



The Effect of Total Quality Management on Organizational Performance:

A PLS-SEM study in Moroccan Public Higher Education

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Abstract: *This study initiates a quantitative empirical survey using the Total Quality Management Model (TQM) as an exhaustive paradigm to identify integral components related to the strategic management system which integrates the financial, administrative (governance), and academic aspects in Moroccan public universities. The thesis methodology has been architected based on the cross-sectional approach. Cross-sectional semi-structured questionnaires have been utilized to collect the research data from 807 senior executives, middle managers, and subordinates in three public universities. For data analysis, PLS-SEM statistics are carried out to process collated data from semi-structured questionnaires. The empirical evidence from TQM associated negative impact to the correlation between the indicators of financial autonomy. Meanwhile, academic autonomy was deemed as conducive to the superior performance on the part of the university subordinates. Another significant output was observed in regard to the administrative autonomy's indicators, which were proven to explain the correlation positively with organizational performance. The current research strategy fits into the cross-sectional type of surveys. The execution of a longitudinal method would have implicated a more effective observational process. This study raises the thorny issue of TQM implementation to break new ground in the scientific research in a developing country as Morocco. The originality of this paper lies in its depiction of the complex phenomena that have been thoroughly investigated in the western contexts, whereas, they have never been considered in any comprehensive academic paper in Morocco.*

Key Words: Performance Management, Total Quality Management, TQM measurement models, SEM-PLS.

1. INTRODUCTION

The generic division of higher education autonomy into financial, administrative, and academic applications, within the underlying context of TQM implementation, has been extensively accounted for throughout the related literature. For instance, Moses (2007) perceives institutional autonomy as a changing process that comprises employees, students, teaching, pedagogical/academic measure, financial management, and governance. McDaniel (1996) examines the levels of autonomy from financial, managerial, educational, and human resources perspectives. Fisher (1988) probes the personnel, students, management, finance, and academic aspects of autonomy. Most of the descriptions of university autonomy focus on the extent of independence and self-steer that universities enjoy. In the meanwhile, Higher education in Morocco in the aftermath of the reforms can be described as alternating between the two extremes: state control and self-rule model. This intermediate form of governance is characterized by the intermingling of state regulation and university self-governance. This hybrid status of Moroccan tertiary education can further be explicated by the relatively broader financial, academic, and administrative freedoms that have been granted to the universities while maintaining the traditional supervisory and regulatory roles of the state.

Quality management achievements are the most conspicuous concretizations within universities. Indeed, financial, academic, and governance embodiments of autonomy can readily be perceived in how HEIs have recently been managed. In this respect, Bencheikh & Elabbadi (2013) underscore the substantial contribution of TQM manifestations of autonomy as introduced by the Emergency Plan as well as the major TQM supportive organizational infrastructure such as management control system in Moroccan HE. This study covers a lot of ground concerning the applications of the total quality management in higher education. The researcher starts from the conviction that universities' performance cannot be effective without the streamlining and implementation of TQM strategies. This view is built on the researcher's argument that only a partial implementation of the reform has been undertaken in the three applications of TQM. Indeed, despite the broader freedom granted to the internal structures (University General Council, etc.) in charge of taking financial and academic decisions, the state still exercises a noticeable influence on the running of universities through the medium of the external structures and institutions (Higher Council of Education, the National Coordination Committee for Higher Education etc.). In the meantime, internal governing boards have been enabled extended powers to take strategic decisions with less confinement to the higher authorities. Nonetheless, the assessment of quality management strategies is still unclear or not undertaken at all due to financial, procedural, and HR hurdles. On that account, TQM has been proposed in this study as a valid instrument to fill the gap

of implementing and assessing quality management strategies in Moroccan universities.

2. THEORETICAL FRAMEWORK

2.1 Quality Pursuit throughout Moroccan National Reforms

The official search for quality in Moroccan higher education began with the first endeavour to reform this sector in 1990. Subsequently, Moroccan authorities have initiated a series of reforms to improve the notoriously degrading education at all Moroccan higher education system levels. In this regard, the 2003/2004 reform was adopted to put into effect a new educational organization. The king launched another prominent call for radical change in 2007 and initiated the Emergency Plan to mend the persistent deficiencies in the educational system. In 2008, the Higher Council of Education issued an assessment report that traced back the principal accomplishments. One year later, the Ministry of Higher Education officially endorsed the contingency plan to establish and institute quality within management.

2.2 Application of Total Quality Management in Moroccan Higher Education

Quality achievement in Moroccan higher education is extensively accounted for in the National Chart for Education and Formation. Quality management is chiefly articulated in the statute No 01-00 of May 2000 on the Organization of Tertiary Education. This law is enacted to suit perfectly the requirements of Total Quality Management. It highlights and targets three significant aspects of TQM applications in higher education, namely the academic (pedagogic and instructional issues), financial (budgeting, accounting, and funding), and administrative (governance) reforms (Articles 4 and 5 of statute 01-00).

The academic side of the reform underlies the quality of the pedagogical methods and curricula and the degrees obtained at different cycles (Bachelor, Master, and Doctoral cycles). Therefore, the new modularized system, semesters, and cycles are adapted to meet modern education's prerequisites. Furthermore, academic partnerships between the private and public sectors are seen as central components to upgrade quality in Moroccan universities.

Concerning the financial aspects of the reform, they have been oriented towards finding and allocating additional funds and resources away from the conventional sources. These typically consist of the investment and operating budgets that the state provides the universities with, student enrollment fees, and revenue resulting from the institutions' operations and assets. Also, in terms of accounting, it accounts for the absence of an independent system within universities, which still count on dashboards to provide general and analytical accounting (Bencheikh & Ellabbadi, 2013). In terms of the administrative reform, it seeks to decentralize decision-making and modify the

concept of governance. It also aims to make the administration more resilient and human resources more competent and committed to improving its service. The magic word related to these three TQM applications in Moroccan HE is "autonomy." Indeed, the reform's essence lies in decentralizing decision-making at the levels of governance, academic development (e.g., curricula development and adoption), and setting up independent financial and accounting management. The ultimate objective is to ensure quality control based on autonomous governance and administration. In the meantime, these reforms, as inspiring and optimistic as they may seem to be, generate some concerns such as transparency, evaluation, accountability, rationalization, etc. As important as they are, these issues are beyond the scope of study of this paper. Bencheikh & Elabbadi (2013) investigate the management control system (MCS) in the Moroccan universities in light of the national reform and agree with the two themes introduced by the emergency plan: autonomy and contracting. Their study focuses on the extent to which Moroccan universities can meet the requirements quality, efficiency, and optimization to achieve high performance in management, student services, empowering everyone, and managerial transparency. For this reason, the researchers survey seven Moroccan state universities (Mohammed V University, Agdal University, Mohammed Ben Abdellah University, University Hassan I, Cadi Ayaad University, Ibn Zuhr University, and University Abdelmalek Essaàddi) in addition to the privately managed Al Akhawayn University to account for four prime themes. These are autonomy, contracting and organization, management control and information systems, the role of different actors, and the interlocutor (p. 111). The results of this research confirm the absence of well-defined accounting systems within these universities. They substitute the accounting platforms with dashboards as the preferred premises of management control in Moroccan higher education. The contribution of Bencheikh and Elabbadi's research findings to the current paper does not only lie in their investigation of the effect of the national reform on the Moroccan universities from a managerial perspective but also the examination of a major TQM supportive organizational infrastructure such as Management Control System (Ittner & Larcker, 1995). It is explicitly recognized throughout the reforms undertaken in the Moroccan context that new frameworks should be introduced in universities to ensure autonomy. Policymakers have been aware of the necessity to incorporate new financial, academic, and governance mechanisms to institute and consolidate higher education independence.

3. CONCEPTUAL MODEL AND HYPOTHESIS DEVELOPMENT

For the assessment of the total quality management, three applications have been put into effect. These are financial, academic, and administrative autonomies. Each of these properties is further broken into measurable sub-dimensions. In this respect, the financial application is quantified through the universities' funding dependency

and accounting inefficiency. The academic application is rated for curricula development and modularized system. The administrative application is made operational through the appraisal of decentralization/deconcentration and self-governance (see fig-1). Each of these items and sub-items strengthens the measurability of the TQM variable. Accordingly, this paper advances the assumption that the implementation of these three aspects (governance, financial, and academic applications) as part of TQM will result in high performance in Moroccan higher education.

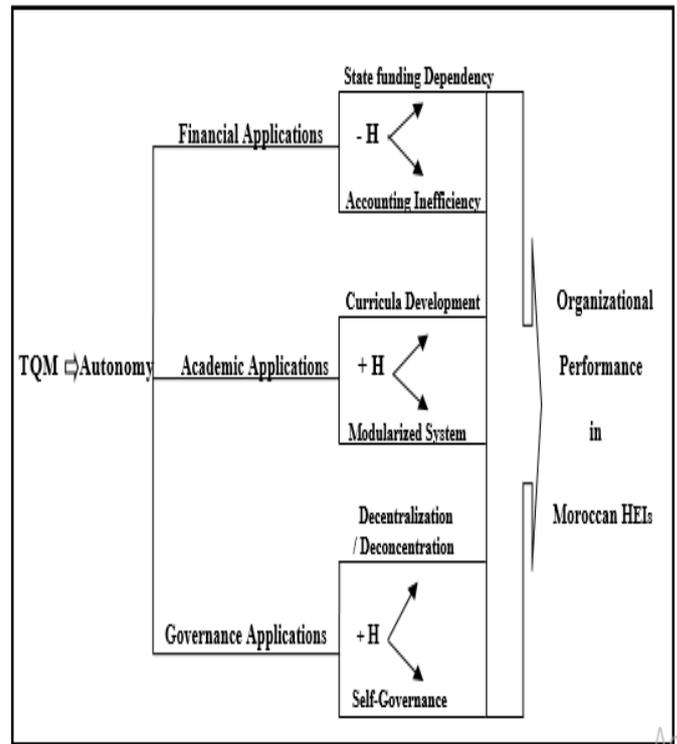


Fig -1: Conceptual model underlying the correlation between TQM and organizational performance.

3.1. Financial Autonomy:

Enders et al., (2013) perceive the universities' financial autonomy in terms of the extent of their reliance on state funding and their capacity to raise extra resources and revenues. They argue that the corporate model of financial management (setting tuition fees, taking on loans, investing, etc.) applies to educational institutions. Cazenave (1992) states that a substantial factor of higher education autonomy lies in how universities can manage the available budgets independently. Financial independence refers to finding resources, expenditures, resource allocation, and budgetary management of an educational institution. These resources can be provided by the state or other external funding entities. Sheehan (1997) provides a comprehensive description of financial autonomy, which entails the university's total independence to decide on financial matters without government interference or other funding entities. He further specifies two primary abilities as being crucial to the universities. These are the ability to raise public funds and the capacity to allocate them according to their needs and priorities. In this sense, a

defining characteristic that optimizes higher education autonomy lies in the institution's freedom to look for and obtain additional funds aside from the traditional resources guaranteed by the state.

Volkwein (1986) determines nine manifestations of financial autonomy. They constitute the major prerequisites for the independent financial management of the university. These are free budgeting, flexible transfer of funds, the authority to monitor tuition fees, the responsibility to manage revenues, well-defined internal standards for staffing, free pre-audit of the costs, self-established rules for year-end balances, and the capacity to pay off employees and expenditures related to additional purchases. In addition to government funding and private resources, other aspects of financial autonomy are embodied in the institution's ability to handle its assets, fees and tuitions, buildings, lands, facilities, loans, etc. These would allow the institution to generate more income and allocate more resources.

In the meantime, it seems very intricate to strike a balance between receiving funds from the government and managing them independently from the central authority. The essence of financial independence lies in this seemingly complicated equation. For no institution can be referred to as being autonomous without having the power to decide on and govern its financial resources. This leads to discussing the margin of freedom that universities enjoy as part of the decentralization process. Menéndez-Weidman (2001) defines educational decentralization as the "transfer of power from the state to elected bodies of regions and departments (and the) devolution of power [...] to appointed rectors, elected local authorities and head teachers" (P, 77). This is congruent with the essence of the reform in Morocco as it seeks to shift from the state oversight to self-governance of universities. Autonomy, in this sense, excludes any external interference from the state or other entities in the management of financial issues and decisions within universities. The chief governmental tools to control universities are embodied in the arsenal of legislation that organizes and monitors tertiary education, monetary funds and aids, and university executives' political appointments. Furthermore, the state's pre-determined budgetary posts and recruitment standards tightly control the hiring of teachers and administrative staff. According to the universities' needs and budgets, self-governance includes the freedom to recruit and contract with teachers and administrative staff. For this reason, financial management requires governing boards that exercise internal governance and make financial decisions related to allocating resources and preparing financial plans. Therefore, the existence of elected or selected councils is an integral element for financial autonomy (Steiss, 1989). Financial management also requires well-defined accounting bodies within universities. These can take the form of a budget unit, a reporting unit, a financial accounting unit, or a responsibility center (Jones & Pendlebury, 1992). The major duties of these accounting bodies are the preparation of the financial statements (Balance Sheet, Income statement, Cash Flow Statement, Equity Statement) according to generally accepted

accounting principles, the preparation of annual reports, and the maintaining of updated information systems of the earnings and liabilities of the institution. The royal decree Number 330-66 of 21 April 1967 states that the Moroccan universities' financial liabilities lie within the jurisdiction of the public accountants and officers. This means that they are in charge of disbursement, expenditure, cash flow, and income (Article 18 of Law 01-00). In this sense, universities do not have the moral entity that would enable them to order or oversee their income or expenditure. This entails a complete absence of independent and well-defined internal accounting bodies within Moroccan universities. This fact fosters state control over tertiary education in the kingdom. As a matter of fact, the malfunctioning or absence of accounting bodies in Moroccan universities (Bencheikh & Elabbadi, 2013) would hinder self-governance and, therefore, affect universities' financial autonomy negatively. It is undeniable from the above discussion that a better higher education performance in Morocco is contingent upon more substantial financial independence and reliable internal accounting systems.

- **Hypothesis 1: Financial applications** will have a **negative** effect on **Total quality management** implementation in Moroccan higher education.

3.2. Academic Autonomy

Conventionally, autonomy is associated with academic freedom. Tight (1988) describes academic freedom as "the freedom of individual academics to study, teach, research and publish without being subject to or causing undue interference." (P, 132). This autonomy description focuses on the freedom that individual academics have in carrying out their research or designing their lectures. By so doing, independence becomes closely related to different members of the university. From a broader perspective, institutional autonomy refers to the various components that interfere with freedom at higher education (Sizer & Mackie, 1995). These components are the cornerstones of independence at different levels, namely student selection and submission, staff recruitment, curriculum design and development, and resource allocation (Ashby & Anderson 1966). Indeed, freedom at the level of managing academic issues ensures efficient and customized decisions when choosing an appropriate curriculum, organizing the educational year, setting standards for students' enrollment and submission, and optimizing scientific research. Berdahl (1990), who distinguishes between substantive autonomy and procedural autonomy, makes one apparent division of the concept of autonomy. According to Berdahl, substantive autonomy refers to the institution's ability to set its standards, goals, educational programs. On the other hand, procedural autonomy denotes the practical means and procedures that help put these goals and schedules into practice.

In this sense, it can be noticed that there is an indisputable link between substantive autonomy and academic affairs, and a manifest association between procedural autonomy and administrative matters. Academic freedom directly affects the learning-teaching process as it denotes the liberty of teaching and researching for professors and the privilege of acquiring knowledge and learning for students (Altbach, 2001, p. 206). From the previous discussion, this paper postulates that by having substantive and procedural autonomy, Moroccan universities will be able to freely develop and adopt their curricula, modularized system, semesters, and cycles to satisfy the students' needs meet the requirements of the job market. Consequently, Moroccan universities' performance will be favourably affected by academic independence.

- **Hypothesis 2: Academic applications** will have a **positive** effect on **Total quality management** implementation in Moroccan higher education.

3.3. Governance Autonomy

The establishment of a new management model based on decentralization, deconcentration, and self-governance is the cornerstone of achieving high administrative performance in Moroccan universities. Good governance entails an effective decentralized government and independent administrative structures within HEIs. Therefore, The Moroccan pattern of deconcentration is built upon the delegation of responsibilities and decision-making power to the medium authorities (provinces and regions) and local levels (the universities' boards and general councils). Thus, deconcentration denotes a total administrative decentralization. Universities, with the new reforms, are the embodiments of decentralization and deconcentration. Being aware of the centralized system's many dysfunctions, the National Charter on education and training (1999) is quite explicit concerning the necessary change. Thus, it outlines the drastic measures that should be taken to achieve a gradual alteration from the extremely hierarchical mode of governance prevailing in Morocco to a more decentralized and deconcentrated model of governance. Accordingly, the National Charter introduces decentralization and deconcentration in the education sector as vital principles of reforming governance (the National Education Charter. (1999). Lever 15. P., 58). Therefore, the present dissertation links the positive performance of the universities' administrative services with the three elements of management, namely decentralization, deconcentration, and self-governance.

- **Hypothesis 3: Administrative applications** will have a **positive** effect on **Total quality management** implementation in Moroccan higher education.

3.4. Interrelationships among Research Variables

3.4.1. Total Quality Management and Organizational Performance

Concerning the liaison between total quality management and organizational performance, it has been studied from the senior management's ability to implement adequate TQM policy to enhance organizational productivity, competitiveness, and overall performance. Therefore, throughout the relevant literature, it has been taken for granted that the execution of an appropriate TQM matrix has a significantly positive influence on performance. Mosaddegh (2006), who confirms that TQM's implementation as a managerial philosophy helps boost business effectiveness, efficiency, adaptability, and competitive advantage, has made this quite explicit. Anurangam et al. (2008) make a point of the favorable link between TQM components (such as leadership, process management, and customer focus) and organizations' quality performance. Even more, Brah et al., (2002) recognize the competitive advantage that allows the firms that implement TQM to outperform the ones without TQM policy. Likewise, Karia & Asaari (2006) argue that an appropriate execution of TQM will result in highly motivated employees who are willing to take part in the development and success of their organization. Additionally, Abdullah et al. (2010) examine TQM soft effect on the organization's overall performance and draw the conclusion that factors such as managerial commitment, customer focus, and connections with subordinates have a positive influence on the ultimate performance. Furthermore, Wang et al., (2010) find out that leadership, along with HR management, exert a positive impact on performance. Correspondingly, Joiner (2006) combines TQM's execution and the achievement of high performance within firms. Heras-Saizarbitoria et al. (2011) elucidate the straightforward favorable significance of TQM on the firms' performance. Gharakhani et al. (2013) highlight the extremely positive influence of the TQM on the firm's financial accomplishment. Besides, Woon (2000) clarifies that the execution of the different aspects of TQM associated with managerial productivity, process management, customer focus, and satisfaction exercise positive effects on performance. Motwani (2001) contends that the application of TQM practices enhances organizational performance. Nonetheless, Dooyoung et al. (1998) go against the stream and highlight the prospect of missing the preplanned organizational objectives despite TQM's execution. This paper advances the assumption that implementing the three aspects of TQM (governance, financial, and academic applications) will result in high performance in Moroccan higher education. What is more, it puts into the test the utilization of the balanced scorecard paradigm (Kaplan & Norton, 1992) as the primary performance measurement instrument in tertiary education.

3.4.2. Total Quality Management, Job Satisfaction, and Organizational Commitment

A well-planned execution of total quality management can bring about considerable changes in organizations. These

transformations can bear upon some of the most influential organizational behaviors, such as career satisfaction and employees' commitment. TQM implementation can alter the work environment and various aspects of quality management for better engagement and comfort of employees in the workplace. In this regard, Korunka et al. (2003) have been especially keen on assessing the outcomes before the alterations brought forth by quality management and the results observed at different intervals during the quality management strategy execution. The findings categorize employee outcomes according to various circumstances, thus depicting them as contextual outcomes. Indeed, the main target of implementing TQM strategies is to set up an adequate environment that motivates members to do their utmost to achieve the organization's objectives. This work atmosphere guarantees high job satisfaction and triggers employees' creativity and innovation as they strive to solve problems and collaborate with workmates. It also fosters teamwork communication (Karia & Asaari, 2006). Furthermore, affective commitment is very decisive when it comes to deciding to remain in the firm or not (Daily & Bishop, 2003). TQM can lead to reversed outcomes if it is not well planned and does not involve all stakeholders, including managers and employees. This paper assumes a mediation role of job satisfaction and organizational commitment between the relationship of total quality management and organizational performance.

- *Hypothesis 4:* The implementation of **Total quality management** will lead to **higher job satisfaction** among employees.
- *Hypothesis 5:* The implementation of **Total quality management** will lead to a **higher commitment** of the employees to their organization.
- *Hypothesis 6:* **high Job Satisfaction** affects **organizational performance** positively.
- *Hypothesis 7:* high **Organizational Commitment** affects **Organizational Performance** positively.

3.5. Mediating roles of job satisfaction and organizational commitment.

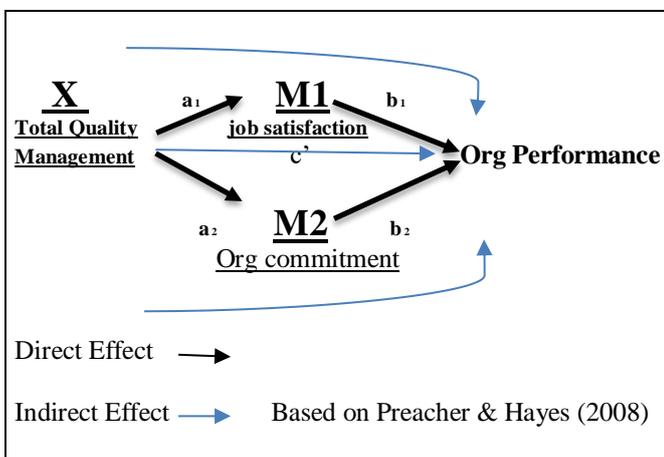


Fig -2: Hypothesized Multiple Mediation Model

This thesis' model adopts Preacher & Hayes' (2008) testing procedure. Thus, the coefficients stand for the indirect impact of the proposed independent variable (total quality management) on the two suggested mediators (job satisfaction and organizational commitment).

The b coefficients refer to the influence that the two mediators exert on the dependent variable (organizational performance) while excluding the effect of the independent variable (on the dependent variable).

The C paths indicate the direct impacts that the predictor have on the outcome variable that is controlled for the presumed effect of the two mediators. Simply put, the C paths are the total effect of X on Y.

Accordingly, this study suggests the ensuing mediation hypotheses:

- *Hypothesis 8:* **Job satisfaction mediates** the relation between **total quality management** and **organizational performance**.
- *Hypothesis 9:* **Organizational commitment mediates** the relation between **total quality management** and **organizational performance**.

Accordingly, two main research questions have been suggested in the context of this study:

- To what extent are Moroccan universities able to implement the three major applications of **TQM financial, academic, and administrative** reforms (in light of the economic, managerial, and human resources constraints)?
- How does **Total Quality Management** affect **organizational performance** in Moroccan tertiary education (direct effect)?

Ultimately, seven main hypothesis, two mediation assumptions, and two research questions have been suggested in the context of this study.

4. METHODOLOGY

4.1. Research Instrumentation: Total Quality Management (TQM) Measurement

The author has elaborated a 5-Likert scale (5= strongly agree; 1= strongly disagree) comprising 29 items divided into three clusters. The first one, Financial autonomy/applications, involves 13 items that ponder on the management of the financial funds (either state funds or extra revenues) in the university. The second cluster is entitled Academic Autonomy/applications and consists of 10 items delving into the margin of the academic freedom granted to the university. This includes how the university manages its academic affairs as well as the prerogative that individual academics enjoy to carry on their scientific projects, lectures, and studies. Concerning the last cluster, it probes into Governance autonomy/applications through 6 items that intersect with the university governance mode and the internal governing board's performance.

4.2. The Total Quality Management Measure Psychometrics:

For the assessment of the hypothesized conceptual framework related to a total quality management application in Moroccan higher education, the researcher has brought forth the TQM survey questionnaire. The author has designed the TQM measurement instrument through the synthesis of the most prevalent TQM practices in the literature and the recommendations of the National Charter of Education (1999) and Statute 01-00 (2000). Therefore, Financial, Academic, and Governance applications have been tailored to fit the survey objectives. Quality management dimensions differ from research to another, depending on the goals and scope of each work. Accordingly, tremendous investigations have been carried out in the field of quality management to uncover the predominant practices underlying this subject area. This has brought about various types of TQM questionnaires assessing different factors. In this respect, the TQM-performance association has been surveyed following multiple performance indicators such as financial focus, academic perspective, administrative (governance), operation and quality performance, etc. Indeed, a broad range of principles has been used to search for the effect of TQM on performance. In the meantime, most of the studies have deployed roughly the same assessment technique for the reliability of their questionnaires. There has been an apparent consensus on Cronbach's alpha as an efficient reliability test for the internal consistency of most scales. By way of illustration, Shekoufeh & Siavash (2013) apply alpha coefficients as an index to weigh the reliability of the proposed questionnaire. They have also made use of the structural equation (path analyses) to unveil the structural model. The outcomes have proved that the four adopted dimensions demonstrate high reliability. For instance, TQM factor scores 0.85; quality performance achieves 0.85; innovation performance gets the average of 0.72; and the fourth-factor organizational performance rates of 0.84. All these factors exceed 0.70 and get closer to 1 the perfect score for complete reliability. Abd El-Moneim A. El-Tohamy (2015) calculates the TQM indicators and finds out a high-reliability rate of the different principles with a total Cronbach's alpha of 0.85. All the factors achieve more than 0.80, which shows the strong internal consistency of this framework. In this regard, customer focus organizations perspective rates 0.86; education and training 0.89; and teamwork gets 0.88. These are very satisfactory scores as far as reliability indexation is concerned. Furthermore, Zhang (2001) uses Cronbach's alpha to test multiple TQM scales. The results have been mostly above the required 0.70. For example, customer focus scores 0.87; education and training 0.88; process control and improvement achieves 0.88; and leadership rates 0.89. Similarly, Conca et al., (2004) produce satisfactory alpha averages with 0.77 for the leadership measure. Whereas, customer focus performance scores an acceptable alpha of 0.54. All these studies lend credence to the Cronbach alpha coefficient as the most applicable test to give support to these questionnaires. Likewise, this study's survey questionnaire

has been processed using this internal consistency measure to substantiate the composite reliability of the 29 items.

4.3. Participants

The demographic survey is addressed to the two-sample categories of this study. The first part is devoted to the top executives and university leaders.

Table -1: Synopsis of Senior Managers statistics (n= 194)

Senior Managers	Categories	Frequencies	%
Gender	female	69	36%
	Male	125	64%
Age	36-45	74	38%
	46-55	86	44%
	56-60	34	18%
Education Level	Masters	7	4%
	Doctorate	155	80%
	Other degrees	32	16%
Seniority in the position	btw 2 and 4	120	62%
	btw 5 and 10	58	30%
	btw 10 and 14	16	8%

It collects data related to their management position, name (optional), gender, and age. The second part concerns the employees and subordinates of the higher educational institutions. It gathers data related to their gender, age, institution, degrees, and the number of years in the current position. The respondents' categories, frequencies, and percentages are displayed in the table above. Table 1 provides detailed information concerning the various senior managers' groups in terms of their age categories, gender, education level, and seniority in their positions.

Gender: with the frequencies of 69 for female (36%) and 125 for male leaders (64%), the gender distribution proves to be mainly in favor of male leadership representativity. Regarding cross-section partition, most deans of faculties and directors of higher institutes are men (12, 00%) in comparison to 4.35% for women. The Director of the Center for Doctoral Studies category displays a relatively slight dominance (11, 20%) on the side of male leaders as female directors achieve 10, 14%. Similar results tend towards the prevalence of male leadership reported in the Secretary General range with 11, 20%, whereas females obtain a low proportion of 1, 45%. Nonetheless, women proved their influence in the remaining four categories (i.e., Vice-Dean in charge of Scientific Research and Cooperation female 31, 88% and male (20, 00%),

Age: with the frequencies of 86 for the 46-55 age segment (44%); 74 for the 36-45 age group (38%); and 34 for the 56-60 age range (18%), the largest category of senior managers fall within the age segment of 46-55. On that

account, the sub-categorization proved that three groups, namely, Directors of Center for Doctoral Studies, Heads of Department, and Secretary Generals appertain to this age range with individual percentage rates of 16.28, 18.60, and 10.47 respectively. In the meanwhile, three groups belong to the allotted span between 36-45, namely, deans /directors (12.16%), Vice-Dean in charge of Continuing Education & Projects Office (24.32%), and Vice-Dean in charge of Academic Affairs and Student Life (18.92%). These outcomes exhibit that most top executives are middle-aged (between 36 and 55 years old).

Education Level: with the frequencies of 7 (4%) for Masters, 155 for the doctorate (80%), and 32 for other degrees (16%), most of the respondents have higher education degrees. Concerning representative cross-section, the group of Vice-Dean in charge of Continuing Education and Projects Office achieves the highest ratio in terms of Ph.D. acquisition with 23, 87% followed by the Vice-Dean in charge of Scientific Research and Cooperation (17,42%), and Vice-Dean in charge of Academic Affairs and Student Life as well as Head of Department with 14,19%.

Seniority in the Position: with the frequencies of 120 for the career duration between 2 and 4 (62%); 58 for the course of 5 and 10 (30%); and 16 for the stretch between 10 and 14 (8%), the largest category of senior managers falls within the seniority in the position between 2 and 4. On that account, four groups, namely, dean/director (11,67%), Vice-Dean in charge of Continuing Education & Projects Office (27,50%), Vice-Dean in charge of Academic Affairs and Student Life (19,17%), and Head of Department (12,50%). The seniority distribution bears considerably upon the development, implementation, and continuity of the various internal performance assessment schemes.

Table -2: Synopsis of Subordinates statistics (n= 613)

Subordinates	Categories	Frequencies	%
Gender	Male	273	45%
	Female	340	55%
Age	26-35	155	25%
	36-45	182	30%
	46-55	149	24%
	56-60	127	21%
Education Level	Bachelor	245	40%
	Masters	201	33%
	Doctorate	77	13%
	Other degrees	90	15%
Seniority in the position	btw 2 and 4	244	40%
	btw 5 and 10	213	35%
	btw 10 and 14	103	17%
	14 and over	53	9%

Table 2 provides detailed information concerning the various groups of the subordinates in terms of their age categories, gender, education level, and seniority in their positions.

Gender: with the frequencies of 340 for females (55%) and 273 for male leaders (45%), the gender distribution among subordinates proves to be slightly in favor of female representativity with a 10% difference.

Concerning cross-section partition, Services attached to the Dean received the highest percentage in favor of females with 10% compared to 7% for males. They were followed by Services connected to the Vice Dean in charge of Scientific Research and Cooperation with 9% for females and 6% for men and Services attached to the Director of Center for Doctoral Studies with 7% and 6% for males. The residual groups achieve proportions lower than 7%. The gender partition in the subordinate sample revealed that only ten percent of women outnumber men discarded any threat of gender bias in the quantitative survey outcomes.

Age: with the frequencies of 155 for the 26-35 age segment (25%); 182 for the 36-45 age group (30%); 149 for the 46-55 age range (24%), and 127 for the 56-60 age stretch (21%), the largest category of employees falls within the age segment 36-45. The second age classification is 26-35, followed by the age category 46-56, and lastly, 56-60. Regarding the sub-categorization, results showed minimal differences between most groups (e.g., for the age range 26-35, Services attached to the Dean 5%, Services connected to the Secretary-General 2%, Services attached to the Vice Dean in charge of Scientific Research and Cooperation 3%, etc.). These results reveal that the subordinates' population is much younger than leaders (between 26 and 55 years old).

Education Level: with the frequencies of 245 (40%) for Bachelor, 201 for Masters (33%), 77 for the doctorate (13%), and 90 for other degrees (15%), most of the respondents have higher bachelor degrees. Concerning the sub-groups, the proportions are extremely close across all the categories. For instance, Services attached to the Dean the sub-sample achieves 4%; School Service 3%; Information System Service 5%; and Department of Financial Management and Patrimony 5%.

Seniority in the Position: with the frequencies of 244 for the career duration between 2 and 4 (40%); 213 for the duration of 5 and 10 (35%); 103 for the stretch between 10 and 14 (17%), and 53 14 and over (9%), the largest category of subordinates falls within the seniority in the position between 2 and 4. On that account, Services attached to the Vice Dean in charge of Scientific Research and Cooperation, Department of Financial Management and Patrimony 2%, Services attached to the Vice Dean in charge of Continuing Education & Projects Office 3%, etc. The seniority in the position has a sizeable effect on the university performance assessment, programs, commitment, and sustainability.

4.4. Sampling Method

The simple probability sampling technique, particularly, the stratified random-sampling method has been used for the selection of participants. Stratified random sampling was carried through to attain a sample size of 807 respondents from a population of 2585 top executives, mid managers, subordinates, and employees. Stratification has been implemented by the systematic division of the population into homogeneous strata (subgroups) based on some predetermined criteria of the respondents' assortment (Dillman, 2012). This technique has enabled the researcher to scale down the sample size by dividing the population into small groups on the grounds of some shared attributes. Accordingly, each stratum has been formed based on at least one common feature, such as age, gender (male/female), managerial position and administrative hierarchy structure (leader/non-leader), educational level, seniority in the position, or professional qualification. This distribution makes the sample more manageable for the sake of achieving more precision and reducing sampling error (the degree of disparity of a sample from the population). Such sampling tolerates the representativeness of the tiniest and most inaccessible subgroups in the population. Subsequently, simple random sampling is utilized to specify the number of individuals in each stratum. The current study targets different HEIs with various administrative structures and varied services that affect the sample size of these organizations. Thus, the stratified random sampling enables adequate representativeness of all the institutions. The surveys have been carried out all along the period extending from January to June 2019.

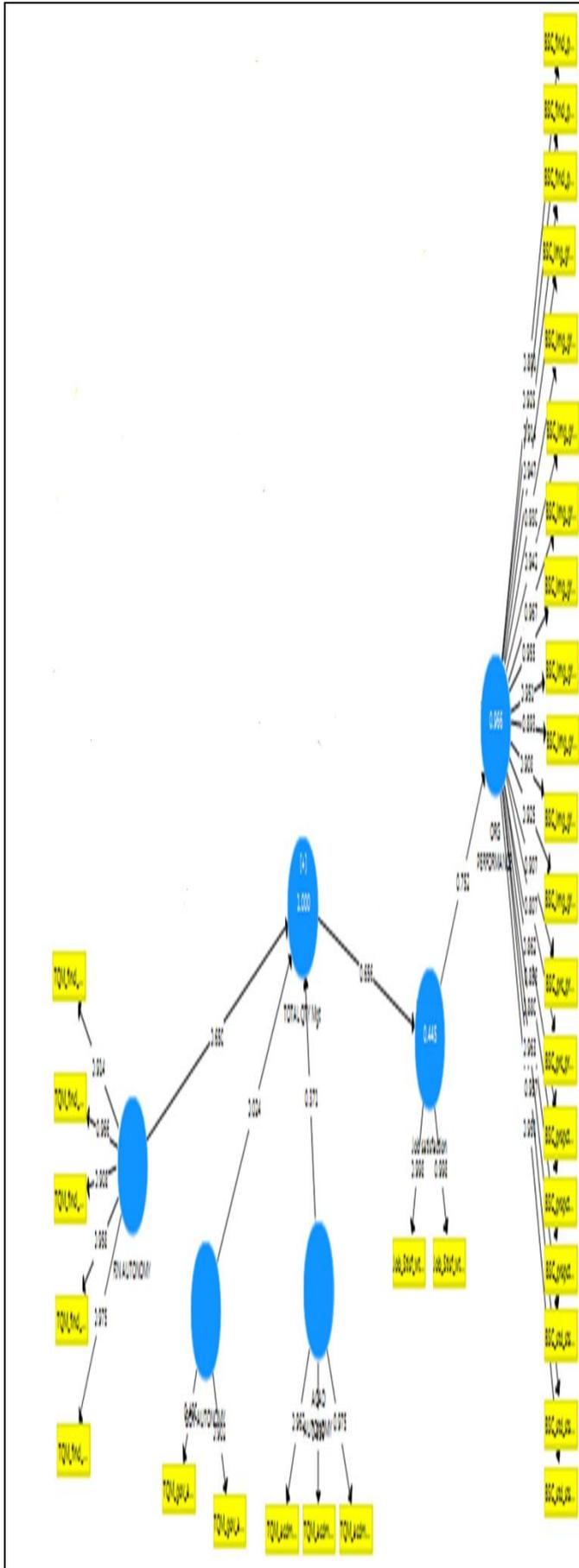
4.5. PLS-SEM Data Analysis and Execution Procedure :

This study's PLS-SEM structural framework has been elaborated through the initial process entailing the specification of the outer (measurement) and the inner (structural) models, followed by the estimation of both models. This aligns with Hair et al., (2014), who suggest that the first stage of PLS-SEM execution should be the development of a path model underlying the associations between constructs and variables on the grounds of theory and logic. In the same vein, the initial phase should be devoted to the inspection of the reliability estimates, convergent validity, and discriminant validity. Whereas, the subsequent level of data analysis entails the running of factorial validity, multicollinearity, and significance and relevance of outer weights (Hair et al., 2017). Regarding the first assessment, it consists of weighing the outer/measurement model from two modes: reflective and formative indicators evaluation. This is in line with Loehlin (1998), who underscores the significance and criticality of assessing the measurement model for the quantification of the reliability and validity of the unobserved (latent) constructs, along with their observed (manifest) variables. The reflective assessment involves the examination of the internal consistency using composite reliability. Ultimately, testing validity estimates are undertaken by implementing convergent and discriminant validity. The subsequent stage

comprises the assessment of the formative indicators. This stage is initiated for the sake of confirming the validity of the model through the running of the nomological validity as well as the external validity (content and face validity). What is more, the significance of weights measure has been estimated for the quantification of the constructs. Meanwhile, the bootstrapping technique, along with multicollinearity tests, have been implemented for assessing indicators. It is noteworthy mentioning that the current study model contains no formative assessment and that all the indicators are reflective. As far as the second assessment is concerned, a process has been initiated immediately after the substantiation of the measurement model to assess the inner/structural model. This section provides a thorough discussion and elucidations of each step of the above data analysis procedure based on the PLS-SEM applied algorithm.

I)- Specification of measurement and structural models	
II)- Weighing the Outer/Measurement models:	
A-Reflective Measurement Models	B- Formative Measurement Models
-Internal consistency : (Composite reliability).	-Convergent validity
-Convergent validity,	-Collinearity between Indicators.
-Factor Cross Loadings,	-Significance and relevance of outer weights.
-Average variance Extracted.	
-Discriminant validity.	
III)- Weighing the Inner/Structural models:	
Path coefficients (Hypothesis Testing).	
Coefficients of determination (R ²).	
Predictive relevance (Q ²).	
F ² effect sizes.	
Goodness of Fit	
Mediation Analysis.	

Table -3: Data Analysis Procedure Based on the PLS-SEM Applied Algorithm. Adapted from Hair et al., (2017)



4.6. PLS-SEM Structural Model Results:

4.6.1. Path Coefficient: Hypothesis Testing & Structural Relationship

In this study, the *P*-value approach embarks on probing into the research data relative to the hypothesis in view of accounting for the statistical significance.

Therefore, *P*-value results and interpretations are grounded on the assumption of being statistically significant or non-significant. In this respect, the validation or invalidation of the hypotheses depends on the cut-off 0.05. To determine the statistical significance, *P* values are partitioned into three outcomes: (a) $p < 0.05$; (b) $p > 0.05$; and (c) $p = NS$ (Kock, 2014). When the *P*-value achieves beneath the significance limit (0.05), the null hypothesis is immediately disproved.

Table -4: Path Coefficient: Hypothesis Testing & Structural Relationship

Hy po	Relationships	Std. Beta	S (M)	Std. Error	T- value	P- value	Decision
H1	Financial Autonomy ->Total Quality Mgt	0.650	0.649	0.007	97.077	0.000	Supported
H2	Governance Autonomy ->Total Quality Mgt	0.024	0.024	0.006	3.797	0.000	Supported
H3	Academic Autonomy ->Total Quality Mgt	0.371	0.371	0.006	65.470	0.000	Supported
H4	Total Quality Mgt ->Job satisfaction	0.656	0.657	0.033	20.030	0.000	Supported
H5	Total Quality Mgt ->Org commit	0.911	0.910	0.013	72.051	0.000	Supported
H6	Job satisfaction ->Org Perform	0.752	0.753	0.021	36.453	0.000	Supported
H7	Org commitment ->Org Perform	0.285	0.285	0.023	12.645	0.000	Supported

The displayed outcomes in the table 4 provide the statistical grounds (path coefficients, standard errors and t-statistics) for the ensuing analytical accounts for the validation or invalidation of the individual hypotheses predicted throughout this study. The bootstrapping procedure has been applied for the generation of the subsamples (Hair et al. 2011).

Fig -3: The Research Least Squares Path Model

4.7. Empirical Results of Hypotheses Tests:

4.7.1 Coefficient of Determination (R²)

The R² value (0.966) reveals that a sizeable value of the R² is achieved. This denotes that the variable leadership style depicts 96.6 % of the constructs of the dependent variable organizational performance (Henseler et al., 2009). This outcome reflects the adequacy and soundness of the structural model of this study.

Table -5: Coefficient of Determination (R²):

	R Square	R Square Adjusted	
Org performance	0.966	0.966	High

4.7.2. Effect Size

The ensuing table projects the effect sizes of the supported relationships of this study. Cohen (1988) identifies three degrees of path significance related to effect size values: (1) the values greater than 0.35 insinuate intensified impact; (2) the values ranging from 0.15 to 0.35 are characterized with intermediate effect; (3) and the values between 0.02 and 0.15 denote limited or inconsequential effect.

In the meantime, the values that score less than 0.2 are deemed uninfluential, and therefore, unworthy of consideration even when the fitting P values are statistically substantiated. Accordingly, any effect size beneath 0.02 means the utter absence of any effect (Kock, 2013).

Table -6: Effect Size

	Org Performance	
Job satisfaction	0,752	Large
Org commitment	0,285	Medium

Therefore, there is a substantial effect (0.75) in the relationship between job satisfaction and organizational performance, whereas 0.28 denotes a medium effect in reference to organizational commitment and organizational performance supported relationship.

4.7.3. Predictive Relevance Q²

For this arithmetic, the endogenous latent variable (the criterion) is harnessed for the computation of the predictive relevance of each latent variable in the model

(Kock, 2013). For the appraisal and recognition of the adequacy of the model's predictive relevance, the value 0 forms the barometer around which the Q² validation or invalidation is resolved. Therefore, in case the Q² value exceeds zero for a particular endogenous latent variable, the fitting variable displays predictive relevance. However, the Q² values that are equivalent to or beneath zero demonstrate a lack of predictive relevance (Kock, 2013).

Table -7: Predictive Relevance Q²

Total	SSO	SSE	Q ² (=1-SSE/SSO)	
Org performance	13340.000	2549.346	0.809	High

The table 7 provides evidence of the high predictive relevance of the PLS structural model as organizational performance's rating largely exceeds the value 0 and achieves 0.80.

4.7.4. Goodness of Fit of the Model (GOF):

The goodness-of-fit index (GoF) seeks the measurement of the entire fit of the suggested PLS path model to account for its adequacy with the empirical findings. This test gives evidence of the plausibility of the integrality of the research model. Therefore, the decision whether GoF value reflects sizeable (over 0.36), intermediate (0.25), inadequate fit (0.10), or no fit at all (btw 0 and 1) is made through the computation of the R square and AVE to generate the GoF of the whole model (Wetzels et al., 2009).

Table -8: Goodness of Fit of the Model (GOF)

R Square	0.966	
AVE	0.817	
GOF	0.888	Large GoF

According to the above Table 8, it can be concluded that the GoF model of this study is substantially large (0.88), which accounts mostly for the plausibility and validity of the global PLS path model of this study.

4.8. Mediators Analysis: Preacher & Hayes' (2008) Method

A two-stage process has been initiated to conduct mediation analysis. Thus, the significance of the straightforward impact that the exogenous variables exert on the endogenous variables (direct effect) has been accounted for before incorporating any mediation analysis (indirect effect) by means of Bootstrapping.

4.8.1 Phase One: Total Effect

Table -9: Total Effect

	Path a	Path b	Indirect Effect	SE	t-value	Bootstrapped Confidence Interval		
						95% LL	95% UL	
TQM-> Job Satisf	0,656	0,752	0,493312	0,026	18,9735385	0,442352	0,544272	YES
TQM-> Org Commit	0,909	0,285	0,259065	0,026	9,96403846	0,208105	0,310025	YES

The running of PLS allows for the assessment of the path model for each bootstrap sample. In the meantime, subsequent to the examination of the path coefficient, the outer model of the inner model is gauged through the running of T-statistic ‘outer loadings’ (Means, STDEV, and T-values). The outer model loadings are appraised to be highly significant if the entirety of the T-statistics scores above 1.96 (Wong, 2013). This requirement has been achieved in this study. As shown in the above table, the aggregates of the T Statistics exceed predominantly 1.96. Thus, Total Quality Management and organizational performance achieve the rate of 28.99. Ultimately, the model’s significance depends on achieving the required 0.05 rate after the carrying out of the bootstrapping procedure. The current study model has been established to be highly significant as the P values are below the cut-off 0.05. Therefore, the correlations between the independent variables (total quality management) and the dependent variable (organizational performance) through the mediators (job satisfaction and organizational commitment) have been proven highly significant as they obtain the values of 0.003 and 0.000, respectively.

4.8.2. Phase Two: Lower and Upper Level

The bootstrapping analysis has shown that all direct effects, Total Quality Management-> Org Performance $\beta = 0.753$ are significant with t-values of 3.034 and 28.999, respectively. In the meanwhile, the indirect effects and bootstrapped confidence intervals for mediation hypotheses are reported in the second phase.

Table -10: Lower and Upper Level

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistics (O/STDEV)	P Value	
TOTAL QTY MGT->ORG PERFORMANCE	0.753	0.752	0.026	28.999	0.000	Significant

This study does not diverge from the conventional confidence interval of 95%, which is heavily advocated in the literature and extensively implemented throughout empirical studies. 95% is analogous to the threshold 0.05 applied in P-value. Confidence intervals 95% can provide similar (or even more precise) inference of the statistical significance to the cut-off 0.05 applied in P-value. To proceed with the 95% confidence intervals, they are estimated to account for their upper and lower bounds. Thus, in the case where the value zero belongs to the interval's specific parameters, the hypothesis is disproved. However, when the value zero does not fit within the given range (falls outside) of the interval the hypothesis is vindicated.

In plain English, the lack of statistical significance is proven when the value 0 is within 95%; whereas, the statistical significance is substantiated when the value 0 is beyond 95%.

5. DISCUSSION AND IMPLICATIONS

The empirical evidence from TQM reveals that the five proposed hypotheses underlying Total Quality Management were validated. The hypothesized paths underlying the three dimensions of TQM proved to be highly significant. Therefore, the positive/negative correlations between financial autonomy, academic autonomy, and administrative autonomy and total quality management were established, thus providing substantiation to their effects on employees’ performance.

Financial autonomy -

- **Hypothesis 1:** Financial applications will have a **negative** effect on **Total quality management** implementation in Moroccan higher education, which affects employees’ performance unfavourably.

The PLS coefficient outputs establish the validity of the unfavourable impact that the inadequate application of financial autonomy bears upon the execution of total quality management strategies in the studied universities. Thus, with a Beta value of $\beta=0.650$, T value= 97.077, and P value= 0.000, this hypothesis has been corroborated and supported.

This study drew a significant inference regarding the correlation between financial autonomy and TQM. Therefore, it authenticated the two indicators of financial autonomy: state funding dependency and accounting inefficiency. It was found that both items translate this correlation. On that account, findings associated the negative effect of the financial applications to the lack of independence in managing the resources provided either by the state or other external funding entities. Thus, the respondents rated the universities’ financial autonomy in terms of the extent of their reliance on state funding and their capacity to raise extra resources and revenues. They argue that educational institutions do not handle the corporate model of financial management (setting tuition

fees, taking on loans, investing, etc.) adequately. The reason for this lies in the inability to raise public funds and the incapacity to allocate them according to these institutions' needs and priorities.

In the meanwhile, In terms of accounting, it accounts for the absence of an independent system within universities, which still count on dashboards to provide general and analytical accounting (Bencheikh & Ellabadi, 2013). In this sense, the results showcase that most HEIs do not have accounting entities that enable them to order or oversee their income or expenditure. This entails a complete absence of independent and well-defined internal accounting bodies within Moroccan universities. This fact fosters state control over tertiary education in the kingdom. The malfunctioning or lack of accounting bodies in Moroccan universities hinders self-governance and, therefore, affects the financial autonomy of universities negatively. It is self-evident from the above revelations that a better higher education performance in Morocco is contingent upon more financial independence and reliable internal accounting systems. The financial inadequacy also embodies the restrictions imposed on universities to run budgets. In this regard, Olsen (2007) rejects the notion, which advocates that universities should serve the external agenda of the state, and he argues that universities should possess their objectives. Part of these schemes, there should be a total quality management program with a specific budget and plan of execution. McDaniel (1996) examines the levels of autonomy from financial, managerial, educational, and human resources perspectives. He concludes that the wise application of financial independence lies in the universities' ability to separate investment budgets and operational budgets. This denotes that any failure to handle financial decisions at the internal level of the university will affect any plan for the carrying out of a TQM approach. Direct financial control should not be exercised over universities through regulations. The state should be in charge of setting the general rules for the functioning of the universities (Dobbins & Knill, 2009, p. 408).

Meanwhile, self-governance denotes a high financial autonomy and decentralized decision-making process. Total financial autonomy is the hallmark of the success of any quality management model, as the state should not interfere with the university budget. The university executives in charge of governance and managing universities should enjoy extended freedom in taking financial decisions. This study draws the conclusion that self-governance of the financial matters is the most crucial attributes that contribute directly to the autonomy of an educational institution. Most of the descriptions of university autonomy focus on the extent of independent and self-steer that universities enjoy in terms of running their budgets. Therefore, the inability to manage the existing funds, the absence of accounting bodies, and the scarcity of extra sources were proven to impede any total quality management roadmap in Moroccan HEIs.

Academic autonomy –

- ***Hypothesis 2: Academic applications*** will have a **positive effect** on **Total quality management** implementation in Moroccan higher education, which affects employees' performance favourably.

Results from the PLS test lay out that the aggregate of T-statistics rates $3.797 > 1.96$, (Wong, 2013) and P-value achieves 0.000. Accordingly, with the path coefficients matching largely the required norms, the accuracy of this hypothesis has been validated. Thus, the academic applications that include autonomous decision-making at the level of curricula design and adoption, modularized system, semesters, and cycles are found to have a positive effect on TQM and organizational performance in Moroccan Higher education.

These results confirm the genuine implementation of the reforms related to the academic issues in the Moroccan HEIs and their noticeable impact on the ground. The raters conceive the academic components of university independence as very effective. This is apparent in managing academic issues, ensuring efficient and customized decisions at the level of choosing an appropriate curriculum, organizing the educational year, setting standards for students' enrollment and submission, and optimizing scientific research. A great deal of the corresponding research has affirmed that the execution of an appropriate TQM matrix that involves academic schemes can have a significantly positive influence on performance. On that account, Altbach (2001) underscores the huge influence of academic freedom on upgrading achievements. Academic freedom affects the learning-teaching process directly as it denotes freedom of teaching and doing research for professors, and freedom of acquiring knowledge and learning for students (Altbach, 2001.p, 206). Peak (1995) sheds light on the benefits of TQM implementation in HEIs and lists many advantages such as the upgrade of the learning-teaching processes, the creation of motivating educational settings, curricula enhancement, increasing training services, and controlling costs. Nonetheless, Dooyoung et al., (1998) go against the stream and highlight the prospect of missing the preplanned organizational objectives despite the execution of TQM.

Administrative autonomy –

- ***Hypothesis 3: Administrative applications*** will have a **positive effect** on **Total quality management** implementation in Moroccan higher education, which affects employees' performance favourably.

The P coefficients yield statistical reports that adhere to the PLS directions regarding the validation of the hypothesis. The significance of the key indicators, Standard β =

0.024, T value= 3.797, and P value= 0.000, provide evidence of the third hypothesis and confirm its authentication. Accordingly, adopting modern methods of governance based on decentralization, deconcentration, and self-governance enhances the administrative services and exerts a positive effect on implementing TQM and performance in Moroccan higher education.

The research findings establish the Moroccan pattern of deconcentration as built upon the delegation of responsibilities and decision-making power to the medium authorities such as provinces and regions, and local levels the universities' boards and general councils. This study reaches a conclusion, which supports the need for strong and independent leadership, that implements adequate and comprehensive management to achieve excellence in higher education. Respondents consider that for the effective carrying out of TQM, it seeks to decentralize decision-making and modify the concept of governance. It also needs to make the administration more resilient and the human resources more competent and committed to the improvement of the service they provide. It was also reported that internal governance entails an effective decentralized government and independent administrative structures within HEIs. Diverse studies in this field have inferred that the implementation of any TQM program requires genuine decentralization and self-governance. In the same vein, Davidovitch (2015) states that governance of higher education is embodied in the ability of the administrative and governance structures to make decisions. Woon (2000) makes clear that the execution of the different aspects of TQM associated with managerial productivity, process management, customer focus, and satisfaction exercise positive effects on performance. Abdullah et al., (2010) examine TQM soft effect on the overall performance of the organization and draw the conclusion that factors such as managerial commitment, customer focus, and connections with subordinates have a positive influence on the ultimate performance.

- **Hypothesis 4:** The implementation of **Total quality management** will lead to **higher job satisfaction** among employees.

The claimed correlation is established with ease since the results obtained from PLS vindicate the conformity of the assumption with $\beta = 0.656$, T value (T-statistics) of 20.030, and P value= 0.000.

This research on employees' perceptions of the implications of TQM practices on job satisfaction has concluded that many aspects of soft TQM practices, namely customer focus and organizational teamwork, have noticeable impacts on job satisfaction. Indeed, employees confirmed that the main target of implementing TQM strategies is to set up an adequate environment that motivates members to do their utmost to achieve the objectives of the organization. The outcomes assert that this type of work atmosphere guarantees high job satisfaction and triggers employees' creativity and innovation as they strive to solve problems and collaborate with workmates, and it fosters teamwork communication.

Korunka et al., (2003) have been especially keen on assessing the outcomes before the alterations brought forth by quality management as well as the outcomes observed at different intervals during the execution of the quality management strategy. The findings categorize employee outcomes according to various circumstances, thus depicting them as contextual outcomes. Schlesinger & Heskett (1991) attributes job satisfaction to subordinates' conceptualization of service quality and their self-perception of service abilities. A well-planned execution of total quality management can bring about considerable changes in organizations. These transformations can bear upon some of the most influential organizational behaviours, such as career satisfaction.

- **Hypothesis 5:** The implementation of **Total quality management** will lead to a **higher commitment** of the employees to their organization.

The statistical data lend support to this relationship as standard β scores 0.911, T-statistics exceed considerably 1.96 (Wong, 2013), and the defining indicator P-value meets the requirements of $p < 0.05$ with the strong significance of 0.000.

The current study has proven the straightforward correlation between TQM and commitment to organizations. A large proportion of raters asserted that TQM alters the environment of work as well as various aspects of quality management for better engagement and comfort of employees in the workplace. Yet, other respondents warned that TQM could lead to reversed outcomes if it is not well-planned and does not involve all stakeholders, including managers and employees. In this respect, Lawler et al., (1998) find out that engaged personnel in the workplace demonstrate a higher inclination to be satisfied, which intensifies their commitment to the firm. In the meanwhile, the success or failure of any TQM plan relies in the first place on the commitment of the top management (Sohal & Terzivski, 2000). Brooks & Zeits (1999) have carried out a large scale investigation of the employees' commitment to TQM execution among healthcare personnel and affirmed its close link the obtained achievements. On the whole, this study came up with significant findings that provided substantial evidence of the significant relationship between higher commitment, TQM implementation and organizational outcomes. Nevertheless, several researchers have provided many counter-arguments regarding the so-called positive impact/link between quality management practices and employees' satisfaction and commitment. Wood (1999), for instance, contends that many repercussions such as high pressure and heavy supervision may result from teamwork underlying the execution of TQM schemes.

6. ANALYSIS OF THE RESEARCH QUESTIONS

- The first research question proposed was, to what extent are Moroccan universities able to implement the

three major applications of **TQM** *financial, academic, and administrative* reforms?

To answer this question, TQM application in HE was perceived as a strategic management system which integrates the financial, administrative (governance), and academic aspects to upgrade education and related services in higher education. Therefore, the combination of these components together with appropriate training and commitment to executing the quality vision was deemed indispensable to implement TQM and achieve high-performance and excellence. Meanwhile due to the noticeable hurdles facing TQM execution Moroccan universities are still reluctant to develop the practices of quality assurance through the execution of TQM as an integrated measurement model of internal assessment. In the meanwhile, this finding does not deny the noticeable progress that universities achieved in terms of establishing academic and administrative autonomies.

These factors helped to provide predictions regarding university performance based on their ability to embrace and carry out well-defined TQM schemes. Therefore, 35 % of HEIs were deemed to acquire the minimum requisites to apply TQM on a regular basis. Hence, from the outcomes of this study, it was evoked that TQM implementation is very slow, which bear significant ramifications on the development of universities performance.

➤ The second research question proposed was, how does **Total Quality Management** affect **organizational performance** in Moroccan tertiary education?

These outcomes entail rich inferences in terms of the effect exerted by each of these items on HEIs. For instance, most financial items outcomes indicate the slow pace in the university shift from the state oversight to self-governance. By way of illustration, external auditing and staff recruitment were found to be still monitored by the state. In regards to TQM implementation, it was found that the financial perspective lies behind the inefficiency or absence of quality management programs, which bear upon the negative performance of organizations. The academic and governance positive effects on organizational performance provide aspiration of progress and effectiveness in terms of TQM package execution once the monetary issues are resolved. This also suggests that an ongoing restructuring of the administration at the level of these three major applications is currently taking place in public universities. Yet, the financial factor still constitutes a hindrance to the adoption of TQM as an integrated assessment model in Moroccan HEIs.

6.1. Mediation Analysis

- ***Hypothesis 6:*** Job satisfaction mediates the relation between **total quality management** and **organizational performance**.

The effect of the Job Satisfaction. The indirect effect is positive and significant between Total Quality Management and organizational performance. T-value 18,973, which is a very strong value that meets largely the requirement >1.96 (Wong, 2013), the indirect effects 95% Boot CI Bias Corrected: [LL = 0,442 UL = 0,544] indicates that confidence intervals does not entail zero demonstrating there is a mediation (Preacher and Hayes, 2008).

The research outputs display that a well-planned execution of total quality management can bring about considerable changes in organizations. These transformations can bear upon some of the most influential organizational behaviors, such as career satisfaction. Respondents report that TQM implementation can alter the environment of work as well as various aspects of quality management for better engagement, comfort, and performance of employees in the workplace. It was revealed that this type of work atmosphere guarantees high job satisfaction and triggers employees' creativity and innovation as they strive to solve problems and collaborate with workmates. In this regard, Korunka et al., (2003) have been especially keen on assessing the outcomes before the alterations brought forth by quality management as well as the outcomes observed at different intervals during the execution of the quality management strategy. Meanwhile, Deming (1986) puts the blame on management for plenty of quality problems in organizations hence the need for having quality products if the achievement of optimum excellent is sought. Clearly, teamwork has been highlighted in TQM plans. It has taken many shapes and forms in TQM. For instance, quality control (QC) and quality improvement of teamwork. The effect of teamwork during the execution of TQM has also been identified as a booster of motivation and effectiveness, which highlights job satisfaction (Rahman & Bullbock, 2002). What is more, extensive research on employees' perceptions of the implications of TQM practices on job satisfaction has concluded that many aspects of soft TQM practices, namely customer focus and organizational teamwork, have noticeable impacts on job satisfaction. In all, this study reiterated the mediating effect of job satisfaction in the relationship between total quality management and organizational performance.

- ***Hypothesis 7:*** Organizational commitment mediates the relation between **total quality management** and **organizational performance**.

The effect of the Organizational Commitment. The indirect effect is positive and significant between Total Quality Management and organizational performance. T-value 18,973, which is a very strong value that meets largely the requirement >1.96 (Wong, 2013), the indirect effects 95% Boot CI Bias Corrected: [LL = 0,442 UL = 0,544] indicates that confidence intervals does not entail zero demonstrating there is a mediation (Preacher and Hayes, 2008).

Most surveyed organizations recognize the significance of total quality management to employee commitment as a means to keep costs down and upgrade performance, service, and product quality. Accordingly, the success or

failure of any TQM plan relies in the first place on the commitment of the top management. Furthermore, a significant result exhibits that affective commitment is very decisive when it comes to deciding to remain in the firm or not. Employees associate their willingness to stay in their jobs to their emotional affinity and attachment to their organizations. It was argued that engaged personnel in the workplace demonstrate a higher inclination to be satisfied, which intensifies their commitment to the firms and upgrade their performance. There is a consensus among organizations that committed subordinates are extremely contributive to the expansion and success of their firms. Brooks & Zeits (1999) have undertaken a comprehensive investigation of the link between employees' commitment to TQM execution among healthcare personnel. The results have provided substantial evidence of the significant relationship between commitment and organizational outcomes. Nevertheless, several researchers have provided many counter-arguments regarding the so-called positive impact/link between quality management practices and employees' satisfaction and commitment. Wood (1999), for instance, contends that many repercussions such as high pressure and heavy supervision may result from teamwork. TQM can lead to reversed outcomes if it is not well-planned and does not involve all stakeholders, including managers and employees. This paper confirms the assumption that there is a mediation role of job organizational commitment between the relationship of total quality management and organization performance.

7. CONCLUSION

The effect of the Total Quality Management system on Moroccan tertiary education was approached from the three aspects financial, academic, and administrative impacts. These correlations were scrutinized following the positive-negative effects that the former has on the latter and the benefits of TQM in the Moroccan context. The findings revealed very significant and positive correlations between academic and administrative aspects of autonomy and organizational performance. Whereas, an insignificant relationship was revealed between financial autonomy and university performance.

These significant outcomes denote that in case that the integrality of the TQM applications requirements is made available, they would contribute to favourable employees' performance with slightly different degrees of influence from one aspect of autonomy to another. Correspondingly, the findings associated negative impact to the correlation between the indicators of financial autonomy: state funding dependency and accounting inefficiency, TQM, and employees' performance. This negative result is mainly due to the lack of independence in managing funds as well as the absence of professional accounting entities within most HEIs. Meanwhile, this study's findings depict the two subscales of academic

autonomy, curricula design and adoption, and modularized system, semesters, and cycles, as conducive to the superior performance on the part of the university administrators, middle managers, and subordinates. Another significant output was observed in regard to the administrative autonomy's indicators (decentralization, deconcentration, and self-governance), which were proven to explain the correlation positively with organizational performance. Concerning the fourth and fifth assumptions, they were able to vindicate the substantial influence of total quality management on generating both higher job satisfaction and higher organizational commitment among employees.

Hurdles – There is evidence from the above findings, which supports this apparent reluctance and boosts the argument that higher education in Morocco falls short of some of these requisites. In this respect, in light of the economic constraints, the financial factor demonstrated the difficulties that most of the higher educational institutions suffer from namely, finding resources, reducing expenditures, resource allocation, and budgetary management. Additional revelation concerns the universities' partial independence to decide on financial matters without interference from the government or other funding entities, which hinders their ability to raise public funds and the capacity to allocate them according to their needs and priorities. Another significant impediment to the sound execution of TQM was the non-existence of well-defined accounting bodies within universities.

What is more, most TQM programs require special budgets. These funds can be provided by the state or other external funding entities with all the bureaucracies and complexities that this process entails. Professional training regarding TQM expertise and skills is another obstacle revealed in the outcomes. In default of regular professional training, workshops, and seminars, the notion of quality management remains an occasionally discussed concept in many institutions. The institutionalization of TQM requires that everyone in the university believes in the concept of quality and works towards its systematic implementation within a standardized framework. In all, despite the few attempts to keep track of internal performance and due to the aforementioned reasons,

Yet, they still assume the responsibility of allocating and managing budgets as well as organizing and developing different mechanisms to undertake quality check at HEIs. Thus, creating permanent units and committees of quality examination is an important instrumentality to put into effect and overcome any financial or training obstacles.

The contribution of this article to the international research lies in its application of a worldwide used model to quantify and weigh the quality management patterns in the Moroccan context to provide insight into the ramifications on employees' performance.

The current research strategy fits into the cross-sectional type of surveys, which is quite distinct from its longitudinal counterpart. Having stressed this limitation, the execution of a longitudinal method would have entailed a more effective observational process to depict the alteration of

quality management and organizational performance at different intervals over time. Meanwhile, this was made impossible due to the recurrent administrative restrictions encountered throughout the studied universities. Therefore, Future scholarly research could develop organizational performance management model by undertaking a thorough longitudinal course of action to keep track of the studied phenomena.

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Total Quality Management: Financial autonomy to recruit is monitored by the state

TQM_fincl_auto_undrtk_govng_brds

Total Quality Management: Financial autonomy is undertaken by the governing boards

TQM_fincl_auto_ensrd_accnt_bdy

Total Quality Management: Financial autonomy is ensured by an accounting body.

TQM_fincl_auto_ensrd_fincl_acc_bdy

Total Quality Management: Financial autonomy is ensured by a financial accounting unit

TQM_fincl_auto_affct_absnc_inffncy_accnt_bdy

Total Quality Management: Financial autonomy is affected by the absence or inefficiency of the accounting body.

TQM_fincl_auto_affct_absnc_fnds

Total Quality Management: Financial autonomy is affected by the absence of funds.

TQM_fincl_auto_fr_bdget

Total Quality Management: Financial autonomy of free budgeting

TQM_fincl_auto_trnsfr_fnds

Total Quality Management: Financial autonomy of transfer of funds

TQM_fincl_auto_mng_tuton_fee

Total Quality Management: Financial autonomy to manage tuition fees

TQM_fincl_auto_mng_rvnue

Total Quality Management: Financial autonomy to manage the revenues

TQM_fincl_auto_montr_stffg

Total Quality Management: Financial autonomy to monitor staffing

TQM_fincl_auto_mng_univ_shft_stat_ovrsght_gov

Total Quality Management: Financial autonomy to manage the university shift from the state oversight to self-governance.

Academic Autonomy

TQM_acdmc_auto_stnrd_gols_prgm

Total Quality Management: Academic autonomy to set standards, goals and programs

TQM_acdmc_auto_tech_pblsh

Total Quality Management: Academic autonomy to teach and publish

TQM_acdmc_auto_cndct_rsrch

Total Quality Management: Academic autonomy to conduct research

TQM_acdmc_auto_std_sbmsn

Total Quality Management: Academic autonomy of students' submission.

TQM_acdmc_auto_stf_rcrtrt

Total Quality Management: Academic autonomy of staff recruitment

TQM_acdmc_auto_crclm_dsgn_

Total Quality Management: Academic autonomy of curriculum design

TQM_acdmc_auto_acdmc_yr

Total Quality Management: Academic autonomy to manage academic year.

TQM_acdmc_auto_otpmz_rsrch

Total Quality Management: Academic autonomy to optimize research

TQM_acdmc_auto_std_aqr_kwlg

Total Quality Management: Academic autonomy of students to acquire knowledge

TQM_acdmc_auto_grnt_fav_prf_univ

Total Quality Management: Academic autonomy guarantees a favorable performance of your university

Governance Autonomy

TQM_gov_auto_slf_gov_mde

Total Quality Management: governance autonomy of self-governance mode

TQM_gov_auto_dcenrlzd_system

Total Quality Management: governance autonomy of a decentralized system

TQM_gov_auto_dconrttd_system

Total Quality Management: governance autonomy of a deconcentrated system

TQM_gov_auto_shft_mde_gov

Total Quality Management: governance autonomy shifts the mode of governance

TQM_gov_auto_mngd_intrnl_gov_brds

Total Quality Management: governance autonomy is managed by the internal governing boards

TQM_gov_auto_afct_pstvly_perf

Total Quality Management: governance autonomy can affect positively performan

Appendix A

Data Coding

Financial Autonomy

TQM_fincl_auto_aditnl_fnds

Total Quality Management: Financial autonomy to manage additional funds

TQM_fincl_auto_mng_avbl_bdgets

Total Quality Management: Financial autonomy to manage available budgets

TQM_fincl_auto_aloc_fnd

Total Quality Management: Financial autonomy to allocate funds

TQM_fincl_auto_recv_stat_extr_fnds

Total Quality Management: Financial autonomy to receive the state and extra funds

TQM_fincl_auto_rcrut_employ

Total Quality Management: Financial autonomy to recruit employees

TQM_fincl_auto_rcrut_mntrd_stat

Appendix B/ TQM Questionnaire

5= strongly agree 4= agree 3= neutral 2= disagree 1=strongly disagree

Financial Autonomy/ Applications		
1	Your university has enough freedom to look for additional funds aside from the sources guaranteed by the state.	5 4 3 2 1
2	Your university manages the available budgets independently.	5 4 3 2 1
3	Your university raises public funds and allocates them according to its needs and priorities.	5 4 3 2 1
4	Your university strikes a balance between receiving the state funds and raising additional revenues.	5 4 3 2 1
5	Your university has the freedom to recruit and contract with teachers and administrators according to its needs and budget.	5 4 3 2 1
6	The state predetermined budgetary posts and standards of recruitment tightly monitor the hiring of the teachers and administrative staff.	5 4 3 2 1
7	The governing boards exercise internal governance and take financial decisions related to allocating resources and preparing financial plans.	5 4 3 2 1
8	Your university has a well-defined accounting body.	5 4 3 2 1
9	The accounting body takes the form of a financial accounting unit	5 4 3 2 1
10	The absence or inefficiency of the accounting body affects the financial situation and performance of your university.	5 4 3 2 1
11	The absence of funding independence from the state affects negatively the performance of your university.	5 4 3 2 1
12	How would you rate the following manifestations of financial autonomy as the major prerequisites for an independent financial management of your university? <ul style="list-style-type: none"> • Free budgeting in your university. • Resilient transfer of funds. • Capacity to manage tuition fees • Ability to monitor the revenues of the university. • Clear standards for staffing. 	5 4 3 2 1 5 4 3 2 1 5 4 3 2 1 5 4 3 2 1 5 4 3 2 1
13	Your university is shifting from the state oversight to self-governance.	5 4 3 2 1
Academic Autonomy/ Applications		
1	Your university has the ability to set its standards, goals and educational programs.	5 4 3 2 1
2	Your university guarantees the freedom of individual academics to teach, research, and publish without being subject to undue or excessive interference.	5 4 3 2 1
3	There is a total freedom of carrying out research and designing lectures.	5 4 3 2 1
4	Your university has the total freedom of setting standards for students' selection and submission.	5 4 3 2 1
5	Your university has the freedom of staff recruitment.	5 4 3 2 1
6	Your university has the freedom of curriculum design and development.	5 4 3 2 1
7	Your university has the freedom to manage the modularized system and semesters, and the academic year.	5 4 3 2 1
8	Your university has the freedom to optimize scientific research.	5 4 3 2 1
9	Students have total freedom to learn and acquire knowledge.	5 4 3 2 1
10	Academic independence guarantees a favorable performance of your university.	5 4 3 2 1
Governance Autonomy/ Applications		
1	Your university adopts a self-governance mode of management in which executives make decisions independently of the control of the higher authorities.	5 4 3 2 1
2	Your university adopts a decentralized system of management in which the university enjoys an effective decentralized government and independent administrative structures.	5 4 3 2 1
3	Your university adopts a deconcentrated style of management in which responsibilities and decision-making power are delegated to different departments and university boards.	5 4 3 2 1
4	Your university is progressing gradually from the hierarchical mode of governance to a more decentralized and deconcentrated mode of governance.	5 4 3 2 1
5	The internal governing boards have a complete freedom to govern the affairs related the university.	5 4 3 2 1
6	The adoption and implementation of the three elements of managements (deconcentration, decentralization, and self-governance) can affect positively the performance of the executive and administrative services at your university.	5 4 3 2 1