An Investigation of Factors Influencing Sustainable Education within Qatari High Schools by Using Total Quality Management (TQM) Principles

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Abstract- In Qatar, the quest for creative and inspiring educational institutions is driving the nation toward fostering independent, confident, and self-reliant critical thinkers. This effort to build exceptional schools in line with international standards is essential to achieving Qatar's ambitious 2030 vision of transforming into a developed society committed to sustainable development. As part of this vision, the Third Qatar National Development Strategy (2024-2030) sets a goal to significantly improve Qatari students' performance in international exams such as PISA and TIMMS, aiming for an increase of 30 points in each assessment cycle. This challenge underscores the urgent need to focus on enhancing the quality of primary and secondary education, addressing inequalities, and improving learning outcomes for all students. However, according to the Annual Statistics of Education in Qatar (2021-2022), it is concerning that Qatar ranks below the global average in international assessments. These exams are crucial for measuring the effectiveness of a country's education system compared to others and identifying areas that require improvement. This paper conducted an in-depth review of the literature on Total Quality Management (TQM) scopes and related statistical methods, such as data analysis and regression modeling, to highlight current best practices, innovative approaches, and evidence-based strategies for improving educational quality. The findings reveal that low student achievement is influenced by factors such as curriculum development and the involvement of parents and the wider community in education.

I. INTRODUCTION

Qatar has incorporated the Sustainable Development Goals (SDGs) into its national vision, known as the Qatar National Vision 2030 (QNV 2030). This indicates a commitment to aligning the country's development goals with global sustainability objectives. The SDGs have been integrated into various national strategies, including ministerial and sectoral plans. This demonstrates a holistic approach to implementing sustainable development principles across different sectors of the economy and society. Qatar has also integrated the SDGs into its education strategy, recognizing the importance of imparting knowledge and values related to sustainability to future generations (Al Kuwari et al., 2021). SDG 4, also known as Sustainable Development Goal 4(Appendix C), focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (United Nations, 2023). Achieving the goals outlined QNV 2030 is a priority. Ensuring that education is aligned with these goals is seen as essential for long-term human development and addressing challenges, including unexpected events such as the 2017 Qatar blockade and the COVID-19 pandemic (Al Kuwari et al., 2021). To address the identified gaps and challenges, Total Quality Management (TQM) would be the best solution. TQM is an organizational approach that centers on enhancing the quality and efficiency of an institution's processes, products, and services to meet or exceed customer expectations. It emphasizes continuous improvement, involving employees, data-driven decision-making, process optimization, and strong leadership involvement. TQM is not merely a set of operations but an ongoing process of identifying areas for enhancement and empowering employees to contribute to quality improvement, all while keeping a keen focus on customer satisfaction. (Iyer, 2018). It's important to note that the application of TQM in schools is an ongoing process and can evolve over time. For the most up-to-date information on the state of TQM in schools in Qatar, it is recommended to

consult educational authorities, research studies, or reports from relevant organizations (Wibowo et al., 2018).

II. BACKGROUND

In Qatar, the pursuit of creative and inspiring educational institutions is steering the nation toward producing independent, confident, and self-reliant critical thinkers. This drive to establish exceptional schools aligns with international standards and is pivotal to realizing Qatar's ambitious 2030 vision, transforming it into an advanced society committed to sustainable development. Remarkable investments, amounting to QR 22 billion in 2020, underscore the nation's dedication to education (MOEHE, 2023).

The Ministry of Education and Higher Education (MOEHE) plays a crucial role in developing the educational landscape of Qatar. Qatar has successfully cultivated a robust and diverse K-12 education system, which has exhibited consistent growth, owing to the backing it has received. This comprehensive framework caters to the diverse needs of students and families, comprising a total of 208 public schools that provide education to over 196,000 students, together with more than 310 private schools that serve nearly 200,000 students (MOEHE, 2023). These educational establishments offer a variety of courses to cater to a vast range of ethnicities and cultural backgrounds. At the heart of successful schools in Qatar lies the high standard to which teachers are held. The Ministry employs rigorous recruitment processes, licensing procedures, and robust support mechanisms for educators. Various training options are made available, demonstrating the nation's commitment to nurturing skilled and dedicated teachers. Significant resources are channeled into teacher training and development initiatives, ensuring the continuous enhancement of teaching methodologies.

Qatar's dedication to educational excellence extends beyond its borders. The nation is steadfast in its commitment to incorporating global best practices and standards. Importantly, these enhancements are meticulously tailored to align seamlessly with Qatari values and cultural norms (MOEHE, 2023). This holistic approach underscores Qatar's unwavering resolve to provide not only a world-class education but also an education deeply rooted in its rich heritage and traditions.

In addition, the Third Qatar National Development Strategy for 2024-2030 aimed for a sizeable rise in the average score that Qatari students achieve on international examinations such as PISA (Program for International Student Assessment) and TIMMS (Trends in International Mathematics and Science Study). The goal was to raise the average score by 30 points in each cycle. Furthermore, the (MOEHE) set an ambitious target in their strategy for 2018-2022, aiming for an average score of 500 points by 2022. These strategies were devised to enhance the educational standards and outcomes for Qatari students (Ziad, 2021). This challenge emphasizes the urgency for the nation to focus on enhancing the quality of primary and secondary education, addressing disparities, and improving learning outcomes for all students.

III. LITERATURE REVIEW

TQM in Education

TQM is an organizational approach that centers on enhancing the quality and efficiency of an institution's processes, products, and services to meet or exceed customer expectations. It emphasizes continuous improvement, involving employees, data-driven decision-making, process optimization, and strong leadership involvement. TQM is not merely a set of operations but an ongoing process of identifying areas for enhancement and empowering employees to contribute to quality improvement, all while keeping a keen focus on customer satisfaction (Iyer, 2018). The term "total" emphasizes the necessity for all members within the organization to actively participate in ongoing improvement initiatives. Similarly, the term "Management" underscores that this involvement pertains to everyone in the organization. The concept of management applies universally, transcending status, position, or role, as each individual bears managerial responsibilities within their specific domains (Sallis, et al., 2014). The application of TQM as a framework for enhancing educational quality finds relevance in a diverse array of settings, spanning private and public companies, as well as various university organizations (Sadikoglu & Olcay, 2014).

TQM is an important quality standard in education because it provides a concept of continuous improvement, which provides schools with the tools they need to adapt to their customers' ever-changing demands (Sallis, 2015). As a result, it has the potential to increase educational outcomes like student engagement, teacher morale, and test results (Mahmood, Ismail, & Omar Fauzee, 2020). Because of the rapid pace of societal change and the appearance of new concerns, governments and educational authorities around the world are worried about how to improve educational quality. TQM provides core ideas for implementing critical educational improvements (Gomes & Panchoo, 2017).Implementing TQM can improve the educational process, provide a more inspiring learning environment, fine-tune the curriculum, provide training services more quickly, and save expenses (Arkorful & Abaidoo, 2014).

Quality education is a critical issue in many civilizations throughout the world. In a highly competitive education industry, the success of academic institutions is determined by the quality of education they deliver. TQM has piqued the interest of educational professionals, legislators, academics, and researchers due to its recognition as a successful management philosophy that promotes continuous improvement, customer satisfaction, and organizational excellence. TQM provides fundamental principles for leading necessary educational improvements (Gomes & Panchoo, 2017). TQM is an evolution of the quality assurance concept that aims to foster a culture in which every member of the organization is motivated to meet the needs of various stakeholders such as students, parents, government bodies (both central and local), the general public, and specific communities such as the business and industrial sectors (Sani et al., 2015).

SDG4 in Education
SDG4 comprises seven crucial aims according to United Nations (2023) (Appendix C), with the first three targets specifically aimed at guaranteeing inclusive and equitable access to education at all levels, ranging from basic education to university education, as well as technical institutions, for individuals across all age groups. The fourth objective centers on the development of employability skills that are in line with the demands of the job market. The

fifth objective provides comprehensive educational resources for individuals with impairments, as well as those belonging to vulnerable and marginalized populations. The primary objective of the sixth target is to enhance the capabilities of all individuals in the younger generation by equipping them with advanced skills in reading and numeracy, gradually diminishing the overall illiteracy rate within the country. The significance of the seventh aim is of utmost importance, as it underscores the imperative to develop an educational curriculum that aligns with both the demands of society and the personal aspirations of individuals. The objective of this method is to establish a society that is intelligent, skilled, and sustainable, while also being devoid of gender discrimination, violence, and conflict. In its ultimate goal, the concept entails the transformation of Earth into a sanctuary characterized by tranquility and flourishing. Hence, it can be argued that SDG4 not only facilitates the promotion of sustainability but also serves as a catalyst for other SDGs to address practical issues in the real world (Wals & Benavot, 2017).

The Relationship between TQM in Education and SDG 4
According to Pal and Bhattacharya (2020), TQM has emerged as a viable approach to enhance the delivery of quality education and promote the development of employable skills among learners. TQM is fundamentally associated with SDG4 objectives, allowing it to meet its targets. TQM methodology provides a structured approach to improving educational quality, ensuring access to education at all levels, developing employability skills, promoting inclusivity for people with disabilities, equipping youth with essential literacy and numeracy skills, and designing curricula that are tailored to societal needs. By using TQM principles, educational institutions can effectively deliver on the SDG4 targets, establishing a complete and sustainable educational environment. The following are examples of TQM frameworks in the educational sector.

The Relationship Between Quality Education and International Assessments
Historically a study by Little (2018) mentioned that to ensure the quality of education, assessments of educational progress have been used. The benefits of these assessments are to validate the completion of a

specific educational level and to determine which students are eligible for further education or employment opportunities. Every year, schools compare the performance of their students in national exams and take pride in their achievements (Little, 2018). Since its establishment in the early 1960s, the International Association for the Evaluation of Educational Achievement has conducted a series of international and regional student evaluations. With each cycle, an increasing number of countries have been motivated to participate in these assessments, including TIMMS and PISA.

According to Perry and Ercikan in 2015, the test results are crucial in providing useful insights into a variety of educational facets. These insights encompass the assessment of teaching and learning quality within schools, the overarching school culture, and the effectiveness of administrative practices. Additionally, the test results shed light on the influence of diverse demographic, economic, and social factors that may shape and impact educational outcomes. This comprehensive approach to analysis allows for a more nuanced understanding of the multifaceted elements that contribute to the overall performance and effectiveness of educational systems. Participation in international studies assessing the quality of education provides the national education system with many advantages. The results obtained in these programs not only allow for a comprehensive evaluation of the country's education quality by international standards but also serve as a catalyst for reform within the national education system. These outcomes play a pivotal role in refining educational content, enhancing pedagogical training, and shaping professional development programs for educators. Additionally, the insights gained contribute to the creation of a new generation of textbooks guided by specialized expertise. The positive impact of international programs extends further, influencing the overall quality of national education initiatives. Moreover, the involvement of leading experts from various organizations in these international endeavors enriches the perspective on educational practices, fostering a collaborative and globally informed approach to education improvement (Matkarimov, 2022).

Some important research, like the work of Hanushek and Woessmann (2020), shows how important it is for a country's overall cognitive abilities to be measured by internationally recognized tests in subjects like science and math, like TIMMS, PIRLS, and PISA. These assessments serve as valuable benchmarks for assessing the educational standards of a nation. The attribute of being educational, thus, assumes a crucial function in propelling economic advancement.

Through an examination of the educational systems in nations that have regularly demonstrated strong performance in international exams evaluating cognitive abilities, it is argued that there are both shared patterns and distinct trajectories toward achieving excellence within educational frameworks (Yilmaz, & Keskin, 2020).

IV. RESEARCH PROBLEM

According to the Annual Statistics of Education in the state of Qatar (2021-2022), it is concerning that Qatar ranks lower than the world average in international assessments such as PISA and TIMSS. These assessments provide a measure of a country's education system in comparison to other countries and can highlight areas for improvement. Low-level scores in Mathematics and Science for 4th and 8th graders suggest that there may be issues with the curriculum, teaching methods, or assessment practices in these subjects. Additionally, the low scores indicate that there may be a need for more targeted and individualized support for struggling students. The classification of Qatar as second-to-last in the PISA test is also concerning. It suggests that Qatari students are not meeting the minimum level of proficiency in core subjects such as reading, mathematics, and science. This may have implications for the future success of these students in higher education and the workforce (Al Kuwari et al., 2021).

In 2012, the Third National Human Development Report (NHDR) emphasized the importance of addressing the fall in enrollment in science and mathematics. This decline has to be reversed in order to better meet the needs of knowledge-based economy companies (p.52). In addition, the Second Qatar National Strategy for 2018-2022 aimed for a sizeable rise in the average score that Qatari students achieve

on international examinations such as PISA and TIMMS. The goal was to raise the average score by 30 points in each cycle. Furthermore, the Ministry of Education and Higher Education (MEHE) set an ambitious target in their strategy for 2017-2022, aiming for an average score of 500 points by 2022. To put this into perspective, the scores at the time were 418 in PISA and 423 in TIMMS. These strategies were devised to enhance the educational standards and outcomes for Qatari students (Ziad, 2021).

Purpose of the study

The purpose of this study is to investigate the factors affecting the academic achievement of high school students in Qatar.

Research Methodology

I conducted a thorough review of the literature on TQM scopes and related statistical methods such as data analysis, and regression modeling, and identified current best practices, innovative approaches, and evidence-based strategies that have been successful in improving the quality of education.

The following are the TQM pricipals that I used in my survey(Appendix D):

- *Leadership:* Leadership and TQM are two critical components of organizational success, and they are closely intertwined. TQM is a management approach that focuses on continuous improvement and employee involvement to achieve superior quality of education. Effective leadership is essential to implement and sustain TQM within an organization (Buch & Rivers, 2001).
- *Curriculum Development:* Schools need to develop a comprehensive and relevant curriculum that aligns with national educational standards and considers the needs and aspirations of students. The curriculum should be constructed to foster analytical thinking, problem-solving skills, creativity, and full development of students (Ferrin, Landeros, & Reck, 2001).
- *Teaching and Learning Strategies:* Efficient teaching and learning strategies are essential for quality education. Schools should promote student-centered approaches that encourage active participation, collaboration, and inquiry-based learning. Teachers should be trained in modern pedagogical methods to facilitate engaging and interactive classroom experiences (Kaiseroglou, & Sfakianaki, 2020).
- *Qualified and Motivated Teachers:* High-quality teachers are vital for quality education. Schools should prioritize the recruitment and retention of qualified teachers who possess subject knowledge, pedagogical skills, and a passion for teaching. Continuous professional development programs should be provided to teachers to enhance their teaching practices (Taftania, Kusna, Mahardika, Nugraheni, Eriyani, Yulindasari, & Gunawan, 2020).
- *Assessment and Evaluation:* Schools should implement fair and transparent assessment and evaluation systems to monitor student progress and identify areas for improvement. Formative and summative assessments should be used to gauge learning outcomes and provide feedback to students, parents, and teachers (Kwarteng, 2021).
- *Infrastructure and Learning Environment:* Schools need to provide a conducive learning environment with adequate infrastructure, including well-equipped classrooms, libraries, laboratories, and technological resources. A safe and inclusive school environment fosters student engagement and promotes effective learning (Pakpahan, & Hidayati, 2021).
- *Parent and Community Engagement:* Collaboration between schools, parents, and the wider community is crucial for quality education. Schools should actively involve parents in their children's education through systematic communication, parent-teacher meetings, and participation in school activities. Engaging in the community can lead to additional support, resources, and opportunities for students (Ngwenya, & Pretorius, 2014).
- *Monitoring and Continuous Improvement:* Schools should establish mechanisms to monitor and evaluate their educational practices continuously. This can include conducting regular evaluations, data analysis, and feedback channels in order to identify areas of improvement and put into effect any changes that are required. The exchange of ideas and information with educational authorities, peers, and educational specialists can yield insightful information that can

be used to improve educational quality. (Glaveli, Vouzas, & Roumeliotou, 2022).

- *Root Cause Analysis:* Data analysis helps identify the root causes of problems within processes. By analyzing data, organizations can pinpoint where issues occur and apply TQM principles to rectify them (Meyers, & VanGronigen, 2021).

Method

In order to test the proposed theoretical framework, the quantitative analytic technique was used to examine the factors associated with low academic achievement in this study. For this aim, information from the Teachers, Coordinator, and Academic Vice Principal was gathered via a questionnaire survey. This study's design provides an accurate picture of the various factors that are connected to students' poor academic performance in high school. The Academic Vice President, the coordinator, and teachers' responses were gathered using a questionnaire survey as a research tool. The primary section of the questionnaire includes responses from high school employers together with demographic data (job, years of experience in education, and study level).

Survey Instruments & Measurements

Eight factors related to school were calculated using 32 components from the questionnaire survey; "leadership, curriculum development, teaching and learning strategies, qualified and motivated teachers, assessment and evaluation, infrastructure and learning environment, parent and community engagement, monitoring and continuous improvement., which were dignified with scale. The responses were logged on a Likert scale. It involves five (5) points (Excellent(E), Good (gd), Neutral(N), Poor (P), Very Poor (VP)) and used as a measurement of the questionnaire. The responses were collected from teacher, coordinator and School Administrator at high schools in Qatar.

Ethical Approval

Ethical approval for this study was obtained in two stages. First, approval will be sought from the Ministry of Education and Higher Education (MOEHE) in Qatar (Appendix A). Following this, a second approval was obtained from the Institutional Review Board (IRB) at Qatar University through the IRB.Net website (Appendix B). These approvals will ensure that the study adheres to ethical guidelines and

standards for conducting research involving human participants. Subsequently, I introduced myself to each group of academic staff, outlined the study's goals, and sought their voluntary participation. Participants were informed of their right to decline participation at any time without providing a reason. Moreover, the confidentiality of gathered information and participant privacy was ensured through data coding.

Sample & Data Collection

The objective of this study contained of those employees who works in high school in Qatar. All workers, regardless of rank, constituted the study's unit. The protocol outlines the procedures for gathering, protecting, and upholding participant confidentiality as well as how personal information is obtained. The study's sample was selected using the purposeful sampling technique(Patton, 1990, p. 169ff). About 174 questionnaires were distributed to the various administrative and educational organizations after the questionnaire was set up in a Microsoft form.

Participants

Table 1 shows the demographic information of the participants.

 1. Position of Respondents

The data shows that the majority of respondents are teachers, representing nearly 79% of the sample, followed by coordinators at approximately 19%, and a small portion of school administrators at 2.3%. This distribution suggests that the findings primarily reflect the perspectives of teaching staff, with fewer responses from higher administrative roles. The heavy weighting towards teachers might indicate that the data is more reflective of direct classroom and instructional experiences rather than broader administrative viewpoints.

2. Years of Experience

 The majority of respondents (54.6%) have more than 15 years of experience, indicating a strong representation of highly experienced professionals. Around 23% of respondents have between 11 to 15 years of experience, and 16.7% have between 5 to 10 years, while only a small percentage (5.7%) have less than 5 years of experience. This data implies that the survey insights are based on respondents with extensive practical experience in the education sector,

which could enhance the reliability of their responses on issues that require long-term experience, such as curriculum development and assessment practices.

3. Study Level of Respondents

A significant proportion (68.97%) of respondents hold a bachelor's degree, suggesting that this is the typical level of education for professionals in the sample. Around 23% of respondents have a master's degree, while a smaller portion holds a PhD (6.32%). Only a minimal number (1.72%) have a diploma. This educational background distribution suggests that most respondents have a foundational or advanced understanding of educational theory and practice, with a substantial percentage having pursued postgraduate studies. The high number of respondents with at least a bachelor's degree adds credibility to their insights, as they are likely to be familiar with various educational practices and policies.

Table1 demographic data

Variable	category	Frequency	Percentage (%)
position	Teacher	137	78.64
	Coordinator	33	18.97
	School Administrator	4	2.3
Years of experience	Less than 5 years	10	5.7%
	5-10 years	29	16.7
	11-15 years	40	23%
	More than 15 years	95	54.6%
Study level	Bachelor	120	68.97
	diploma	3	1.72
	Master	40	22.99
	Phd	11	6.32

Data Validity

As displayed in Table 2, to examine the internal consistency of the component parts of the factors, the validity study was first carried out by calculating Cronbach's Alpha. The items included in the study have reliability coefficients over the 0.70 threshold. The range of Cronbach's coefficients, which show how highly dependable scales are, is 0.864 to 0.929.

Table2 Instrument validity and reliability

variable	Cronbach's α	results
leadership	0.929	valid
curriculum development	0.915	valid
Teaching and Learning Strategies	0.911	valid
Qualified and Motivated Teachers:	0.864	valid
Assessment and Evaluation:	0.878	valid
Infrastructure and Learning Environment	0.908	valid
Parent and Community Engagement	0.888	valid
Monitoring and Continuous Improvement	0.921	valid

Results

This study, which intends to investigate the factors that influence students' academic achievement, consists of eight themes. The content analysis that was done to determine the themes is shown in the graphs below.

Effect of leadership on students' academic achievement

The purpose of the research's first problem question was to determine how leadership affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
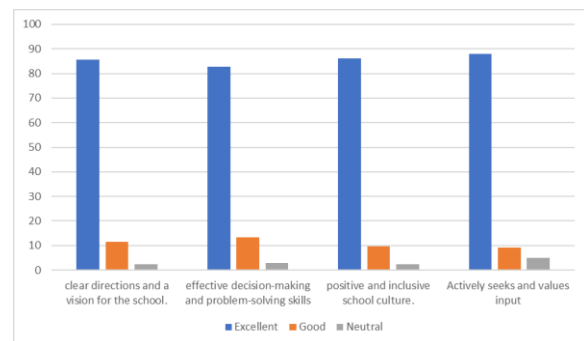

Figure 1. Percentage of Leadership Effect

Figure 1 shows that leadership factors impacting students' academic achievement include actively seeking and valuing input (87.93%), having a positive and inclusive school culture (86.21%), having clear direction and a vision for the school (85.63%), and making effective decisions and problem solving (82.76%)..

Effect of curriculum development on students' academic achievement

The purpose of the research's second problem graph that follow provide the findings from the content analysis that was done for this purpose.
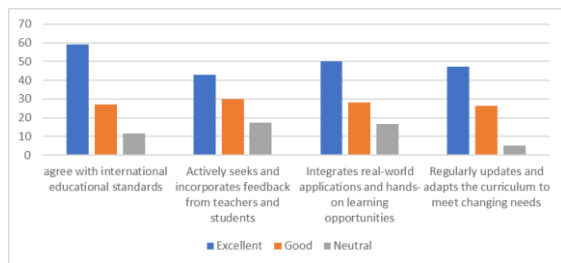
Figure 2. Percentage of the Curriculum Development Effect

Figure 2 shows that curriculum development factors impacting students' academic achievement include agree with international educational standards by (59.2%) participants, being integrates real-word application and hands-on learning opportunities by (50%) participants, regularly updates and adapts the curriculum to meet changing needs by (47.13%) participants , actively seeks and incorporates feedback from teachers and students by (43.1%) participants.

Effect of Teaching and Learning Strategies on students' academic achievement

The purpose of the research's third problem question was to determine how teaching and learning strategies affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
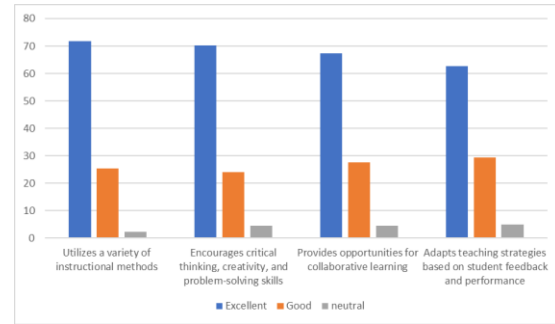

Figure 3. Percentage of Teaching and Learning Strategies Effect

Figure 3 shows that Teaching and Learning Strategies factors impacting students' academic achievement include utilizes a variety of instruction methods by (71.84%) participants, being encourages critical thinking, creativity, and problem-solving skills by (70.11%) participants, provides opportunities for collaborative learning by (67.24%) participants, adapts teaching strategies based on student feedback and performance by (62.64%) participants.

Effect of Qualified and Motivated Teachers on students' academic achievement

The purpose of the research's fourth problem question was to determine how qualified and motivated teachers affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
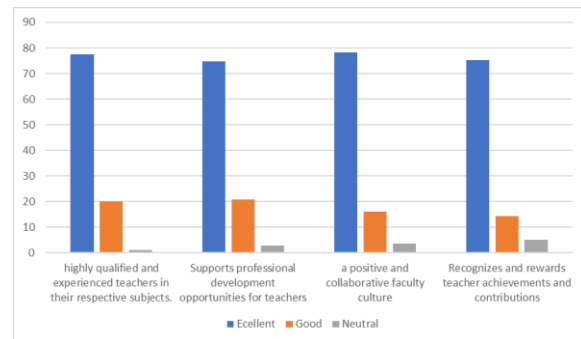

Figure 4. Percentage of Qualified and Motivated Teachers Effect

Figure 4 shows that qualified and Motivated Teachers factors impacting students' academic achievement include appositive and collaborative faculty culture by (78.16%) participants, being high qualified and experienced teachers in their respective subjects by (77.59%) participants, recognizes and rewards teacher

achievement and contributions by (75.29%) participants, supports professional development opportunities for teachers by (74.71%) participants.

Effect of assessment and evaluation on students' academic achievement

The purpose of the research's fifth problem question was to determine how assessment and evaluation affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
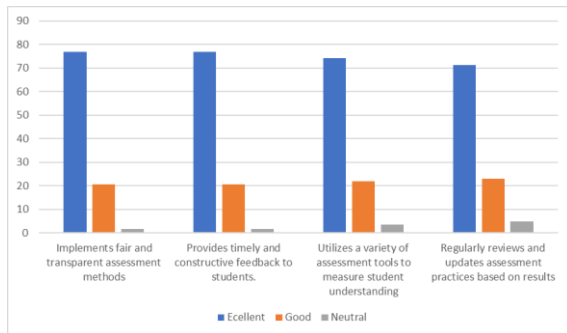

Figure 5. Percentage of Assessment and Evaluation Effect

Figure 5 shows that assessment and evaluation factors impacting students' academic achievement include providing timely and constructive feedback to students and implements fair and transparent assessment methods by (77.01%) participants, being a variety of assessment tools to measure student understanding by (74.14%) participants, regularly review and updates assessment practices based on results by (71.26%) participants

Effect of infrastructure and learning environment on students' academic achievement

The purpose of the research's sixth problem question was to determine how infrastructure and learning environment affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
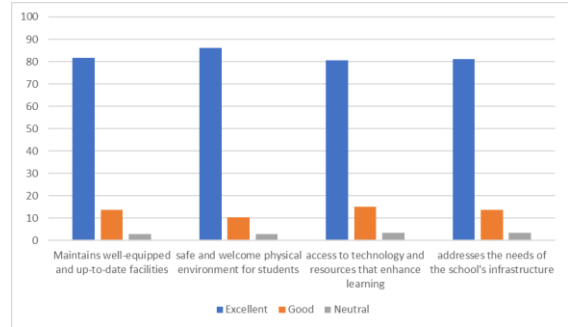

Figure 6. Percentage of Infrastructure and Learning Environment Effect

Figure 6 shows that infrastructure and learning environment factors impacting students' academic achievement include safe and welcome physical environment for students by (86.21%) participants, being well-equipped and up-to-date facilities by (81.61%) participants, addresses the needs of the school's infrastructure by (81.03%) participants, access to technology and resources that enhance learning by (80.46%) participants

Effect of parent and community engagement on students' academic achievement

The purpose of the research's seventh problem question was to determine how parent and community engagement affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
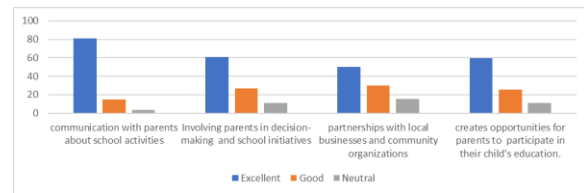

Figure 7. Percentage of Parent and Community Engagement Effect

Figure 7 shows that parent and community engagement factors impacting students' academic achievement include communication with parents about school activities by (81.03%) participants, being involving parents in decision-making and school initiatives by (60.92%) participants, creates opportunities for parents to participate in their child's education by (59.77%) participants, partnership with local businesses and community organizations by (50%) participants.

Effect of monitoring and continuous improvement on students' academic achievement

The purpose of the research's eighth problem question was to determine how monitoring and continuous improvement affects students' academic performance. The graph that follow provide the findings from the content analysis that was done for this purpose.
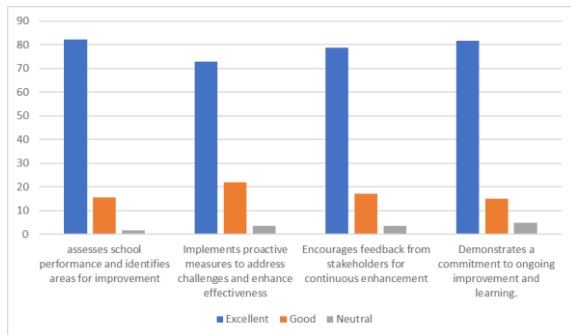

Figure 8. Percentage of Monitoring and Continuous Improvement Effect

Figure 8 shows that monitoring and continuous improvement factors impacting students' academic achievement include assessment school performance and identifies areas for improvement by (82.18%) participants, being demonstrates a commitment to ongoing improvement and learning by (81.61%) participants, encourages feedback from stakeholders for continuous enhancement by (78.74%) participants, implements proactive measures to address challenges and enhance effectiveness by (72.99%) participants.

V.   DISCUSSION

The data reveals a cohesive and experienced respondent group, with most participants being teachers and a majority having extensive experience (more than 15 years) and at least a bachelor's degree. This background suggests that the perspectives shared in the survey are informed by substantial, practical knowledge and understanding of educational practices.

The high-reliability scores (Cronbach's alpha) across all surveyed categories – leadership, curriculum development, teaching and learning strategies, teacher qualifications and motivation, assessment, infrastructure, parent and community engagement, and

continuous improvement – demonstrate a strong internal consistency within each category. This consistency indicates that respondents generally agree on key educational elements, reflecting a unified outlook on effective practices and areas for improvement within their institutions.

Examining the results of this research reveals that low academic achievement among students is influenced by the effect of curriculum development on students' academic achievement as well as parent and community involvement. The study's conclusions are consistent with those of earlier, comparable studies. As a result, planning for future family configurations can raise educational levels. In addition to having superior physical facilities, schools can be designed to raise academic attainment by allowing students to learn by doing and experiencing things. By putting the school's academic performance first, focusing on teachers' professional development, and removing themselves from bureaucratic duties, principals can arrange meetings with student representatives. A school environment that will encourage students' academic accomplishment, such as study centers and social and sports organizations, can be built, while all forms of social and leisure areas that will lower students' incentive to study can be minimized.

Following a comprehensive root cause analysis of the collected data is intervention will target the specific weaknesses identified in the Qatari education system: Professional Development Workshops for Teachers: To enhance the quality of teaching, professional development workshops will be organized for teachers. These workshops will focus on modern pedagogical techniques such as differentiated instruction, student engagement strategies, and effective assessment methods. The aim is to equip teachers with the necessary skills to foster an engaging and effective learning environment. Research indicates that ongoing professional development significantly improves teaching effectiveness and student outcomes (Darling-Hammond et al., 2017).

Student-Centered Learning Initiatives: To boost student engagement and motivation, the implementation of student-centered learning initiatives will be a key focus. Activities will include project-based learning, collaborative group work, and

the integration of technology-enhanced learning tools. These approaches are designed to make learning more interactive and engaging for students, thereby increasing their interest and participation in the learning process. Studies have shown that student-centered learning approaches lead to higher levels of student engagement and academic achievement (Freeman et al., 2014).

Parental Involvement Programs: Recognizing the crucial role of parents in student success, parental involvement programs will be developed. These will involve regular parent-teacher meetings, workshops to help parents support their children's education effectively, and establishing continuous communication channels between the school and home. Such initiatives aim to create a supportive home environment conducive to learning. Research has consistently demonstrated a positive correlation between parental involvement and student academic performance (Jeynes, 2012).

School Environment Improvements: Creating a conducive learning environment is essential for student well-being and academic success. This will involve upgrading school facilities, establishing counseling services, and promoting a positive school culture through initiatives like anti-bullying campaigns. A positive and supportive school environment is fundamental for fostering academic excellence and student well-being (Cohen et al., 2009).

Targeted Academic Support: To address specific academic challenges, targeted support programs will be implemented. These will include after-school tutoring, learning apps, and peer mentoring schemes aimed at providing additional academic assistance to students who need it. Such targeted interventions are effective in bridging achievement gaps and supporting students to reach their full potential (Slavin et al., 2009).

CONCLUSION

The findings suggest that there is a shared recognition among educational professionals of the importance of robust leadership, strategic curriculum development, quality teaching practices, and supportive infrastructure, as well as the value of engaging with parents and communities. The data also underscores a focus on continuous improvement, which likely aligns to maintain high educational standards.

In summary, the collective insights gathered through this survey provide a reliable foundation for identifying and implementing targeted improvements in educational practice. This alignment among educators and administrators can facilitate a collaborative approach to fostering an environment that supports both student achievement and teacher effectiveness.

REFERENCES

[1] Al-Kuwari, M. M., Du, X., & Koç, M. (2021). Performance assessment in education for sustainable development: A case study of the Qatar education system. *Prospects*, 1-15.

[2] Arkorful, V., & Abaidoo, N. (2014). The role e-learning, the advantages of its adoption in higher education. International Journal of Education and Research, 2(2), 397-410

[3] Buch, K. and Rivers, D. (2001), "TQM: the role of leadership and culture", *Leadership & Organization Development Journal*, Vol. 22 No. 8, pp. 365-371. https://doi.org/10.1108/01437730110410080

[4] Cohen, J., McCabe, L., Michelli, N. M., & Pickeral, T. (2009). School Climate: Research, Policy, Practice, and Teacher Education. *Teachers College Record*, 111(1), 180-213.

[5] Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective Teacher Professional Development. *Learning Policy Institute*.

[6] Ferrin, B.G., Landeros, R. and Reck, R.F. (2001), "Integrated supply matrix management: A TQM approach for curriculum development", *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No. 7/8, pp. 520-537. https://doi.org/10.1108/EUM0000000005905

[7] Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science,

engineering, and mathematics. *Proceedings of the National Academy of Sciences*, 111(23), 8410-8415.

[8] Gomes, T., & Panchoo, S. (2017). TQM in Private Secondary Education in Mauritius. International Journal of Innovation and Research in Educational Sciences, 4(4), 421-432.

[9] Hanushek, E., & Woessmann, L. (2020). Education, knowledge capital, and economic growth. In The Economics of Education (pp. 171-182). Cambridge: Academic.

[10] Iyer, V. G. (2018, February). Total quality management (TQM) or continuous improvement system (CIS) in education sector and its implementation framework towards sustainable international development. In *2018 International Conference on Computer Science, Electronics and Communication Engineering (CSECE 2018)* (pp. 546-555). Atlantis Press.

[11] Iyer, V. G. (2018, February). Total quality management (TQM) or continuous improvement system (CIS) in education sector and its implementation framework towards sustainable international development. In *2018 International Conference on Computer Science, Electronics and Communication Engineering (CSECE 2018)* (pp. 546-555). Atlantis Press.

[12] Jeynes, W. H. (2012). A meta-analysis of the efficacy of different types of parental involvement programs for urban students. *Urban Education*, 47(4), 706-742.

[13] Kaiseroglou, N., & Sfakianaki, E. (2020). A review of total quality management applications in schools. *International Journal of Management in Education*, 14(2), 121-134.

[14] Kwarteng, A. J. (2021). An assessment of outcome criteria associated with the implementation of TQM in a higher education institution in Ghana. *Cogent Education*, 8(1), 1859198.

[15] Little, A. W. (2018). Evidence, SDG 4, Targets and Indicators: Summative assessments of systems vs. formative assessments of learners?. *Journal of international cooperation in education*, 20(2), 85-105.

[16] Mahmood, W. A. Q. A. S., Ismail, S. N., & Omar Fauzee, M. S. (2020). The influence of total quality management, school climate and job satisfaction on school performance in government schools in Pakistan.

[17] Matkarimov, A. M. (2022). THE IMPORTANCE OF INTERNATIONAL EVALUATION STUDIES IN IMPROVING THE NATIONAL EDUCATION SYSTEM. *Galaxy International Interdisciplinary Research Journal*, *10*(12), 813-815.

[18] Meyers, C. V., & VanGronigen, B. A. (2021). Planning for what? An analysis of root cause quality and content in school improvement plans. *Journal of Educational Administration*, *59*(4), 437-453.

[19] MOEHE Qatar(2023). Retrieved from https://www.edu.gov.qa/en/Pages/HomePage.aspx

[20] Pakpahan, P. L., & Hidayati, W. (2021). Implementation of Total Quality Management in Facilities to Improve Institution Quality School. *MANAGERIA: Jurnal Manajemen Pendidikan Islam*, *6*(1), 97-124.

[21] Pal, S., & Bhattacharya, S. (2020). Improving the Standard of Higher Education by Improving its ' Quality. 55, 58–67.

[22] Pal, S., & Sarkar, P. (2022). QUALITY EDUCATION & TRIBES: NEW APPROACH TO ATTAIN SUSTAINABLE DEVELOPMENT GOALS. *EPRA International Journal of Multidisciplinary Research (IJMR)*, *8*(7), 416-422.

[23] Patton, M. Q. (1990). Qualitative evaluation and research methods (2nd ed.). Newbury Park, CA: Sage.

[24] Perry, N., & Ercikan, K. (2015). Moving beyond country rankings in international assessments: The case of PISA. Teachers College Record, 117(1), 1–10.

[25] Sadikoglu, E., & Olcay, H. (2014). The effects of total quality management practices on performance and the reasons of and the barriers to TQM practices in Turkey. *Advances in Decision Sciences*, *2014*, 1-17.

[26] Sallis, E. (2015). Total quality management in education. Yogyakarta: Ircisod.

[27] Sani, R. A., Pramuniati, I., & Mucktiany, A. (2015). Penjaminan mutu sekolah. Jakarta: Bumi Aksara.

[28] Slavin, R. E., Lake, C., Davis, S., & Madden, N. A. (2009). Effective Programs for Struggling Readers: A Best-Evidence Synthesis. *Baltimore, MD: Johns Hopkins University, Center for Research and Reform in Education*.

[29] Taftania, S., Kusna, A., Mahardika, B. A., Nugraheni, D. R., Eriyani, D., Yulindasari, N. O., ... & Gunawan, I. (2020, December). Implementation of total quality management through the leadership of schools in efforts to improve teacher creativity: A conceptual paper. In *1st* International Conference on Information Technology and Education (ICITE 2020) (pp. 501-505). Atlantis Press.

[30] United Nations Educational Scientific & Cultural Organization (UNESCO) (2014). Shaping the quality agenda: education for sustainable development as an integral element of quality education. Paris: UNESCO.

[31] Wals, A. E., & Benavot, A. (2017). Can we meet the sustainability challenges? The role of education and lifelong learning. *European Journal of Education*, *52*(4), 404-413.

[32] Wibowo, A., & Sari, M. W. (2018). Measuring enterprise resource planning (ERP) systems effectiveness in Indonesia. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, *16*(1), 343-351.

[33] Yilmaz, M. L., & Keskin, H. A. (2020). Is a Universal Model of a 'Good'National Education System that brings Economic Returns Emerging?. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, *20*(Özel Sayı), 61-72.

[34] Ziad, S. A. I. D. (2021). Integrating STEM in to TVET education programs in QATAR: Issues, concerns and prospects. *The Eurasia Proceedings of Educational and Social Sciences*, *23*, 15-24.

[35] Al-Thani, W. A., Ari, I., & Koç, M. (2021). Education as a critical factor of sustainability: case study in Qatar from the teachers' development perspective. *Sustainability*, *13*(20), 11525.

[36] Mohamed, R. Y. (2021). *The impact of a quality assurance system on private education in the state of Qatar: perspectives of evaluators and principals* (Doctoral dissertation, University of Warwick).

[37] Al Nabhani, M. B. B. B. M. (2007). *Developing the education system in the Sultanate of Oman through implementing total quality management: The ministry of education central headquarters- a case study* (Doctoral dissertation, University of Glasgow).

[38] Al-Kuwari, M. M., Al-Fagih, L., & Koç, M. (2021). Asking the right questions for sustainable development goals: Performance assessment approaches for the Qatar education system. *Sustainability*, *13*(7), 3883.

[39] Zguir, M. F., Dubis, S., & Koç, M. (2022). Integrating sustainability into curricula: Teachers' perceptions, preparation and practice in Qatar. *Journal of Cleaner Production*, *371*, 133167.

[40] Al-Hail, M. A., Al-Fagih, L., & Koç, M. (2021). Partnering for sustainability: Parent-teacher-school (PTS) interactions in the Qatar education system. *Sustainability*, *13*(12), 6639.

[41] Sawalhi, R., & Sellami, A. (2024). Factors influencing teacher leadership: Voices of public school teachers in Qatar. *International Journal of Leadership in Education*, *27*(4), 779-796.

[42] Alhaza, K., Abdel-Salam, A. S. G., Mollazehi, M. D., Ismail, R. M., Bensaid, A., Johnson, C., ... & Romanowski, M. H. (2021). Factors affecting university image among undergraduate students: The case study of Qatar University. *Cogent Education*, *8*(1), 1977106.

[43] Al-Nuaimi, S. R., & Al-Ghamdi, S. G. (2022). Assessment of knowledge, attitude and practice towards sustainability aspects among higher education students in Qatar. *Sustainability*, *14*(20), 13149.

[44] Msallam, A. A., Al Hila, A. A., Naser, S. S. A., & Al Shobaki, M. J. (2020). The Reality of Achieving the Requirements of Total Quality Management in University Colleges.

[45] Shurair, A. S. (2017). *Stakeholder Perception of Service Quality in Qatar Higher Education Institutions: An Application to Qatar University* (Master's thesis).

[46] Abu-Shawish, R. K. (2024). Teachers' perceptions of the barriers to effective teaching in Qatar's government schools. *European Journal of Education*, e12711.

[47] Mohamed, B. H., Disli, M., Al-Sada, M. B. S., & Koç, M. (2022). Investigation on human

development needs, challenges, and drivers for transition to sustainable development: The case of Qatar. *Sustainability*, *14*(6), 3705.

[48] ALTAMIMI, M. S. (2022). FACTORS AFFECTING ACADEMIC DISCIPLINE SELECTION AND ACADEMIC PERFORMANCE OF 12TH GRADE STUDENTS IN QATAR.

[49] Al-Mansoori, R. S., & Koc, M. (2019). Toward knowledge-based economy: Innovation and transformational leadership in public universities in Texas and Qatar. *Sustainability*, *11*(23), 6721.

[50] Elnashar, M. (2024). *Teachers' Assessment and Perceptions of the Social and Emotional Competencies of Qatar Primary School Students: An Explanatory Sequential Mixed Methods Study* (Doctoral dissertation, Fielding Graduate University).

[51] Shurair, A. S., & Pokharel, S. (2019). Stakeholder's perception of service quality: a case in Qatar. *Quality Assurance in Education*, *27*(4), 493-510.

[52] Chaaban, Y., Arar, K., Sawalhi, R., Alhouti, I., & Zohri, A. (2021). Exploring teachers' professional agency within shifting educational contexts: A comparative study of Lebanon, Qatar, Kuwait, and Morocco. *Teaching and Teacher Education*, *106*, 103451.

[53] AL-NAEMI, B. N. (2024). *A METHODOLOGY TO ASSES ENVIRONMENTAL SUSTAINABILITY OF EDUCATIONAL BUILDINGS IN QATAR WITH A CASE STUDY* (Doctoral dissertation).

[54] Zguir, M. F., Dubis, S., & Koç, M. (2021). Embedding Education for Sustainable Development (ESD) and SDGs values in curriculum: A comparative review on Qatar, Singapore and New Zealand. *Journal of Cleaner Production*, *319*, 128534.

[55] Bouranta, N., Psomas, E., & Antony, J. (2021). Findings of quality management studies in primary and secondary education: a systematic literature review. *The TQM Journal*, *33*(3), 729-769.

[56] Ater, J. A. (2013). Challenges facing the implementation of Total Quality Management practices in public secondary schools in Kenya. *Unpublished MBA project. Nairobi: Kenyatta University*.

[57] El-Masri, M., & Tarhini, A. (2017). Factors affecting the adoption of e-learning systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). *Educational Technology Research and Development*, *65*, 743-763.