information and analysis</li> <li>- Statistical quality techniques use</li> </ul>	<ul style="list-style-type: none"> <li>- Organization of quality</li> <li>- Employee training</li> <li>- Employee participation</li> <li>- Supplier quality management</li> <li>- Customer focus</li> <li>- Continuous support</li> </ul>
4	[32]	Manufacturing , Sweden, United States, Japan, Finland, South Korea, and Germany. 189 big plants	<ul style="list-style-type: none"> <li>- Quality information</li> <li>- Process management</li> <li>- Product design</li> </ul>	<ul style="list-style-type: none"> <li>- Top management support</li> <li>- Work-force management</li> <li>- Supplier involvement</li> <li>- Customer involvement</li> </ul>
5	[30]	Manufacturing , USA, 226 plants	<ul style="list-style-type: none"> <li>- quality information</li> <li>- Product design</li> <li>- Process management</li> </ul>	<ul style="list-style-type: none"> <li>- Top management support</li> <li>- Customer relationship</li> <li>- Supplier relationship</li> <li>- Work-force management</li> </ul>
6	[31]	Manufacturing , Thailand 188 companies	<ul style="list-style-type: none"> <li>- Process control usage</li> <li>- Statistical design</li> <li>- Process management</li> </ul>	<ul style="list-style-type: none"> <li>- Top management support</li> <li>- Customer focus</li> <li>- Supplier management</li> <li>- Human resource</li> <li>- Organizational cooperation</li> </ul>
7	[38]	Manufacturing , Malaysia 255 electronics firms	<ul style="list-style-type: none"> <li>- Quality tools and techniques</li> <li>- Benchmarking</li> <li>- The ISO 9001 standard and process management,</li> <li>- Measurement</li> <li>- Product/ service design.</li> </ul>	<ul style="list-style-type: none"> <li>- Leadership</li> <li>- People management</li> <li>- customer and supplier relationships,</li> <li>- quality planning,</li> </ul>

The studies explained the importance of the above practices and the importance of the classification into core and infrastructure QMPs. It is evident from the table that most of the studies were carried out in the manufacturing sector, as well as, in industrialized countries, while measurement in higher education sector has largely been neglected.

For the above reason, the present study focuses on MBNQA as practices divided into four practices of infrastructure QMPs namely leadership [6, 30-32], work-force [6, 29-32], strategic planning [33, 39], customer focus [29, 31]. Added to there are two practices related to core QMPs namely : measurement, analysis, and knowledge management [29, 30, 32], and process management [30, 31].

### 3. Model proposed

To further understanding of the relationship among QMPs, the literature is divided into different categories, for instance, infrastructure practices and core practices [6, 32, 40]. To adopt the infrastructure and core QMPs classification in building our research model to direct implementation, infrastructure practices pertain to all practices that create the best environment and support for core practices QMPs, whereas core practices relate to direct implementation to improve the quality, see Figure 1.

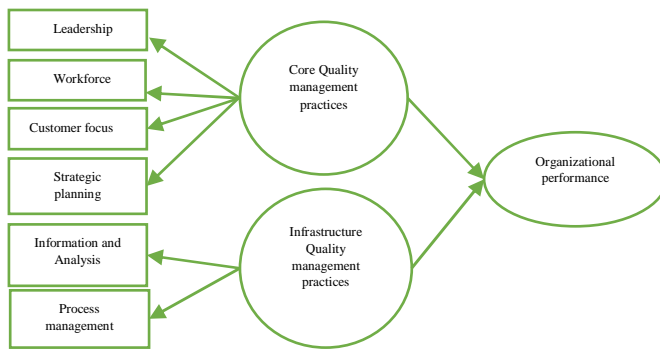


Figure 1. Model proposed

### 3.1 The relationship between Core Quality Management Practices and Organizational Performance.

The previous studies related to QMPs examined the effect of Core QMPs to Organizational performance. The majority of studies mentioned the positive and direct relations between the Core QMPs and Organizational Performance [29, 30, 38, 41], in contrast to, some studies which refer to no significant relationship between the Core QMPs and performance [32]. However, the studies differed in determining factors Core QMPs, and depending on the approved practices and adopted by the organization. This study adopts two practices as Core QMPs are process management, and Information and analysis.

On one hand, the variables that adopted by the study as the Core QMPs depended on some other previous studies which brought the existence of a positive relationship between it and the performance. According to [30] study, there are significant relationships between process management and quality information as a core QMPs and quality performance. Meanwhile, there is agreement that process management (process control) is one of key variable in core QMPs, and has a significant effect with key performance results [31, 34]. On the other hand, there is direct and significant relationship between “information and analysis” as a core QMPs and performance (financial, organizational, and quality product). However, there are positive direct effects of Core QMPs on organizational performance [29].

### 3.2 Relationship between Infrastructure quality management practices and organizational performance.

The previous studies focused on infrastructure QMPs as an important practice carried out by the organizations management. This literature identifies many practices that are infrastructure QMPs. This paper adopts the four infrastructure QMPs for MBNQA standards that: leadership, workforce, customer focus, and strategic planning.

The previous studies mentioned a variation in the relationship between infrastructure and performance. Some studies have confirmed that relationship is not direct, and that is done through Core QMPs [29, 30, 34]. other study further confirmed the existence of a direct and significant relationship between Infrastructure and performance [32].

There are several studies which tested the relationship between each practice separately with the performance. The relationship between the leadership and performance have been tested and results varied as significant and direct such as [32, 38, 42, 43], and other non-significant [30, 44]. Similarly some studies have found significant and direct relationship between customer focus and performance [32, 38, 42, 43], and other non-significant [29, 30]. This is the way how it works between workforce practice and performance, where the studies that highlighted positive effect between them [32, 42, 45]. While some studies have found negative effects [30, 34]. Finally, there are direct relationship between strategic planning and performance [42, 43], and indirect relation between it [34]. The conclusion is, there are positive direct effects of Infrastructure QMPs on organizational performance.

## 4. Conclusion

This paper has discuss the relationships between the variables represented by core QMPs and infrastructure QMPs as independent variables, and their relationship to organizational performance as a dependent variable. In a review of the literature found, there is a relationship between the practices and performance in general. The lack of studies that tested the effect of infrastructure QMPs, and Core QMPs. this paper provided an opportunity and justifications to propose new form to test the relationship depending on two independent variables are the practices of infrastructure, and Core quality management, based on the Malcolm Baldrige national quality award with the Organizational performance as a dependent variable.

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