

**THE EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT
MODEL APPLIED TO CATHOLIC PRIMARY SCHOOLS OF
KHARTOUM STATE**

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ABSTRACT

Catholic Schools in the Republic of Sudan are distinguished by their focus on the delicate balance between quality and equity. This study aims at building a self-assessment tool based upon the European Foundation for Quality Management (EFQM) Excellence Model that helps these schools to assess their quality and enter into a dynamism of continuous improvement.

The researcher has selected three Catholic Primary Schools located at Khartoum State that have been studied with an embedded multiple-case design based upon quantitative (descriptive statistics, parametric and non-parametric tests, correlations) and qualitative methods (participant observation, interviews, participant action research and questionnaires).

The research can be considered both exploratory as it introduces a quality management model in schools that have not had any point of reference before on this regard, and explanatory, as it intends to identify some variables that explain the different quality between them.

The implementation of the self-assessment process shows that the EFQM Model really offers a holistic approach to quality management and to the self-assessment of that quality applicable to Catholic Primary Schools of Khartoum State.

The research also offers some recommendations to improve the assessment tool and extend its application to other Primary Schools of the country.

Keywords: EFQM, Primary Schools, Catholic Schools, Khartoum State, Quality

INTRODUCTION

No scientific research has been conducted on the quality of Catholic schools in Sudan or on the full application of the European Foundation for Quality Management (EFQM) Excellence Model

to Primary Schools of the country.

The Catholic Church runs thirty eight Primary Schools in Khartoum State. A few of them were created in the nineteenth century and in the first eighty years of the twentieth century. But the majority of these schools were opened during the Second Sudanese Civil War (1983-2005) as a response to the massive arrival of displaced people from the South towards the peripheries of the capital of the country. This second wave of schools was built with more simple structures than the first ones as they were supposed to be provisional. Nevertheless, many of them have been transformed into stable schools.

This study designs a quality assessment model for these schools based upon the EFQM Excellence Model and the principles of Total Quality Management (TQM). This model is applied to a sample of them selected through a questionnaire that assesses their availability to enter into a process of continuous improvement and the suitability of their organizational culture.

The research also aims at producing a self-assessment tool that may easily be adapted to government schools of Khartoum State.

LITERATURE REVIEW

The Assessed Object: Comboni Schools

The Catholic Church opened the first school in Sudan in 1843 (Toniolo & Hill, 1974, p.1 and p.35). An Italian missionary called Daniel Comboni multiplied its number between 1872 and 1881 and left a deep imprint in the country up to the point that Catholic Schools, even today, are popularly known as *Comboni Schools*. They were created “as alternative to the Quranic schools for the small Christian minority, as instrument for the education of local catechists and for the so called ‘civilization’ of the continent” (Naranjo Alcaide, 2019, p. 106).

In the first decades of the XX century, Catholic schools were mainly associated with the concept of quality education. Muslim families searched for them because of this and because of the scarcity of educational alternatives. But from the eighties onward, the stress fell on the dimension of equity as their number multiplied to provide instruction to refugees, displaced and marginalized people of the outskirts of the main cities of Sudan. At the same time, dozens of private and government schools proliferated in the metropolitan area of the capital.

An emergency program called “Save the Saveable” multiplied the number of *Comboni Schools* since 1986 catering refugee and displaced children produced by the upsurge of the Civil War between the North and the South of the country (1983-2005). This growth reached the point that

their number, ninety in 2001, became too big to serve the objective of quality (Wani Gore, 2002, p. 9).

In 2010 the Archdiocese of Khartoum decided to finish the Save the Saveable Program. Every Parish was supposed to reduce the number of schools that were under its territory and choose two as maximum. These selected ones would become “Community Parish Schools” under the responsibility of the respective Parish Priest. Normally, the Parishes identified the schools with better premises and a community that had showed readiness to pay the school fees and ensure, in this way, their self-reliance (Naranjo Alcaide, 2019, p. 36).

Today the Catholic Church runs 38 Primary Schools in Khartoum State that educate 18,839 students.

Which Model of Quality Assessment

Production/function research in educational assessment, that is not so meaningful in developed countries, is instead relevant in developing countries with factors like teacher/pupil ratio, instructional time, homework frequency, teacher training, teacher experience, teachers’ salaries, availability of text books and expenditure per pupil. “The larger impact of these resource input factors in developing countries can be attributed to larger variance in the independent as in the dependent variables” (Scheerens, 2004, p.19).

Nonetheless, this study also deals with school organizational variables, which is less common in research related to developing countries (Scheerens, 2004, p.2).

The research of the “Effective Schools Movement” has contributed to the development of a wider understanding of educational quality. But at the same time, their model has been criticized both conceptually and methodologically (Frechtling, 1982; Rowan & Denk, 1982). Martinez-Moreno Cerrillo adds the fact that the paradigm “has not offered models of school effectiveness that help to carry on an improvement process in the school” (2007, p. 135).

The analysis of different models for the assessment and management of quality leads to the introduction of the Total Quality Management framework as the most updated and suitable one for the purposes of this research. When implementing such theoretical framework to education, it looks fundamental to consider the cultural characteristics of the schools object of the study and the relation between quality and values. In the case of this work, the researcher is a Spaniard; the object of evaluation are Catholic schools that try to instil certain values; a meaningful percentage of students and staff of the selected schools are South Sudanese; and the schools are located in a country dominated by Arab culture and Islamic religion that are considered as the main features

of Sudanese culture.

And among the different theoretical frameworks that fall under the umbrella of TQM, we consider the EFQM Excellence Model the most suitable for a quality assessment of the Primary Schools of the Archdiocese of Khartoum (Comboni Schools). Some of the reasons behind this choice is that the EFQM model provides a basis for benchmarking and inherently stimulates organizational learning and innovation; it focuses on relevance to society and quality; it embraces all functions and school activities; it is based on internal self-evaluation capable of external review; it takes into account diversity and avoids uniformity; and it involves stakeholders (especially students) as an integral part of the process (Zink & Schmidt, 1995; Osseo-Asare, A. E. Longbottom & Murphy, 2005).

And as a way of applying the EFQM model we choose the questionnaire because the administrations of Comboni Schools have never experienced it before and this tool is considered the best approach for a first attempt (Davies, 2004, p. 22). Certainly, the formulation of criteria and sub-criteria was adapted to the context and characteristics of these schools.

Quality Assessment in Sudanese Schools

Previous literature on assessment of educational quality in Sudan is not very abundant. Fauzia Taha Mahdī states that since the beginning of the XX century, the Sudanese educational system “has not been submitted to any evaluation” (2006, p. 35). In her research, she applied the CIPP model of evaluation (Context, Input, Process, Product) to Primary Schools of Khartoum State. More recently, Al-Tayyib Yūsif Muḥamad (2015) studies the application of Total Quality procedures to a private primary school for girls located in Khartoum (Al-Qabas) and analyses the implementation of Total Quality Management by the Khartoum Foundation for Private Education Supervision (2016). In his literature review, he concludes that previous studies on the application of TQM to basic schools in Sudan (Al-Tayyib Yūsif Muḥamad, 2015, quotes: Ṣalāh Sulīmān ‘Abdallah, 2009; ‘Abdallah Muḥamad Al-Badawi, 2009; Faiṣal ‘Abdallah Al-Ghamidi, 2011; Nadia Adam Idrīs Gibrā’īl, 2011) did not mention the way TQM was implemented (procedures, time line...), nor followed up or revised nor the concrete model of reference that was used nor the satisfaction indicators of the customers. Who were these ones was not even defined. Al-Tayyib Yūsif Muḥamad instead concentrates his study on these procedures and concludes that it’s “possible to apply the procedures of TQM to Basic Schools easily and with simplicity” and this implementation does not demand a special budget for it (Al-Tayyib Yūsif Muḥamad, 2015, p. 45).

Our research does not study a pre-existing ongoing process of quality management at Comboni Schools but proposes a guidance framework for Total Quality Management (TQM)

implementation for these schools and investigates the first steps of the application of an adaptation of the EFQM model elaborated by the researcher after the literature review.

Thus the research is innovative as far as the methodology and the object of the research are concerned and therefore provides with knowledge about this particular kind of schools and data for their improvement. Moreover it may also represent a point of reference for the implementation of the EFQM model in other private or government schools of the country.

In addition to this, the research will help those schools to define and achieve their goals, to respond better to the needs of Sudanese society, students and their families; to increase the satisfaction and the performance of their staff and students, to become more accountable and to enter into a process of continuous improvement.

RESEARCH DESIGN AND METHODOLOGY

Research Strategy

The most suitable strategy to realize the aim of this research is the case study. The reasons of this choice are that: the research is both explanatory and exploratory; there is no control over behavioural events; it is important not to divorce the object of the study from its context; and the focus is on ongoing events (Yin, 1994, p. 6). Nonetheless, the history of these schools was examined with the aim of identifying their characteristics and specific objectives. This facilitates the contextualization of the assessment model and the definition of indicators of quality.

Davies recalls the research of Bardoel & Sohal (1999) that “pointed to two recent studies in which it was found that the case study approach had particular applicability to the evaluation of TQM projects” (2004, p. 104). The reason of this suitability is the importance that this strategy gives to the context. Davies (2004, p. 104) cites other studies that suggest the same strategy for TQM like the ones of Leonard & McAdam (2002), Silvestro (2001, p.260) and Downey-Ennis & Harrington (2002, p. 72).

A point of criticism against case studies “is that they provide little basis for scientific generalization”, but the answer to this is “that case studies, like experiments, are generalizable to theoretical propositions and not to populations or universe” (Yin, 2003, p. 10).

Among the applications of the case studies quoted by Yin (2002), there are two that have to do with this research: the first one is “to describe an intervention and the real-life context in which it occurred” and the second one is the “meta-evaluation” (Yin, 2002, p. 15). As a matter of fact, this research will apply a model inspired in the EFQM (intervention) and will analyse the

evaluation process done by the school Quality Teams (meta-evaluation).

Research Design

This study combines both quantitative and qualitative methods to throw light on the above mentioned schools. These methods include descriptive statistics, parametric and non-parametric tests and correlations between dependent and independent variables on the one hand (quantitative methods); and participant observation, interviews, participant action research and questionnaires (qualitative methods) along with descriptive, historic and documental designs on the other hand.

The study propositions are the following ones:

- a) A contextualized version of the EFQM Excellence Model can help assess the quality of Comboni Primary Schools in Khartoum State and elaborate an Improvement Plan.
- b) The questionnaire is the most suitable tool to introduce a contextualized version of the EFQM Excellence Model in the Comboni Primary Schools.
- c) For a successful implementation of the EFQM Model, the following aspects should be considered:
 - previous assessment of the suitability of the organizational culture of the school and its values;
 - proper planning on the way of implementing the Model;
 - commitment of the school leadership;
 - motivation, conviction, feeling the need and a clear vision of expected benefits;
 - good communication and information;
 - adaptation of the terminology of the model to the school community avoiding business language;
 - implementation of the model aligned with already existing activities.

This study considers every school as single unit of analysis. Since the selected schools for case study are three, the type of study design for this research is the comparative multiple-case (holistic) design.

Protocol and Data Collection

The first step was to present the research project to the Director of the Diocesan Office of Education of the Archdiocese of Khartoum and listen to his feedback on the proposal, the questionnaires and different materials used for the data collection.

A first questionnaire collects data in view of selecting the three schools of the sample for the case studies. This questionnaire aims at describing the school culture and assessing their openness and motivation to enter into a dynamism of continuous improvement.

The questionnaire was presented and filled in the context of a seminar with the headmasters of twenty one schools of the Archdiocese located within the limits of Khartoum State on April 25, 2018.

After analysing the data, three schools were selected. Then the principals and headmasters of the three selected schools were informed and invited to confirm their availability to join the project.

After that, the researcher presented a written message to those three principals and to the Director of the Education Office of the Archdiocese of Khartoum in order to explain the process in detail, verify their readiness and agree on an implementation calendar that included these moments:

- a) the creation of the "Quality Teams" of every school with five members per team;
- b) their training and work in four workshops with the researcher including the filling of the self- assessment questionnaire;
- c) the preparation of the Improvement Plan and Meta-evaluation.

The workshops took place from August 11, 2018 to January 1, 2019. In every workshop the researcher presents two quality criteria and every member of the "Quality Team" works on the respective part of the questionnaire in an individual way. The Project Manager collects the copies of the documents requested in the questionnaire (previous self-assessments carried out by the school; strategic plan, statements of vision, mission and values inventories; budgets, records of staff and students attendance; school organizational chart, statistics of the marks in the General Primary School Certificate), calculates the average of the marks of the school and transfers the results to a Self-Assessment Matrix.

After completing the questionnaire for the nine criteria of the EFQM Excellence Model, the team members review the results, identify strengths and sub-criteria that need improvement and classify those areas in need of improvement in three columns: the first one according to urgency, the second one according to their importance and impact on the key results and the third one according to the availability of resources. After this analysis, they prepare a first draft of the Improvement Plan where they choose five areas for improvement and the respective strategies with the agents that will execute them and the calendar of execution.

Finally the teams' members evaluate the self-assessment process they have completed (meta-

evaluation).

In addition to that, the researcher interviews the Quality Team Directors and the Principals to collect remaining data and triangulate information.

The researcher analyses the results and presents them to the Quality Teams in a final workshop with some recommendations about the design of their school Improvement Plan.

EFQM Final Results

The Self-Assessment Matrix summarizes the results for every sub-criterion. In that matrix, the researcher made some modifications to the weights of some enablers. Greater weight was given to the criteria “persons” and “material resources” in relation to other models like the one proposed by the Ministry of Education (MECSS) of Spain for Primary Schools. The reason of this choice is that the literature review has shown that these factors have a very important impact on the quality of primary schools in the so called developing countries (Scheerens, 2004).

Table 1: Weight of the nine EFQM Criteria in this Study

Criterion	MECSS	In this research	
Enablers	Leadership	12%	10%
	Policies and strategies	10%	10%
	Persons	7%	10%
	Partnerships and resources	7%	10%
	Processes	14%	10%
	Subtotal 1	50%	50%
Results	Results on the customers	15%	15%
	Results on the staff	11%	11%
	Results on society	10%	10%
	Key results	14%	14%
	Subtotal 2	50%	50%

For every question, the arithmetic mean of the different answers of the members of the quality teams was calculated and weighted according to the values indicated in the self-assessment

matrix. These averages were calculated on the number of answers and not on the number of team members.

As for questions where the possible answers were “yes” or “not”, a different measure of central tendency was used, the mode. The reason is that when for instance it is asked if the school has a certain document and three or four members of the team answer “yes” and just one answers “no”, it looks closer to reality to think that the school really has that document. Just in the case of having a tie (two “yes” and two “no”), the arithmetic mean is the value that is transferred to the self-assessment matrix.

The questionnaire includes self-perception questions but also the collection of some quantitative data (for instance the percentage of teachers with a university degree, the percentage of teachers who hold a university degree related to the subject they teach and the average salary) that can be compared or correlated with the final score of the questionnaire after the self-assessment or with the results of the GPSC.

In some cases, the answers of the team members could be compared with an external source. Thus the researcher elaborated a second set of results using the assessment matrix with the corrected information. For instance, in some cases the team members thought that a certain document existed but instead there was no or the other way around.

Therefore, at the end the researcher got two scores for every school, one merely based upon the work of the quality teams and a second one corrected with some external evidence.

RESULTS

In this section we organize the presentation of the results articulated around the research questions.

First Research Question: Comboni Primary Schools Quality.

The first research question is: “what are the particular characteristics of quality for a Comboni Primary School?”

Continuous Students’ Assessment

In the three schools the progress of the students is evaluated with periodical assignments and tests in addition to the final exams. In fact, this is one of the characteristics of these schools more appreciated by families (sub-criterion 5a: well-designed processes).

Their teaching staff is faithful to the preparation of students' homework. At school 1 teachers ask for homework once a week while at schools 2 and 3 they ask even daily

It is worth recalling that the studies of Fuller & Clarke (1994, quoted by Scheerens, 2004, p. 8) state that "frequency homework" is one of the input variables that showed significant association with achievement in nine out of eleven studies carried out in primary schools of developing countries.

Also the study of Lako concludes that one of the main factors related to the teaching staff that affect quality positively is the application of "continuous assessment exams to test students' progress in studies" (Lako, 2010, p. 60).

Material Resources Management

In these schools there is normally a greater care for the premises and material resources in relation to government schools (sub-criterion 4c: material resources, premises and equipment management).

Schools 1 and 2 affirm to have a written inventory of furniture and equipment while the members of school 3 team affirm not to have it. Nonetheless, the Parish Priest brings the inventory of the school material. School 2 headmaster also brought a copy of the inventory. Just school 1, with more financial possibilities, has a full time responsible for maintenance.

The researcher observed that the standard of the premises of the three schools is good considering the context in which you easily find Government schools without toilets or "toilets that could not be used due to lack of doors, water or technical problems" (EU et al., 2015, p. 120). These schools also are connected to the electrical net, - school 1 has even a generator-, and have running water.

A study carried out in twelve locations of Red Sea and Blue Nile States underlines the lack of maintenance in government schools "(no school wall, furniture, drinking water, latrines etc...)" (EU et al., 2015, p. 437).

The research of Fawzia Taha Mahdī at Khartoum State mentions that local inspectors and headmasters underline problems related to the school environment like the lack of furniture for instance among the main factors that have a negative impact on the students' results (2006, p. 133).

The research of the efficient schools movement in developing countries showed that the quality of the facilities had significant positive association with achievement in 6 out of 8 studies

(Scheerens, 2004, p. 22).

The research of Martin Lako also identified physical facilities and the safety, cleanness and good maintenance of premises as fundamental quality factors according to the 94 students, 30 teachers and three head teachers who filled his questionnaires (2010, p. 60).

Preservice Training

The preservice training of the teaching staff of these schools is better than the average one in government schools. School 1 has 35 out of 39 teachers (89%) who are Bachelor's Degree holders. School 2 has sixteen teachers in total: three just completed Secondary School, three got an Intermediate Diploma, nine are Bachelor's Degree Holders and one, the Headmaster, is a Master's Degree holder.

The Unesco report, based upon information provided by the Federal Ministry of General Education in 2017 (Sudan Education Sector Analysis Draft Outlines), states that the "current teaching body in basic education is characterized [...] by a majority of teachers who do not have a university degree" (Unesco, 2018, p. 84).

Staff Commitment

In the three schools the staff members look very committed with the work as the percentage of absence is low. Less than 5% of the staff members have a one day absence per week in a normal week in the three schools. Every school keeps records of the attendance of their staff (Sub-criterion 7a: staff satisfaction).

This a sign of a strong school management which is significant in a country where a study funded by the European Union points the "regular absenteeism of the teachers" (EU et al., 2015, p. 99).

Low Dropout percentage

In Sudan "15% of primary school children are at risk of dropping out before the final grade of primary school" (Unicef, 2014; quoted by Unesco, 2018, p. 28). The survival rate is better for girls: 72.10%. In this context, the results of Comboni Schools look very good. At School 1 just 5 students left the school before the end of the year (0.4%) and at school 3 just 3 did it (1.6%). School 2 did not provide statistics on this regard.

Second Research Question: EFQM Excellence Model for Self-knowledge

The second research question is: “How can the EFQM Excellence Model help the school to know itself better?”

The main difficulties that the quality teams found during the process were the “assessment procedures and way of drawing final results during the process of self-assessment” (five members) and the questions related to financial issues (three members). All the respondents found the process helpful and the most mentioned reason was that they believed that the self-assessment would produce “improvement of processes and outputs (or quality in general)” (6 members).

Deepening the Self-description

When the school administrations were invited to describe themselves in the seminar previous to the self- assessment based upon the EFQM Excellence Model, they pointed out these elements:

Table 2: Self-knowledge before this study

School	Description of the school	Values	Attitudes that represent the culture of the schools
School 1	Stable system Moderate performance Difficulty to provide the level of English expected by parents	Dedication; Self-assessment and improvement; Motivating the students; Creative and renewing; Collaborative and sociable	Abiding to school regulations, punctuality, good conduct, friendliness, mutual respect, nationalism, participation in all religious and national occasions
School 2	School in a context with few awareness of the importance of education founded by the Church to help the displaced.	Respect for the work of the workers, honesty, collaboration	Discipline Presence of dustbins

School 3	Catholic Church School with all the school years with diversity of religious communities (Christian and Muslim)	Religious and cultural values	Honesty; Moral; Mutual respect
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This table gives an idea of the characteristics that look more relevant to the school administrators before the self-assessment. If we compared this self-description with that after the Self-Assessment process with the EFQM Model, it becomes clear that the latter one provides a more complete framework to inquire in the different dimensions of the school life and to unveil weak points that had not been identified previously.

Lack of Strategic Planning

At the end of the self-assessment process, the three teams have underlined their need of improving their strategic planning (Sub-criterion 2c: designing, communicating and validating the strategic plan).

No school declares to have a strategic plan or a document that states the mission and vision of the school.

The research of the Efficient Schools movement underlines the importance of the “correspondence between objectives and strategies as decisive factor for school efficiency” (Martín-Moreno Cerrillo, 2007, p. 126). And in fact, the analysis of the Improvement Plans revealed this difficulty to match objectives and strategies.

A UNESCO report mentions the “absence of forward-looking resource planning” at the level of general education in Sudan (Unesco, 2018, p. 128). The difficulty for strategic planning also appears at State level in cases like Blue Nile and Red Sea States for instance (EU et al., 2015, p. 436).

Siddig Adam Hamed (2016) studies the impact of culture on strategic decisions in the Sudanese context. According to his study, Sudanese culture emphasizes two elements that have an impact on the decision making process: “collectivism” and “performance orientation” (2016, pp. 7-8). The latter one could also be interpreted as “short-term orientation” which helps contextualize the difficulties of the three schools for long term strategic planning.

Third Research Question: Producing an Improvement Plan

The third research question is “how can the EFQM Excellence Model help the school to produce its Improvement Plan?”

The self-assessment tool did really lead to produce an improvement plan in an articulated way. And surely it also improved the quality of previous self-assessments that is the first step to produce a good improvement plan. This statement looks clear when we compare the process for the self-assessment based upon the EFQM Model with the previous way of self-assessment that the fourteen schools directions were applying as expressed during the seminar previous to the selection of the three schools. Their answers were classified in groups according to the understanding of the question:

Table 3: Description of Previous Process of Self- assessment for 14 Catholic Schools

Previous understanding of the self-assessment process carried out by the school	Answers	No.	Subtotal
Methodology	Periodical meetings	1	2
	Collaboration with the Parish Priest and the Diocesan Education Office and the Parish Education Office	1	
Object-Contents	Students Exams	4	12
	Budget	1	
	Positive and negative points	1	
	Setting solutions	1	
	Self-support in terms of maintenance and salaries of teachers	1	
	Number of students	1	
	Percentage of success every year	2	
	Evaluation of the work to know the extent of implementation of the planned programs	1	
Rating	Good	4	4
	NR/DK	1	3
Frequency	There is no	1	
	Random and with conventional and outdated methods	1	

As for the three selected schools their answers were the following ones:

Table 4: Description of Previous Process of Self-Assessment

School	Description of previous process of self-assessment	Previous knowledge on EFQM
School 1	Random and with conventional and outdated methods	No
School 2	1. Exams; 2. Analysis of the results; 3. Evaluation of the work the groups to know the extent of implementation of the planned programs	Yes
School 3	Students' marks, the budget, positive and negative points, setting solutions	No

No school had done an improvement plan before. Moreover, the schools had no indicators to assess the students' performance in addition to their marks in the exams (sub-criterion 2b: Performance Indicator Input to Strategic Planning).

The Improvement Plans produced after the assessment with the EFQM Excellence Model were based upon a larger concept of quality and a better knowledge of themselves. The self-assessment process helped the members of the quality teams to think of aspects of school life never considered before.

The schools headmasters were invited to list the characteristics of quality in the seminar with fourteen school administrations previous to this study. In that seminar, school 2 was one of the two with a broader concept of self-assessment, even if much more limited than the provided by the EFQM Model. The headmasters of the other schools had a quite limited understanding and a lack of methodology.

The different aspects of the previous understanding of quality for the three teams of the sample can be classified according to the nine criteria of the EFQM Model:

Table 5: Previous Concept of Quality in relation to EFQM Model

Criterion	School 1	School 2	School 3
Leadership	Strong direction		
Planning and strategy	Clear policies and strategies Continuous updating of the school system	Continuous success	Well defined mission, vision and strategy; ability to implement projects
People (workers)	Trained teachers	Discipline Competence of teachers	
Partnerships and resources	Availability of technological tools		
Operations	Well organized Systematic evaluation of performance Good teaching and learning environment	Nice and civilized educational environment	
Workers results	Discipline		
Clients results	Disciplined students	Discipline	
Society results			
Key results	Authentic reports		

This table helps understanding the limits of the previous concept of quality in relation to the more holistic vision proposed by the EFQM Model.

Fourth Research Question

The last research question is: “which variables explain the different quality between the schools of the sample?”

The self-assessment tool based upon the EFQM Model for this research integrates resource-production variables as indicators in addition to process variables.

EFQM Self-Assessment Scores

The following table shows the percentage of the total score for every criterion (first column) and the results corrected by some external evidence.

Table 6: Percentage of the Maximum Score

Criterion	School 1		School 2		School 3	
	Self-perception	With ext. evidence	Self-perception	With ext. evidence	Self-perception	With ext. evidence
1	54,57	51,52	57,15	44,95	59,34	47,15
2	59,33	59,33	42,36	42,36	58,17	58,17
3	48,61	41,67	37,85	30,9	30,56	37,67
4	56,48	56,48	43,96	43,96	34,07	39,57
5	59,37	59,37	62,81	62,81	41,56	41,56
6	67,11	67,11	68,42	68,42	68,42	68,42
7	70,97	70,97	87,1	87,1	83,87	83,87
8	52,78	52,78	50	50	52,78	52,78
9	60	70,67	28,13	28,13	49,3	51,07
Mean	58,80	58,88	53,09	50,96	53,12	53,36

From these results we see that the criterion in which the three schools have a highest score is the seventh one, personnel results. There the two main quality indicators were the level of absenteeism (staff satisfaction) and the frequency of the homework asked by every teacher (staff performance) in addition to the self-perception on the school level in these two aspects.

The three schools almost coincide in the weakest criterion, the third one: people. School 2 is still weaker in the criterion 9 (key results). The criterion “people” includes human resource management, staff competence development, staff commitment and involvement and internal communication.

One way of interpreting this fact is to think that there is a contradiction between what the school does (criterion 3) and what the school achieves (criterion 7). But another way of interpreting this fact is to think that the indicators for criterion 3 were more demanding than those for criterion 7 and therefore that new indicators should be added to assess the latter criterion.

School 1 looks strong in the management of material resources, premises and equipment and weak in the management of technology. This aspect is considered as the second weakest sub-criterion with a greater impact on the key results of the school.

Organization of an Exams Preparation Camp with Feeding

The studies collected by Fuller and Clarke (1994, quoted by Scheerens, 2004, p. 22) in primary schools of developing countries show that the variables child nutrition and feeding have positive association with achievement in seven out of eight studies. In the analysis of the results of the General Primary School Certificate, two schools of our sample showed a meaningful improvement in their marks after organizing a preparation camp that included a daily meal. This result is coherent with the above mentioned studies. Nonetheless it is not clear which one of the two variables had a greater impact: the feeding or the conditions for better study that provide the camp (time table, quiet place that facilitates concentration, teachers ‘support).

In a study carried out in twelve locations of Red Sea State and Blue Nile State, the schools also organize camps to prepare the eighth grade students optimally. “The students come to school at 7.00 a.m. and work till 6 p.m. to prepare for the exams. To avoid their being overworked, the academic subjects are alternated with co-curricular activities. There is singing, dancing, and lunch” (EU et al., 2015, p. 371).

Table 7: Pass % in Relation to the Organization of Camp with Breakfast

School	2016/2017		2017/2018	
	Preparation camp with breakfast	% of Pass in the GPSC	Preparation camp with breakfast	% of Pass in the GPSC
School 1	No	90.1%	No	85%
School 2	No	50%	Yes	70%
School 3	No	44%	Yes	100%

Some Input Variables and Quality

Certainly the size of the sample of this research is too small for a proper statistical analysis. Nonetheless, it can be interesting to study the correlations between some input variables that showed significant and positive association with achievement in primary schools of developing countries. The two dependent variables related to achievement would be the percentage of students who passed the General Primary School Certificate (GPSC) and the EFQM final score based upon data.

Table 8: Some Input Variables Related to School Achievement in the Three Schools

School	No. of students ¹	Av. No. of students per class	Av. No. of students per teacher	Teachers with a university degree (%)	Teachers with a specialized university degree ²	% of pass in the GPSC	EFQM Result with data ³
1	1,200	50	27.91	89	70,00	85	610,27
2	575	57.5	35.94	62.50	50,00	70	512,82
3	185	23.12	15.42	41,7	29,20	100	550,71

1. Data collected by the researcher on 26/04/2018.
2. Here the university degree is related to the taught subject.
3. The maximum score is 1,000.

If we calculated the respective correlations:

Table 9: Correlation between some Input Variables Related to School Achievement in the Three Schools

	No. of students	Av. No. of students per class	Av. No. of students per teacher	Teachers with a university degree (%)	Teachers with a specialized university degree	% of pass in the GPSC	EFQM Result with data
No. of students	1						
Av. No. of students per class	0,65	1					
Av. No. of students per teacher	0,49	0,98	1				
% of teachers holders of a university degree	0,998	0,70	0,55	1			
% of teachers holders of a specialized university degree	0,99	0,75	0,61	0,997	1		
% of pass in the GPSC	-0,38	-0,95	-0,99	-0,44	-0,51	1	
EFQM Result with data	0,71	-0,08	-0,27	0,66	0,60	0,39	1

Number of Students

Considering the percentage of students who passed pass in the GPSC as indicator of achievement, the two input variables that have a greater impact are average number of students per class (-0,95) and the average number of students per teacher (-0,99). The less those ratios are, the better the marks in the GPSC are.

But if we consider the result of the self-assessment based upon the EFQM model and corrected with data, the three more significant relevant variables that have an impact on the school quality are: number of students (0,71), percentage of teachers holders of a university degree (0,66) and percentage of teachers holders of a specialized university degree (0,60).

While the studies collected by Fuller and Clarke in primary schools of developing countries are not so clear on the relevance of the “class size” factor, just nine out of twenty six showed

significant positive association with achievement (Scheerens, 2004, p. 22), the research of Fawzia Taha Mahdī in Khartoum State mentions that local inspectors and headmasters underline the overcrowding in the classrooms among the main factors that have a negative impact on the results of the students (2006, p. 133).

In the same line, the evaluation of the performance of the “Save the Saveable Schools” revealed that the increase in the ratio of students per class had a negative impact on the results of the National Exams of Grade 8 (GPSC). Between 1991 and 2002 the results of those schools oscillated between 60% and 85% of pass (Wani Gore, 2002, p. 35).

Pre-service Teachers Training

Pre-service teachers training: the percentage of teachers in the school who hold a university degree correlates with the score of the self-assessment with the EFQM Excellence Model (0.66) while the correlation for the percentage of teachers who hold a university degree related to the subject they teach is 0.60 (sub-criterion 3b: Competence Development of the Staff).

In-service Staff Training

The questionnaire included the number of workshops organized by every school (internal workshops) and the workshops or other activities of professional development to which the school has sent staff members as indicators to evaluate “staff competence development” (sub-criterion 3b). From these data, it is possible to examine the impact of the in-service training:

Table 10: Staff Training in Relation to Key Results

School	Internal Workshops	External Workshops	Courses	University Degree	2016/2017 % of pass in the GPSC	2017/2018 % of pass in the GPSC	EFQM Result with data
School 1	2	2	1 for 5 teachers	1 teacher for MA	91.1	85	610,27
School 2	0	1	1 for 5 teachers		50	70	512,82
School 3	0	1	1 for 5 teachers 1 for 3 teachers		44	100	550,71

As already mentioned, in the studies of Fuller & Clarke (1994, quoted by Scheerens, 2004, p. 19), the input variable “in-service teacher training” showed significant association with achievement in eight out of thirteen studies carried out in primary schools of developing countries.

Moreover the weak practical pre-service training provided in the faculties of education in Sudan (Unesco, 2018, p. 86) recalls the need of caring the in-service continuous education of teachers.

The importance of this in-service continuous training is also stressed by the fact that “candidates with low marks are assigned to the educational sciences and faculties of education in Sudan. The majority of students in these programmes are assigned to educational specializations contrary to their initial interests” (Unesco, 2018, p. 87).

In this case, we see that the school that has more resources in general, school 1, is the one that cares more for staff in-service training and gets a better result in the self-assessment with the tool based upon the EFQM Model. School 3 also invested more in in-service training and got a better score than school 2. There is a perfect correlation between the amount of training activities and the score after the self- assessment with the EFQM Excellence Model.

It is also worth mentioning that this correlation is not so evident with the results of the GPSC because of the impact of the organization of the preparation camps with daily breakfast.

Average Salary

Here we examine the impact of the salary on the EQFM score. This indicator was included in the sub- criterion 3c: Staff Commitment and Involvement:

Table 11: Average Salaries in Relation to GPSC Results and EFQM Score

School	Average Salary	2016/2017 % of pass in the GPSC	2017/2018 % of pass in the GPSC	EFQM Result with data
School 1	1,600	91.1	85	610,27
School 2	1,166	50	70	512,82

School 3	1,248	44	100	550,71
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The correlation between the results of the self-assessment based upon the EFQM Model and the average salary is very close to 1. Just as a curiosity, the researcher also included the dependent variable “2016/2017 % of pass in the GPSC” even if the salaries correspond to the 2017-2018 academic year to avoid the strong impact of the preparation camp on the results of School 3.

Table 12: Correlation between Academic Results, EFQM Score and Average Salaries

	Average Salary	2016/2017 % of pass in the GPSC	2017/2018 % of pass in the GPSC	EFQM Result with data
Average Salary	1			
2016/2017 % of pass in the GPSC	0,96	1		
2017/2018 % of pass in the GPSC	0,18	-0,12	1	
EFQM Result with data	0,98	0,87	0,39	1

In Sudan it is worth mentioning that “between 6% and 20% of regular teachers have other jobs or provide private tutoring to students, indicating a need for supplementary income” (Unesco, 2019, p. 92), which surely has an impact on the quality.

In the same line the study carried out in schools of twelve locations of Blue Nile and Red Sea States shows that teachers are not motivated financially and morally, thus weakening their desire to work in hardship areas and to promote the spirit of teamwork. Frustration of teachers due to the pressures of living and low salaries makes them indifferent and resort to different methods to improve their incomes (EU et al., 2015, pp. 446-447).

DISCUSSION

This study has shown that the EFQM Model really offers a holistic approach to quality management and to the self-assessment of that quality applicable to Comboni Primary Schools of Khartoum State.

The implementation of the self-assessment questionnaire showed some divergence between the statements of the members of the quality teams and real data. Even if the application of the

Wilcoxon Signed Ranks Test showed that this divergence was not statistically meaningful, this is a real challenge in Sudan. A UNESCO report underlines in relation to the management of Educational Management Information Systems the “lack of skills and qualifications required to collect, manage and use the data” (Unesco, 2018, p. 135). In many occasion, self-perception or self-assessment is based on the desire about how things should be and not on real facts.

The self-assessment tool based upon the EFQM Model was built and applied to a sample of three Comboni Schools and their quality teams were able to produce an improvement plan based upon a deeper and more objective self-knowledge in relation to the previous one. This improvement could be verified by comparison with the previous information that the administrations were able to provide about their respective schools.

Nevertheless, the improvement plans revealed that the members of the quality teams found it difficult to connect basic strategic goals with the necessary strategies that should be designed to achieve them.

At the end of the process, the members of the quality teams found the process helpful and expressed their readiness to repeat it after one year which would be fundamental for the full assimilation of the Model. The process also enlarged their understanding of the concept of quality.

The research also showed some particular characteristics of quality of Comboni schools: the stress on continuous evaluation of the students through homework and periodical tests in addition to the final exams; their open and dynamic concept of identity that makes them welcoming to diversity; the care for quality of the premises and their Catholic identity.

The study also identified some variables that explain the different quality between the schools of the sample: pre-service teachers training; in-service staff training; average salary and number of students.

The organization of camps to help finalists to prepare the GPSC exams had an extraordinary impact on the results. In one school the percentage of success in that exam passed from 44% to 100%. In those camps the students receive a daily meal and find suitable conditions and support to prepare the exams.

CONCLUSIONS

Considering the difficulty for the members of the quality teams to assess performance based upon concrete facts, which is a fundamental pillar of the EFQM Excellence Model, the

researcher suggests adding a series of indicators to improve the future application of the self-assessment tool.

It would have enriched both the self-assessment tool and the research the inclusion of direct observations of complete lessons to assess the teaching methods and classroom life as part of sub-criterion 5a (well- designed processes). These observations would have helped triangulate data by looking at teachers 'social interaction with students in the classrooms and their pedagogic and didactic skills. It would have been interesting to verify if the teachers use teacher-centred methodologies or child-centred methodologies such as the use of group teaching methods, of open questions and of teaching aids that help children to be actively involved in constructing their own learning (EU et al., 2015, p. 218).

Another indicator that would have improved the self-assessment of the teaching methodology (criterion 5a) is the percentage of students who are able to participate fully in the lessons, to contribute and to receive feedback from the teacher during one class.

Still another indicator that would have improved the assessment of the teaching processes would have been to verify if there are lesson planning notebooks, to revise them and to verify through direct observation if they correspond with actual teaching.

It can be verified if they contain any description of what the students would actually be asked to do or they just contain a summary of the contents of the text book.

The development of the school staff should lead them to have "control over instructional decisions" which is one of the six main characteristics of the Efficient Schools movement model (Martín-Moreno Cerrillo, 2007, p. 126). This factor leads us again to sub-criterion 3c (staff commitment and involvement) and to criterion 2 (planning and strategy) that revealed a certain weakness in these schools and a top-bottom approach in their making decision process.

Another significant material resource is the textbooks. According to the studies collected by Fuller & Clarke (1994, quoted by Scheerens, p. 20), their availability is significant input variable in 19 out of 26 studies and was not considered in this research. Therefore, this research could also be enriched with questions like: student-textbook ratio, student-notebook-ratio, student-desk ratio and chalkboard- classroom-ratio.

Still inside sub-criterion 4c (management of material resources, premises and equipment), the information could have been enriched by adding questions on the conditions of toilets or latrines, electricity, drinkable water and classrooms (fans, blackboards, cleaning...); the presence other visual or learning aids in addition to the blackboard or the multimedia projector (wall posters for

instance); or the number of students per desk.

With all these improvements, the self-assessment questionnaire based upon the EFQM Model could become an excellent tool to support continuous improvement processes in primary schools of Khartoum State.

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