

THE IMPACT OF A MANAGEMENT MODEL ON THE CONTINUOUS POSITIVE CHANGES IN HUMAN CAPITAL AND THE EFFICIENCY OF PUBLIC ADMINISTRATION IN THE EDUCATION SECTOR

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ABSTRACT: *TQM models are disseminated worldwide, regardless of the specifics of the institutional and cultural environment. The study focuses on the application of HR practices, based on TQM, in the specific institutional environment of local education institutions, in modern Greece. The provision of high-quality and effective administrative support to schools can contribute to their smooth operation. The staff of the Directorates of Education in the Region of Central Macedonia comprises the survey population. The subject in question was examined using quantitative methods and the methodological approach of regression analysis has led to the collection of reliable data. The empirical study examined the current situation with regard to HRM and the attitudes of employees in the structural units of public education governance. Results of the analysis show that HR practices implementation affects public officers' satisfaction and motivation. The development of the practical-applied structural model provides top managers (of local educational units) with indicators and evidence-data-based results for the decision-making process regarding HRM activities. The effect of modern practices has an important impact on employees' motivation that produces positive changes in human capital and increases the contribution of HRM to the organizational performance and the quality of public services in the field of education.*

KEYWORDS: Public Administration, HRM, TQM, local educational leadership, satisfaction, quality services

INTRODUCTION

Over the past decade, Greece has faced a sustained recession that has greatly affected its economy and society. This challenging context is affecting many dimensions of Greek lives and the education system. The impact of a well-functioning, efficient and effective educational system on the welfare of societies is worldwide unquestionable. "After a decade of severe fiscal crisis also impacting education, Greece is looking ahead. Now is the time to invest effectively in education and define a forward-looking path for Greece. Drawing on evidence and international experience, the OECD review highlights policy options that can guide and enhance current reform efforts in Greece in four areas: effective governance; policies for school improvement; efficiency, equity and quality of the

education system; tertiary education” (OECD, 2018). “A recent OECD Public Governance Review of Greece identified a variety of issues in public sector human resources management (HRM) in terms of ensuring that employees with the right talent and skills are being utilized effectively. The economic and political climate in Greece has highlighted these challenges, which if not addressed, could have an adverse impact on the future quality of education. In particular, the selection, training and promotion procedures of civil servants, including those working in education, have not been updated as necessary to deliver the reforms required for education improvement” (OECD, 2018). The OECD report suggests that the lack of clarity in the human resource strategy and the governments’ difficulties in implementing reforms and in modernising systems “limits the ability of management to increase efficiency in service delivery, promote organisational innovation and forward plan” (OECD, 2011). The demand for public services that focus on the needs of all stakeholders necessitates the adoption of best practices used in modern governance based on a strategy with clear goals (Michalopoulos, N., 2003). There are complex and dynamic interrelationships between total quality management (TQM), HRM, organizational performance and employee satisfaction through the prism of public sector management. The methods and practices for HRM in the work teams are considered as a key tool for improving the human capital and for increasing the motivation of public officers.

The current study focuses on the development of the Greek Public Administration in the Education sector. A critical weakness of the Greek Administration in the Education sector is the “highly centralized budgeting arrangements are associated with limited discretion for education actors, and the focus of the system is on control of inputs rather than continuous improvement in relation to measured outcomes. The longer-term objectives linked to this vision cannot be realized overnight, as they depend as much on cultural change and the development of capacity throughout the education system as on legislation and central government policy decisions”(OECD, 2017a).

The administration of education is practiced by a number of educational and administrative bodies on various levels of the national educational system, ranging from the Ministry of Education to the school unit (Eurydice, 2018a). According to the Greek National Educational System, the Directorates of Primary and Secondary Education are responsible for management and governance of schools, on a local level (Ministry of Education and Religious Affairs, 2018a). On a local level, administrative services are provided and educational policies implemented by the Directorates of Primary and Secondary Education, which support and supervise administrative, economic and educational issues, and also guide and coordinate the work of schools (Eurydice, 2018b). Thus, the administrative services of the Directorates of Education (as intermediate structural units between the Ministry of Education and schools) become ever-important for the provision of the national educational system in the sector of school governance.

It is worth mentioned that “the government sources of expenditure on education (apart from international sources) can be classified into three different levels of government: central, regional and local. In some countries, education funding is centralised, while in others it can be decentralised following fund transfers among the different levels of government. Additionally, in recent years, many schools have become more autonomous and

decentralised. They have also become more accountable to students, parents and the public at large for their outcomes” (OECD, 2017b). The results of the OECD Programme for International Student Assessment (PISA) suggest that “when autonomy and accountability are intelligently combined, they tend to be associated with better student performance” (OECD, 2016). Hence, a long-term vision for reform includes local flexibility on budgeting linked to decentralized decision-making, the development and professionalization of school leadership, and effective ways of measuring outcomes. “The OECD report argues that the formal legislative, financial and human resource delegation of responsibilities to local actors needs to take place gradually and be linked to sustained efforts to develop the capacity to exercise new responsibilities” (OECD, 2017a). Decentralized budgets and decisions can assist both efficiency and local responsiveness. In this context, the effective management of the local Directorates of Education as the institutional units of the local educational leadership in schools will be particularly critical. So is the capability of the regulatory and administrative structures to stimulate or hinder any societal substructure which have impact in society's welfare. This study perspective is essential both for enhancing HRM practices' immediate effect and for improving them by practical-applied approaches and methods as a means to increase the efficiency and effectiveness of public organizations in the specific sector of education.

There, one can find the motives for choosing these structural units of Education as the intersection between (1) administrative staff that has the right attitudes and accepts quality as a mission of the public education governance, (2) administrative structures that implement TQM and understand that this cannot be done without the support of the employees, (3) the wider social benefits of a well-managed administration that can sustain a better educational system.

LITERATURE/THEORETICAL UNDERPINNING

The role of a motivated administrative staff as a driver for quality assurance and therefore building public institutions that serve the Greek Educational System formulates the theoretical background of the study. It focuses on the application of HR practices, based on a TQM measurement tool, in the specific institutional environment of education in modern Greece. While comparative studies of the application of these practices in different EU countries exist, studies of their effect in specific sectors are relatively rare.

The theoretical framework attempts to describe the prevalent view that the implementation of HR practices as bundles by the Public Administration's management contributes to the administrative staff's satisfaction, motivation, and the adoption of an active role for the continuous improvement of organizational performance. In addition, the continuous assessment of HRM through the public officers' perceptions enhances their performance, which leads to the improvement of the services provided to schools and society. Moreover, the provision of high-quality and effective administrative support to schools by the Directorates of Primary and Secondary Education can contribute to their smooth operation, and to the satisfaction of the school staff.

TQM in Education

According to Saiti (2012) many scholars concluded that total quality is mainly a philosophy rather than a series of techniques and therefore is a human process rather than an organizational one. Thus, as an integrated management philosophy, it is associated with cultural values that promote human thought and enhance collaboration. As a result, all key elements of total quality are closely related to people. Hence, capable people, together with the establishment of proper working conditions, constitute the most essential factor for the successful performance of an organization. Given that the vast majority of organizational activities depend on the knowledge and the capabilities of human resources, there is no rational reason why a school system (including administrative bodies and school units) cannot apply total quality. The shift of schools towards quality comprises a continuous improvement process, which depends on HRM (Rousi, 2007). In a school of total quality not only the learning process is being continually improved but so is the school management, thereby supporting these school processes (Crawford and Shutler, 1999). In the context of a community, schools are essentially organizations with complex social systems, which form part of a larger open environment and consist of interrelated sub-systems (Saiti A., 2012). Within these complex and interrelated subsystems and structures, the quality and efficiency of Public Administration in the field of Education affect the smooth operation of public schools. The operational goal of any Directorate of Primary and Secondary Education is the supervision and smooth operation of the schools under its jurisdiction and of the supporting decentralized structures of primary and secondary education respectively (Ministry of Education and Religious Affairs, 2018b). Within the framework of this philosophy, educational organizations constitute an integral social system within which two-way relations develop between members (regional directors, directors of education, department heads, school principals, school advisors, administrative staff, teachers, students, parents, the local community). Satisfying the needs of all members of the school community and implementing actions according to the strategic planning of each educational body are measures directly linked to quality improvement and efficiency.

The Common Assessment Framework (CAF) from an HRM perspective:

The study and its structural model development were inspired by the part CAF related to HRM. CAF was introduced in 2000 as the first quality management tool for Public Administration on a European level and is the result of intensive collaboration between the European Public Administration Network (EUPAN) and the European Data Management Centre of CAF, which is based at the European Institute of Public Administration (EIPA) in Maastricht, with the aim to develop common tools, activities and visions under a joint agenda. It is based on the Excellence Model of the European Foundation Quality Management (EFQM) and on the assumption that optimum results with regard to organizational performance, customers/citizens and society, are inextricably linked to the leadership that drives the strategy and planning, human resources, cooperation, resources and administrative procedures (EFQM, 2013). It complies with the fundamental principles of excellence which mark the difference between a traditional bureaucratic public organization and one that is focused on Total Quality. Furthermore, effective HRM enables employees to contribute effectively and productively to the organization's overall mission, vision and the accomplishment of its objectives. In addition, in the context of TQM, it is

important to realize that only satisfied employees bring the organization towards satisfied customers. Thus, on the one hand, public administration has to meet the needs and expectations of public officers and keep them satisfied (EUPAN & EIPA, 2013).

Strategic HRM in public sector and specifically in the administration of Education sector in Greece:

The performance management approach to the strategic management of human resources is theoretically significant. Strategic HRM is a critical intangible asset for improving organizational performance and achieving competitive advantage (Kaplan R. and Norton D., 2004). According to the strategic HRM, management sets a plan and measurable goals which imply certain workforce requirements, in terms of the employee skills, competencies and behavior required to achieve the organization's strategic objectives (Dessler G., 2015). There is an innovative trend of HRM in the notion that complementary bundles of HR practices enhance organizational performance, achieve sustained competitive advantage and lead to a win-win situation for both the company and its employees (Dimitrios M. Mihail, Myra Mac Links, Sofoklis Sarvanidis, 2013). According to the literature review, satisfaction surveys and management evaluation are part of strategic management for a more specific appraisal and targeted improvement of organizational performance. Additionally, although TQM and measurement models primarily focus on the evaluation of performance management and the identification of its organizational causes for the continuous improvement of services, in the field of public administration the ultimate goal is to contribute to good governance through the exploiting of all resources (Ministry of Interior, Department of Administrative Reform and E-Government, 2017). Hence, in order to upgrade the quality of Greek public administration, strategic HRM under a framework that assesses public organization according to employees' perceptions are necessary, which the worldwide literature has proved by regarding models that have been successfully applied in the public administration of developed countries such as U.S., U.K., and Canada (Ugheoke S. et al., 2015; Walker & Boyne, 2006).

Specifically, in Greece, the development of local leadership capacity (including school principals and top managers of administrative units of education) is needed to support more school autonomy and provide the foundation for giving more responsibilities to school leaders and local institutional units of education. At a broader European level, there have been quite a few reformations that emphasize the administration decentralization, school autonomy, effectiveness, and quality of performed education, and of course, evaluation of school units (MacBeath et.al, 2004). "Strong leaders need well-defined roles and have to be accountable. Local education leaders could play a big role in transforming schools into learning organizations, open to engagement with the community, using data to assess performance and learning from others. Effective leadership is linked to educational improvement" (OECD, 2017a).

The purpose of the study is to provide an innovative structural model for top managers (local leadership) to improve HRM, to improve working environment and performance, towards more efficient and effective management with a focus on the human assets for

public organizations. This structural model is based on the theoretical framework which depicted the complex and dynamic interrelationships between organizational performance, quality management, strategic HRM, and employees' satisfaction, in the specific institutional environment of education in modern Greece and it is presented in Figure 1.

Independent variables: Factor A as IV_A is related to 1st HR BUNDLE: questions 1–7 (Plan, manage and improve human resources transparently with regard to strategy and planning). Factor B as IV_B is related to 2nd HR BUNDLE: questions 8–14 (Identify, develop and use competencies of people aligning individual and organizational goals). Factor C as IV_C is related to 3rd HR BUNDLE: questions 15–21 (Involve employees by developing open dialogue and empowerment, supporting their well-being)

Dependent variables: HR Results - Employees' satisfaction

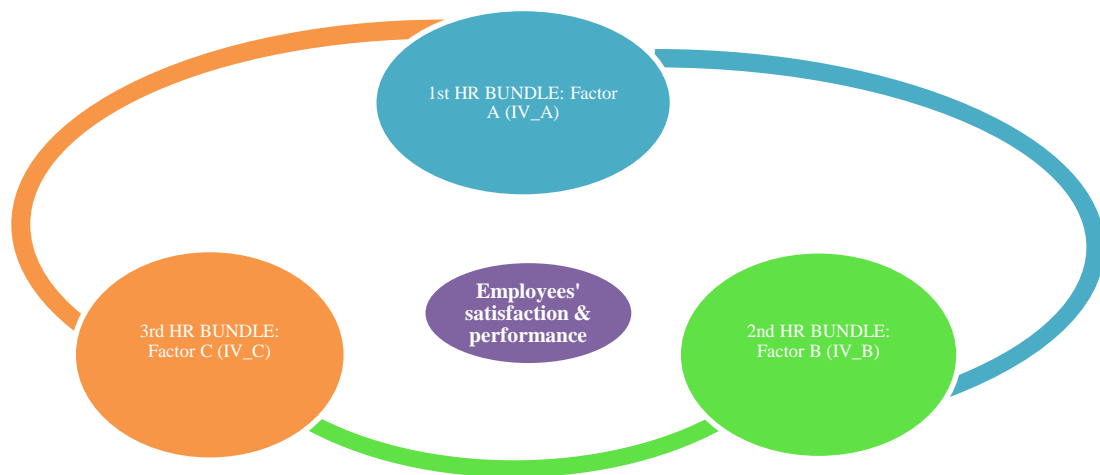


Figure1. Theoretical Framework

The conceptual study through the theoretical framework and the study's objectives set the following Hypotheses in this specific sector of Greek reality:

HYPOTHESIS 1: HR practices, in the form of three bundles introduced by the CAF, significantly affect the mean value of employees' satisfaction.

HYPOTHESIS 2: The effect of the degree of implementation of each HR bundle of practices (three HR bundles introduced by the CAF) appears statistically significant with regard to the degree of the mean value of employee satisfaction.

HYPOTHESIS 3: HR practices, in the form of three bundles introduced by the CAF, significantly affect each of the 18 satisfaction aspects individually.

HYPOTHESIS 4: The effect of the degree of employees' perception that a TQM model future implementation can improve organizational performance, significantly affects each satisfaction aspect.

METHODOLOGY AND SAMPLE

The staff of the Primary and Secondary Directorates of Education in the Region of Central Macedonia (17 public agencies of education located in 7 Greek cities) comprises the research field. This study is an employees' perception survey that was addressed to administrative public officers of all hierarchical levels and sectors. The primary data were obtained using a part of the Common Assessment Framework questionnaire based on the six point-Likert scale that allows for the use of econometric techniques (Ministry of Interior, Department of Administrative Reform and E-Government, 2017). The distribution of the final questionnaire was conducted in November 2019 both in electronic (using Google forms) and in printed form. A letter was sent to each Directorate's e-mail address explaining the purpose and scope of the investigation. It also assured them that the research is in line with the international rules of research ethics and all administrative officers could voluntarily choose to fill in the e-questionnaire. At the end of the two-week period, were submitted 182 responses, of which 141 (30.37 % of the total number of employees) were correctly filled and were used for the further research process. The empirical study examined the current situation with regard to HR practices implementation and the attitudes of employees in the structural units of public education governance. The subject in question was examined using quantitative methods.

For the overall questionnaire (Dependent and Independent variables), the reliability was found to be very high, with index of Cronbach $\alpha = 0.9604$ (Cronbach, L. J., 1951).

For the Independent variables as a whole, reliability was found very high (Index of Cronbach $\alpha = 0.9266$)

The reliability of Factor A as IV_A was found very high (Index of Cronbach $\alpha = 0.8737$).

Similarly, the reliability of Factor B as IV_B was found high (Index of Cronbach $\alpha = 0.8136$).

Finally, the reliability of Factor C as IV_C was found to be high (Index of Cronbach $\alpha = 0.8411$)

The reliability of Dependent variables (HR Results - Employees' satisfaction) was found very high (Index of Cronbach $\alpha = 0.9307$)

The formulation of the research hypotheses was done in three levels and for their investigation three kinds of statistical analysis were carried out.

1. The first focuses on the study of the administrative staff that was examined in terms of satisfaction a) as one dimension, but also b) as 18 separate satisfaction aspects. The regression analysis was estimated with the ordinary least squares method to measure the impact of HR bundles on satisfaction. Additionally, the ordered logistic regression analysis was applied to measure the effect of each HR practice on each satisfaction aspect.

2. The second study examines the degree of satisfaction of administrative officers in terms of the level of application of HR bundles, and the method of categorical variables

(dummies) was applied (Damodar N. Gujarati, 2004). The problematic areas of HRM are investigated through the descriptive analysis by measuring the mean score of HR practices implementation and the level of satisfaction.

3. The third focuses on the study of a TQM model future implementation according employees' perceptions in order to achieve organizational performance. The ordered logistic regression analysis was used to measure each satisfaction aspect.

RESULTS/FINDINGS

The statistical results in the three-level study are significant and in line with all the Hypotheses. More specific:

A) The 1st study approved that HR innovative practices implementation as three bundles (means IV_A, IV_B, IV_C) significantly affect employee results either satisfaction is treated as one dimension (mean of DV) or as 18 specific satisfaction aspects. Each HR bundle of practices has a different level of effect on satisfaction compared to the other two bundles. Additionally, each HR practice individually significantly affects the mean value of satisfaction as one dimension. Also, we can conclude which specific HR practices are more significant within each bundle by observing the coefficients and the index R-squared.

Table 1: QLS regression

Dependent variable: mean of questions on satisfaction	
mean_IV_A	0.218*** (0.0625)
mean_IV_B	0.229*** (0.0587)
mean_IV_C	0.506*** (0.0514)
Constant	0.426*** (0.0975)
Observations	141
R-squared	0.750

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 2: OLOGIT regression analysis

	(1) Q1	(2) Q2	(3) Q3	(4) Q4	(5) Q5	(6) Q6	(7) Q7	(8) Q8	(9) Q9
mean_IV_ A	0.382	0.325	-0.257	-0.272	0.955**	0.863** *	0.876**	0.664*	0.848**
	(0.366)	(0.361)	(0.341)	(0.386)	(0.453)	(0.330)	(0.418)	(0.378)	(0.432)
mean_IV_ B	0.424	0.800**	1.877** *	0.764**	0.902**	0.527	0.0331	-0.300	0.728*
	(0.396)	(0.376)	(0.408)	(0.370)	(0.384)	(0.371)	(0.387)	(0.366)	(0.400)
mean_IV_ C	1.332** *	0.648**	0.886** *	1.759** *	1.393** *	1.328** *	1.681** *	2.226** *	1.182** *
	(0.303)	(0.283)	(0.329)	(0.323)	(0.335)	(0.305)	(0.344)	(0.309)	(0.310)
Constant cut1	0.183	1.357** *	0.101	1.406** *	2.079** *	0.773	2.514** *	1.117**	0.789
	(0.638)	(0.435)	(0.640)	(0.545)	(0.570)	(0.585)	(0.559)	(0.500)	(0.588)
Constant cut2	1.725** *	3.312** *	2.487** *	3.801** *	4.070** *	3.344** *	4.443** *	3.512** *	3.217** *
	(0.664)	(0.516)	(0.592)	(0.641)	(0.663)	(0.587)	(0.634)	(0.563)	(0.658)
Constant cut3	3.442** *	5.214** *	4.661** *	6.458** *	7.288** *	5.841** *	6.862** *	5.833** *	5.750** *
	(0.724)	(0.633)	(0.683)	(0.803)	(0.851)	(0.679)	(0.733)	(0.676)	(0.790)
Constant cut4	5.376** *	7.402** *	6.803** *	8.355** *	10.67** *	8.085** *	8.904** *	8.426** *	8.390** *
	(0.775)	(0.758)	(0.821)	(0.962)	(1.051)	(0.826)	(0.847)	(0.844)	(0.908)
Constant cut5	9.468** *		9.626** *			9.676** *		10.02** *	10.21** *
	(1.168)		(1.005)			(0.931)		(1.285)	(1.115)
Observatio ns	141	141	141	141	141	141	141	141	141

	(10) Q10	(11) Q11	(12) Q12	(13) Q13	(14) Q14	(15) Q15	(16) Q16	(17) Q17	(18) Q18
mean_IV_ A	0.717**	0.386	0.756*	0.727**	0.0854	0.192	0.544	0.774**	0.944**
	(0.314)	(0.352)	(0.389)	(0.356)	(0.379)	(0.360)	(0.343)	(0.394)	(0.388)
mean_IV_ B	0.423	-0.511	0.143	0.0484	0.689**	0.677*	0.609	0.175	1.754** *
	(0.364)	(0.333)	(0.362)	(0.361)	(0.332)	(0.384)	(0.432)	(0.414)	(0.452)
mean_IV_ C	1.369** *	1.130** *	1.381** *	0.838**	0.710**	0.645*	1.118** *	0.573*	0.163
	(0.378)	(0.360)	(0.332)	(0.343)	(0.293)	(0.360)	(0.331)	(0.323)	(0.325)
Constant cut1	0.941*	-0.182	-0.0532	-0.757	- 1.728**	-0.227	0.362	0.730	1.480** *
	(0.497)	(0.542)	(0.599)	(0.526)	(0.771)	(0.542)	(0.519)	(0.501)	(0.531)
Constant cut2	3.013** *	1.753** *	1.708** *	0.514	0.508	1.963** *	1.866** *	2.374** *	4.392** *
	(0.551)	(0.541)	(0.543)	(0.466)	(0.567)	(0.455)	(0.536)	(0.576)	(0.625)
Constant cut3	5.702** *	2.919** *	3.214** *	1.843** *	1.731** *	3.276** *	3.731** *	3.987** *	7.038** *
	(0.642)	(0.575)	(0.565)	(0.467)	(0.578)	(0.473)	(0.655)	(0.672)	(0.805)
Constant cut4	8.866** *	4.528** *	5.621** *	4.268** *	3.310** *	4.996** *	5.876** *	6.923** *	9.875** *

	(0.752)	(0.702)	(0.679)	(0.579)	(0.633)	(0.562)	(0.756)	(0.917)	(1.051)
Constant			8.693**	7.052**	5.855**		9.023**		
cut5			*	*	*		*		
			(0.874)	(0.893)	(0.736)		(0.935)		
Observations	141	141	141	141	141	141	141	141	141

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

B) The second study is referred to the approach: mean – each question of each factor and the regression was estimated using the ordinary least squares method (OLS).

The dependent mean_DV variable is the mean value of the questions that are considered as dependent related to employees' satisfaction (such as Tables 1 and 2).

Independent variables: Tables 3, 4 and 5 show the effect of each rating (scale level) per question individually of the three independent variables (as 7 dimensions per A, B, C factor) on the mean value of the dependent variable. The method of categorical or pseudo-variables (dummies) applied in order to measure the effect of the independent variables which are each question per factor A, B, C on the mean value of the dependent variable. The method of pseudo-variables (dummies) is applied in order to measure the effect in relation to the mean value of employees' satisfaction.

The effect of each question which is regarded as a single variable (7 independent variables per each HR bundle-factor) on the mean value of the dependent variable is under investigation (Tables 3, 4, 5). For example, column (1) Q1A represents the first dimension-question of the factor A. Dummy11A is a variable that takes the value 1 each time scale 1 is linked to the first question 1, and the value 0 in all other cases (i.e. scale of 2-5). Similarly for dummy12A is a variable that takes the value 2 each time scale 2 is linked to the first dimension-question 1, and the value 0 in all other cases (i.e. scale of 2-5) etc.

Column (1) shows the effect of each rating of dimension-question 1 on the dependent variable.

Column (2) shows the effect of each rating of dimension-question 2 on the dependent variable.

Column (3) shows the effect of each rating of dimension-question 3 on the dependent variable.

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Column (7) shows the effect of each rating of dimension-question 7 on the dependent variable.

Table 3: Questions of 1st HR Bundle as factor A (OLS regression from mean dependent variable on each question of factor A)

	(1) Q 1A	(2) Q 2A	(3) Q 3A	(4) Q 4A	(5) Q 5A	(6) Q 6A	(7) Q 7A
dummy11A	0.449** (0.216)	0.280 (0.223)	0.568* (0.288)	0.187 (0.260)	0.586*** (0.220)	0.676*** (0.185)	0.596*** (0.161)
dummy12A	0.860*** (0.191)	0.942*** (0.211)	0.838*** (0.279)	0.788*** (0.249)	0.891*** (0.203)	0.707*** (0.137)	0.910*** (0.152)
dummy13A	1.350*** (0.214)	1.250*** (0.227)	1.408*** (0.284)	1.242*** (0.256)	1.232*** (0.210)	1.340*** (0.150)	1.357*** (0.146)
dummy14A	1.519*** (0.177)	1.325*** (0.359)	1.683*** (0.336)	1.264*** (0.247)	1.481*** (0.326)	1.401*** (0.207)	1.225*** (0.188)
Constant	1.259*** (0.177)	1.313*** (0.197)	1.167*** (0.267)	1.389*** (0.236)	1.222*** (0.185)	1.363*** (0.113)	1.275*** (0.119)
Observations	141	141	141	141	141	141	141
R-squared	0.279	0.310	0.313	0.275	0.277	0.350	0.316

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Questions of 2nd HR Bundle as factor B (OLS regression from mean dependent variable on each question of factor B)

	(1) Q 1B	(2) Q 2B	(3) Q 3B	(4) Q 4B	(5) Q 5B	(6) Q 6B	(7) Q 7B
dummy11B	0.145 (0.253)	0.606*** (0.175)	0.220 (0.165)	0.694** (0.306)	0.741*** (0.235)	0.299* (0.159)	-0.0625 (0.181)
dummy12B	0.884*** (0.238)	0.982*** (0.164)	0.703*** (0.155)	1.055*** (0.282)	1.130*** (0.214)	0.299* (0.159)	0.363** (0.173)
dummy13B	1.371*** (0.240)	1.559*** (0.196)	1.090*** (0.146)	1.674*** (0.270)	1.469*** (0.226)	0.906*** (0.168)	0.894*** (0.196)
dummy14B	2.036*** (0.331)	1.707*** (0.145)	0.796*** (0.199)	1.956*** (0.295)	1.741*** (0.201)	1.003* (0.599)	0.660*** (0.196)
dummy15B	-	-	-	2.231** (0.864)	-	-	-
Constant	1.159*** (0.228)	1.182*** (0.145)	1.611*** (0.124)	0.630** (0.263)	1.037*** (0.201)	1.757*** (0.119)	1.812*** (0.148)
Observations	141	141	141	141	141	141	141
R-squared	0.483	0.304	0.223	0.389	0.259	0.142	0.203

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Questions of 3rd HR Bundle as factor C (OLS regression from mean dependent variable on each question of factor C)

	(1) Q 1C	(2) Q 2C	(3) Q 3C	(4) Q 4C	(5) Q 5C	(6) Q 6C	(7) Q 7C
dummy11C	0.610*** (0.225)	0.494*** (0.160)	0.572*** (0.148)	0.608*** (0.152)	0.326** (0.136)	0.504** (0.209)	0.339** (0.153)
dummy12C	1.025*** (0.204)	0.870*** (0.147)	0.971*** (0.155)	0.758*** (0.127)	0.807*** (0.142)	0.824*** (0.188)	0.649*** (0.146)
dummy13C	1.598*** (0.200)	1.557*** (0.160)	1.496*** (0.144)	1.336*** (0.146)	0.701*** (0.136)	1.081*** (0.178)	0.769*** (0.171)
dummy14C	2.079*** (0.220)	1.683*** (0.139)	1.558*** (0.180)	1.540*** (0.115)	-	1.886*** (0.184)	0.183 (0.340)
dummy15B	2.246*** (0.187)	-	-	-	-	1.246** (0.508)	0.878*** (0.114)
Constant	0.810*** (0.187)	1.283*** (0.128)	1.175*** (0.121)	1.414*** (0.0970)	1.810*** (0.0823)	1.143*** (0.163)	1.734*** (0.114)
Observations	141	141	141	141	141	141	141
R-squared	0.520	0.460	0.487	0.422	0.192	0.474	0.171

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

The 2nd study revealed the higher the rating of the HR practices, the higher the employees' satisfaction and their performance. In addition, the descriptive analysis showed that the administrative officers gave a relatively low score to the implementation of HR practices by the organizations they work for. The lowest mean score in combination with the result of the highest statistical significance of the HR bundle related to employees' empowerment leads to the conclusion that Directorates of Education should pay more attention to this particular factor and implement specific improvement actions. It is worth mentioning that the satisfaction score is higher than the one given to HR practices, according to employees' perceptions. We can conclude that all employees are internally motivated by intrinsic motivators, due to the services they offer to society (teachers, schools, students, etc.)

C) The 3rd study revealed that variable 22 (the effect of the perceptions' degree concerning the administrative officers' intention of a TQM model future implementation) with regard to specific satisfaction aspects is statistically significant.

Table 6: OLOGIT regression analysis - Questions 1–9 on independent variable 22

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9
1.IV_22	- 1.676*** (0.570)	0.207 (0.565)	- 2.525*** (0.469)	- 2.103*** (0.561)	0.592 (0.419)	-0.725** (0.346)	- 2.030*** (0.563)	0.460 (0.512)	1.675*** (0.642)
2.IV_22	- 1.153*** (0.426)	-0.509 (0.408)	- 1.117*** (0.423)	- 1.449*** (0.363)	1.231*** (0.402)	-0.684 (0.437)	- 1.397*** (0.407)	0.591 (0.387)	1.526*** (0.437)
3.IV_22	-0.449** (0.220)	0.786*** (0.278)	- 0.741*** (0.265)	- 0.818*** (0.252)	1.853*** (0.340)	0.210 (0.247)	- 0.693*** (0.233)	1.365*** (0.270)	1.874*** (0.300)
4.IV_22	-0.249 (0.292)	1.019*** (0.237)	- 1.047*** (0.255)	-0.797** (0.330)	1.881*** (0.325)	0.508* (0.262)	-0.375 (0.323)	1.871*** (0.329)	2.647*** (0.335)
5.IV_22	0.592 (1.050)	1.863** (0.941)	-0.229 (0.845)	0.969 (0.995)	1.099** (0.481)	1.055 (1.215)	-1.612** (0.750)	3.468*** (1.084)	1.933*** (0.739)
Constant cut1	- 3.361*** (0.343)	- 0.839*** (0.109)	- 4.275*** (0.454)	- 2.677*** (0.248)	- 0.642*** (0.125)	- 2.717*** (0.330)	- 2.131*** (0.207)	- 0.765*** (0.120)	- 0.914*** (0.171)
Constant cut2	- 2.127*** (0.226)	0.839*** (0.109)	- 2.345*** (0.221)	- 1.008*** (0.126)	0.642*** (0.125)	- 0.829*** (0.102)	- 0.826*** (0.111)	0.765*** (0.120)	0.914*** (0.171)
Constant cut3	- 0.763*** (0.103)	2.467*** (0.249)	- 0.804*** (0.111)	1.008*** (0.126)	2.554*** (0.250)	0.829*** (0.102)	0.826*** (0.111)	2.235*** (0.216)	2.595*** (0.254)
Constant cut4	0.763*** (0.103)	4.588*** (0.578)	0.804*** (0.111)	2.761*** (0.439)	5.194*** (0.542)	2.567*** (0.314)	2.519*** (0.422)	4.359*** (0.399)	4.654*** (0.411)
Constant cut5	4.492*** (1.009)		3.331*** (0.695)			4.024*** (0.574)		5.851*** (0.603)	6.320*** (0.743)
Observations	141	141	141	141	141	141	141	141	141

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Q1 represents the first question (dependent variable).

Table 7: OLOGIT regression analysis - Questions 10–18 on independent variable 22

	(1) Q 10	(2) Q 11	(3) Q 12	(4) Q 13	(5) Q 14	(6) Q 15	(7) Q 16	(8) Q 17	(9) Q 18
1.IV_22	14.63*** (1.088)	0.762 (0.692)	- 2.063*** (0.475)	0.106 (0.525)	-0.543 (0.733)	-0.521 (0.482)	- 1.667*** (0.555)	13.23*** (1.145)	0.290 (0.701)
2.IV_22	15.76*** (1.136)	0.955** (0.439)	-0.782** (0.337)	0.898** (0.399)	-0.454 (0.409)	0.462 (0.434)	- 1.051*** (0.386)	14.18*** (1.069)	1.246*** (0.346)
3.IV_22	16.02*** (1.097)	0.482** (0.211)	-0.247 (0.250)	1.489*** (0.287)	-0.279 (0.214)	-0.379* (0.215)	-0.619** (0.252)	14.56*** (1.042)	1.801*** (0.295)
4.IV_22	16.50*** (1.098)	1.057*** (0.270)	0.0720 (0.290)	1.890*** (0.333)	0.768** (0.319)	0.340 (0.317)	-0.178 (0.286)	14.56*** (1.077)	1.867*** (0.347)
5.IV_22	15.74*** (1.233)	1.414 (1.177)	1.560 (1.170)	3.672*** (0.712)	1.911*** (0.670)	0.780 (0.976)	-1.079 (0.668)	14.22*** (1.509)	0.801 (0.742)
Constant cut1	13.38*** (1.006)	- 0.842*** (0.112)	- 3.506*** (0.395)	- 1.690*** (0.341)	- 3.930*** (0.575)	- 2.521*** (0.298)	- 3.455*** (0.362)	12.69*** (1.004)	- 1.047*** (0.155)
Constant cut2	15.08*** (1.054)	0.842*** (0.112)	- 2.019*** (0.226)	- 0.558*** (0.110)	- 1.817*** (0.221)	- 0.570*** (0.0841)	- 2.225*** (0.219)	14.17*** (1.027)	1.047*** (0.155)
Constant cut3	16.94*** (1.076)	1.873*** (0.198)	- 0.904*** (0.111)	0.558*** (0.110)	- 0.721*** (0.0975)	0.570*** (0.0841)	- 0.808*** (0.105)	15.53*** (1.041)	2.867*** (0.255)
Constant cut4	19.59*** (1.173)	3.399*** (0.351)	0.904*** (0.111)	2.728*** (0.262)	0.721*** (0.0975)	2.127*** (0.251)	0.808*** (0.105)	18.24*** (1.177)	5.159*** (0.549)
Constant cut5			3.744*** (0.598)	5.636*** (0.726)	3.240*** (0.414)		3.630*** (0.689)		
Observations	141	141	141	141	141	141	141	141	141

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Q1 represents the tenth question (dependent variable).

CONCLUSIONS & FUTURE RESEARCH

The three-level study reached to the evidence to justify the research Hypotheses and the formulation of proven conclusions of which the main findings are:

- the significant relationship of "modern practices for strategic HRM - employee satisfaction - performance of the organization"
- the applicability of modern HRM techniques based on the European CAF tool in the field of Greek public administration of education
- the significant effect of the rating of HR practices implementation that predicts the degree of administrative officers' satisfaction
- the identification of the significant areas, good practices and problematic fields of HRM according to employees' perceptions

- the role of a TQM model as a driver for increasing organizational performance by revealing specific aspects of employee satisfaction. This finding is the basis for developing and updating strategies and policies in administrative units to improve the organizational culture, which is essential for employee engagement in the effective implementation of the TQM model.

The above-proven conclusions reached the study's main objective that is: *The applicability and effect of modern techniques and practices, based on Total Quality Management, have an important impact on public servants' motivation that produces positive changes in human capital, and increase the contribution of HRM to the organizational performance and the quality of public administration in the field of education.*

As is the case with any research, the present study also presents certain limitations and weaknesses. One such weakness is the fact that it only examined the administrative employees' perceptions and satisfaction. In line with the principle of evidence-based management (EBM), an organization should collect objective information from all stakeholders. In most cases, this is done through surveys that focus on internal and external customers, while target groups or special user groups (other stakeholders) are also used for this purpose (EIPA & EUPAN, 2013). As mentioned above, within the school system framework of the interrelated subsystems and structures, the perceptions and satisfaction of both school staff and administrative staff become ever-important (as target groups of internal customers or special user groups) due to their capacity to formulate a general and reliable picture of the under investigation structural units, with regard to the way certain organizational aspects are managed. Oikonomidou M. & Konstantinidis I., (2020) examined the perceptions of school principals in relation to organizational aspects of the Directorates of Primary and Secondary Education of Eastern Thessaloniki and their satisfaction and reached statistically significant conclusions. The above study highlighted the organizational factors that have a significant impact on the satisfaction of external customers (i.e. school principals) and showed the main problematic areas of the Directorates of Education of Eastern Thessaloniki in order to aim for an improvement of the provided services. Further research on the school principals' perceptions regarding all the Directorates under study (Directorates of Education in the region of Central Macedonia) can be used as a benchmark for the employees' perceptions and satisfaction so as to gather more valuable information about the management and the services provided, in order to improve the organizational performance of the Directorates of Primary and Secondary Education. This limitation of the empirical research necessitates its expansion through further research of the perceptions of external customers.

Furthermore, a limitation of the present study relates to the fact that its research field covered only the 16 Directorates of Education and the agency of Regional Education Directorate of Central Macedonia (17 agencies in total). However, the Region of Central Macedonia is the 2nd most populous region of Greece, and its population covers 17.1% of the total population of Greece. Thus, the significant results of the empirical research in this specific geographical region are promoted to be investigated in other geographical areas of the country.

Additionally, it is proposed to enrich the structural model of employees' satisfaction survey with other variables in terms of internal people-related performance indicators that enable the organization to measure the results achieved regarding people's overall behavior, their performance, the development of skills, their motivation and their level of involvement in the organization (e.g. sick leave, staff turnover, number of staff complaints, number of proposals for innovation, etc.).

Regardless of any potential limitations, the present study can form the starting point for activating top management to collect, analyze and use data obtained through employee surveys in order to evaluate human resources, monitor organizational performance and provide quality services. The main contributions of this study are valuable for their practical applied character in the public sector. They can be defined as the enrichment of existing theories and tools with new facts, additional approaches and methods. Specifically, the achievement is the formulation of the practical framework that supports the growing positive impact of "supportive" HR practices on employee satisfaction and performance within a strategic perspective. The development of the practical-applied structural model provides top managers with indicators and evidence-data based results for the decision-making process regarding strategic HRM activities. The contributions of applied nature are associated with a wide range of empirical research that have the potential to enrich the information base of decision-making a) for innovative HRM practices that provoke positive changes in human capital, b) for an appropriate working environment and c) for improving organizational performance and quality services in the context of the quality management modeling, in the specific institutional environment of education in modern Greece.

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