

Article

Sustainable Education Quality Improvement Using Academic Accreditation: Findings from a University in Saudi Arabia

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Abstract: Accreditation is widely considered to be a vital tool for quality assurance in higher education; however, there is disagreement in the academic community on the intended benefits of accreditation. Preparing for accreditation requires extensive financial and human resources to complete the required documentation. All accreditation agencies require improvements in institutional infrastructure, enhanced student support, appropriate learning environments, and faculty development, which can directly improve students' learning experiences. In this paper, we explore the impact of accreditation on students' learning by using a case study-based approach. We selected four degree programs from a University in Saudi Arabia and compared the performances of students in different courses before and after acquiring local program accreditation (NCAAA). The results highlight that although there is no direct relationship between increased student performance and acquiring accreditation, there is a significant impact on the performance of student learning. However, there is a need for sustained efforts to continuously adopt accreditation-aligned practices to gain a sustained advantage. We have presented a model that can enable academic institutions to continuously adhere to best practices even if no accreditation visit has been scheduled in the near future. This way, academic programs can consistently improve their processes and enhance student learning.

Keywords: accreditation; sustainable education; higher education; academic performance; higher education management; quality education



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1. Introduction

Higher Education is an important enabler for improving the social and economic conditions of a nation. Academic institutions need to deliver quality education so that the graduates can optimally take up different entrepreneurial and professional roles. The United Nations' sustainable development goal four advocates for affordable, quality higher education, as well as skills enhancement for learners [1]. Sterling [2] highlights that sustainable higher education practices not only require curriculum and structure enhancements but a fundamental shift across all organizational processes. A quality learning environment requires a combination of an experienced faculty, diverse pedagogical skills, state-of-the-art facilities, and leadership support, which require extensive financial and human resources. Different quality-assurance initiatives such as academic standards, guidelines, accreditations, academic rankings, and pedagogical certifications have evolved.

Global accrediting systems for higher education are used by institutions and programs to evaluate their legitimacy in offering high-quality education. Despite many claimed benefits and objections to accreditation and the lack of scientific proof that it improves the quality of education, there is still an increasing demand for this sort of quality assurance [3]. There are many aspects that highlight the quality of education, such as student satisfaction [4,5], appropriate pedagogical approaches [6], academic ranking [7], and accreditation [8]. However, establishing quality assurance processes requires a lot of effort, so

this may lead to ad hoc practices, and such defragmented use of quality initiatives may not yield the desired benefits for academic institutions. On the other hand, temporary adoption of accreditation-recommended practices can show ad hoc improvements, but it may not be helpful in gaining sustained quality in academic programs. More recently, COVID-19 disruptions have not only affected the learning process but also impacted the quality-assurance initiatives in academic institutions. More recently, the concept of e-accreditation has emerged, which advocates for the transformation of accreditation activities in an electronic environment to avoid disruptions. Academic institutions invest a lot of time and effort into accreditation activities and improving students' performance. Therefore, in this paper, we intend to understand the role of academic accreditation in improving students' academic achievements. Our objective is to highlight how accreditation activities contribute to student learning and how accreditation-related quality activities can be sustained to achieve continuous improvement.

The rest of the paper is structured as follows: Section 2 discusses related work, and Section 3 highlights the research methodology. Empirical data are presented in Section 4, followed by a discussion in Section 5 and a conclusion in Section 6.

2. Related Work

Although academic quality and accreditation have long been a topic of interest in the scientific community, due to consistent challenges to the quality of academic education, it is still an important topic. From the point of view of sustainability, sustained quality practices by academic institutions help learners to contribute to improving economic conditions by utilizing the skills acquired from these institutions. Mohamed et al. [9] have highlighted that human development is key to sustainable development; therefore, it is important to identify the human development needs and then design an appropriate skill enhancement program to bridge the required skills. They have outlined human development needs, challenges, and drivers for Qatar. Wang et al. [10] explored how the COVID-19 pandemic affected the education goals of the United Nations' sustainable development goals. They have highlighted that the COVID-19-induced adoption of e-learning poses additional challenges for developing countries, and there is a need for improved user experience through e-learning practices. Crawford and Cifuentes-Faura [11] have highlighted that academic institutions were transforming themselves into sustainable institutions; however, due to COVID-19, institutions may need to make adjustments to achieve this goal. In this paper, our scope is limited to achieving sustainability in accreditation-driven quality processes carried out by academic institutions.

Academic accreditation readiness is a hectic task that requires effective planning, human and financial resources, and continuous improvement. Ziefle et al. [12] have highlighted that faculty knowledge, professional development, and motivation are the three core components of their active engagement in the accreditation process. Active faculty engagement not only speeds up the work but also improves faculty understanding of the accrediting process and preparedness for the accreditation site visit. Active faculty involvement helps to make the quality initiatives sustainable rather than as one-time activities. In another work, Romanowski [3] examined accreditation from the perspective of idolatry theory to explore accreditation's authority over institutions, its demands, its impact on institutions and academics, and its potential to develop and legitimize a specific concept of education and academic discipline. Establishing in-depth case studies of quality adoption not only helps the same institution to reflect upon its quality journey but also helps other academic institutions to learn from quality practices. Furthermore, case studies from different geographical settings provide an understanding of the implications of diverse cultural implications for fostering quality practices in academic institutions. Amaechi and Obiweluzor [13] carried out an empirical study in Nigerian universities and concluded that universities in Nigeria should establish a functional quality assurance directorate that will be a focal point for accreditation activities in relation to academic content, staffing, facilities, funding, and libraries. Similarly, Sziegat [14] has analyzed how Business Schools

in Germany respond to the accreditation requirements of three different accreditation bodies, namely, the AACSB (Association to Advance Collegiate Schools of Business), the EQUIS (European Quality Improvement System), and the AMBA (Association of MBAs). He concluded that business schools should evaluate the following factors when deciding whether to pursue international accreditation: drivers, value, benefits, restrictions, organizational effectiveness, transparency, social responsibility, and accountability for all stakeholders. When a single accreditation suffices, encouraging mutual recognition is preferable to a plethora of accreditation “beauty contests” at the national and global levels. In another study, Indra et al. [15] focused on Indonesian primary and secondary education and found that the quality of school report cards and schools’ accreditation scores have a direct relationship. Tawafak et al. [16] carried out an extensive review and outlined that technology-aided learning, student learning outcomes, and faculty technology experience with university academic achievement are the core factors for accreditation. Early adoption of quality practices by academic institutions helps to foster quality practices. Ulker and Bakioglu [17] highlighted that accreditation efforts result in more benefits for young institutions in the age group of 1–20 as compared to institutions older than 41 years. Furthermore, they highlight that the first accreditation cycle contributes to more improvements than re-accreditation visits. Bendixen and Jacobsen [18] argued that education and accreditation categorize labor market needs as the foremost criteria for education quality, but since education is a national issue, it should contribute to the betterment of society, and it should be the prime factor in determining the quality of education.

Galvez and Fuentes [19] carried out an empirical study in an education institution in the Philippines and concluded that accreditation preparations should not be initiated shortly before the expected accreditation visit; rather, preparations should start right after the previous visits so that quality activities can be carried out in true spirit. Bigdeli et al. [20] investigated the accreditation experiences of top managers at the Iran University of Medical Sciences and found that experiential assistance is essential for management and academic members to face accreditation issues. Addas [21] revealed the NCAAA accreditation experience of King Abdulaziz University’s Bachelor of Landscape Architecture (BLA) program, citing favourable changes in program management, course delivery, and quality. Furthermore, they emphasize the importance of all faculty members’ dedication towards continuous improvement. Previtali and Cerchiello [22] conducted empirical research in the Lombardy Region of Italy and concluded that corporate governance elements, such as the functioning and makeup of the supervisory board, influence accreditation criteria acceptance. Konovalova et al. [23] outlined different challenges for professional and public accreditation for human resource management-related educational programs. Almuhaideb and Saeed [24] documented quality assurance practices to foster an effective outcome-based education process. Almuhaideb and Saeed [25] outlined a set of quality processes to achieve quality criteria in line with ABET accreditation. Shafi et al. [26] shared a program assessment strategy based on their experience with ABET accreditation of Computer Science and Computer Information Systems programs. Saeed et al. [27] carried out a comparative mapping of ABET and NCAAA quality practices to facilitate new programs aspiring for both accreditation programs.

Developing quality assurance reports and artifacts requires a lot of resources, so the auditors must review all the contents of such reports effectively. Due to advancements in technology, modern tools can be employed to effectively review the contents of such reports. Rybinski [28] used natural language processing to explore the relationship between the accreditation status and the national ranking of Polish Universities. In this piece of research, sentiment analysis was conducted on 1850 accreditation reports using correlation analysis, and linear and quantile regression. They recommended that authors of accreditation reports should consider that their reports can be used by natural language processors, and they should consider this while writing the reports. Rybinski [29] used a machine-learning approach to establish the relationship between student experience and university accreditation based on its analysis of 98 accreditations conducted by the Quality Assurance

Agency (QAA) in the UK from 2012–2018. He highlighted that prospective students might use machine-learning models on university accreditation reports to select appropriate universities for admission.

Despite the above-mentioned studies, we did not find any study exploring the linkage between accreditation and students' academic attainment. Therefore, in this study, we were specifically interested in understanding how successful program accreditation affects students' academic performance, and whether there is any direct relationship between acquiring academic accreditation and improvements in students' performance. So, our hypothesis is that accreditation positively relates to an improvement in students' academic performance.

3. Research Methodology

The research question for our research was how program accreditation affects students' performance, and to obtain the answer to this research question, we have adopted a case study-based approach [30]. We collected the empirical evidence from Imam Abdulrahman Bin Faisal University, Saudi Arabia (IAU) [31], which has already received accreditation from the National Center for Academic Accreditation and Evaluation (NCAAA). The National Center for Academic Accreditation and Evaluation (NCAAA) is a local accreditation agency for higher education in Saudi Arabia, which accredits higher education institutions as well as academic programs. NCAAA has outlined eight standards: Mission, Goals, and Strategic Planning; Governance, Leadership, and Management; Teaching and Learning; Students; Faculty and Staff; Institutional Resources; and Scientific Research and Innovation and Community Partnership [32]. On the other hand, there are six standards for program accreditation: Mission and goals; Program management and quality assurance; Teaching and learning; Students; Faculty members; and Learning resources, facilities, and equipment [33]. Therefore, we selected four academic programs: two programs, namely, the Bachelor of Arts in Islamic Studies and the Bachelor of Arts in History, were from the arts college, and two programs, namely, the Bachelor of Science in Nursing and the Bachelor of Science in Dental Surgery, were from the health college. Both art degree programs were accredited in 2018 by the NCAAA, whereas the health college's programs obtained the same accreditation in 2016. The reason for selecting the specified programs was to understand the practices not only in science disciplines but also in the arts, and the selection of specific academic programs was based on their accreditation status.

To understand the impact of accreditation on student learning achievement, we requested the deanship of registration to provide us with the exam results for all courses in the selected academic programs for five years (2 years before and 2 years after accreditation). Keeping in view the confidentiality of the data, we focused on overall students' performance in each course offered in the degree program, instead of individual students' records. We received the data in an Excel file having 21 worksheets, where the first worksheet contained summarized information, such as the total number of graduates and minimum admission criteria for acceptance in each program in the respective year, whereas the other worksheets contained course lists and student grade distributions in those individual courses; five years of data for four programs resulted in twenty sheets. The research adopted ethical practices regarding data collection and manipulation in line with the requirements of the university's institutional review board committee, which approved the project. Two of the authors being employed at the deanship of registration were involved in the verification of the Excel data. Since the academic curriculum is continuously updated to keep it aligned with current scientific innovations, we cleaned the data by selecting only the courses which were common in all 5 years of a program to ensure a consistent tracking of student performance. As a result, to keep our analysis focused, we identified seven core courses for each program for comparison purposes. Furthermore, we carried out a descriptive analysis of students' grade achievement. The categorization of grades at IAU are: "A+", 95–100; "A" 90–94; "B+", 85–89; "B", 80–85; "C+" 75–79; "C", 70–74; "D+", 65–69; "D", 60–64; "F" 0–59; "NF", Fail without a grade; "NP", Pass without a grade;

“DN” Denial; “W”, withdraw; and “IC”, Incomplete. To develop the model for continuous quality improvement, we have used observations and content analysis of different quality artifacts being adopted across the academic programs at IAU. The observations were based on a five-year period, where two of the authors were working in a quality unit and two of the authors were working in the deanship of registration of the same university. Content analysis was based on meeting minutes and internal departmental reports. Excel sheet data, content artifacts, and observation notes were analyzed by the authors to extract key concepts. These key concepts were clustered together to generate the model.

4. Empirical Results

To understand the students’ satisfaction with the degree programs, we had a look at the students’ surveys, and as shown in Figure 1, there was a continuously increasing trend in the case of Islamic degree courses, whereas, in the case of the history degree program, students’ satisfaction decreased in 2018; however, there was an increase after this. In case of both science programs, there was not an increasing trend. In the case of the dental surgery program, there were drops in the satisfaction score in 2015 and 2017, whereas in case of the nursing program, a drop in the score was witnessed in 2017.

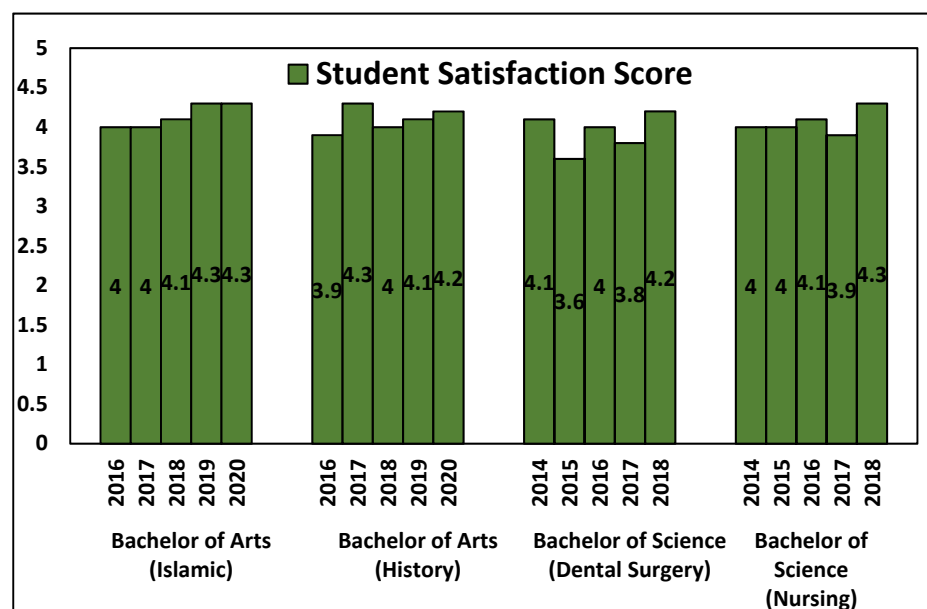


Figure 1. Student Satisfaction Ratings.

For the Islamic degree program, Islamic civilization, Islamic Criminal Jurisprudence, Islamic Economic Jurisprudence (1), Islamic Economic Jurisprudence (2), Islamic Inheritance Jurisprudence (1), Islamic Inheritance Jurisprudence (2), and Political System in Islam courses were selected. In the 2016 offering of the Islamic Civilization course, only 1% of students received an A grade and 5% received a B; in 2017, 6% received an A grade and 15% received a B grade; in 2018, 2% secured an A grade, and 19% received a B grade; in 2019, 57% secured an A grade and 9% secured B grade, whereas in 2020, 22% received an A grade, and 45% received B grades. As shown in Figure 2, the first 50% of students were performing grade D, but in 2020, the first half was mainly A- and B-grade students. In the case of Islamic Criminal Jurisprudence, in 2016, 4% received an A grade, 36% received a B grade; in 2017, 14% received an A grade, and 29% received a B grade; in 2018, 11% received an A grade, and 21% received a B grade; in 2019, 7% received an A grade, and 44% received B grade; and in 2020, 9% received an A, and 18% of students received a B grade. In the case of the Islamic Economic Jurisprudence (1) course, 3% received an A grade and 18% received a B grade in 2016; in 2017, 0% received an A, and 9% received a B; in 2018, 6% received an A grade, and 19% received a B grade; in 2019, 7% received an A grade, and

36% received aB grade; and in 2020, 0% received an A or B grade. In the case of Islamic Economic Jurisprudence (2), 13% received an A grade and 25% received a B grade in 2016. During 2017, 9% received an A grade, and 28% secured B grade. In 2018, 13% of students secured an A grade, and 20% received a B grade. In 2019, 26% received an A grade, and 61% received a B grade, whereas in 2020, 0% received an A, and 8% received a B grade.

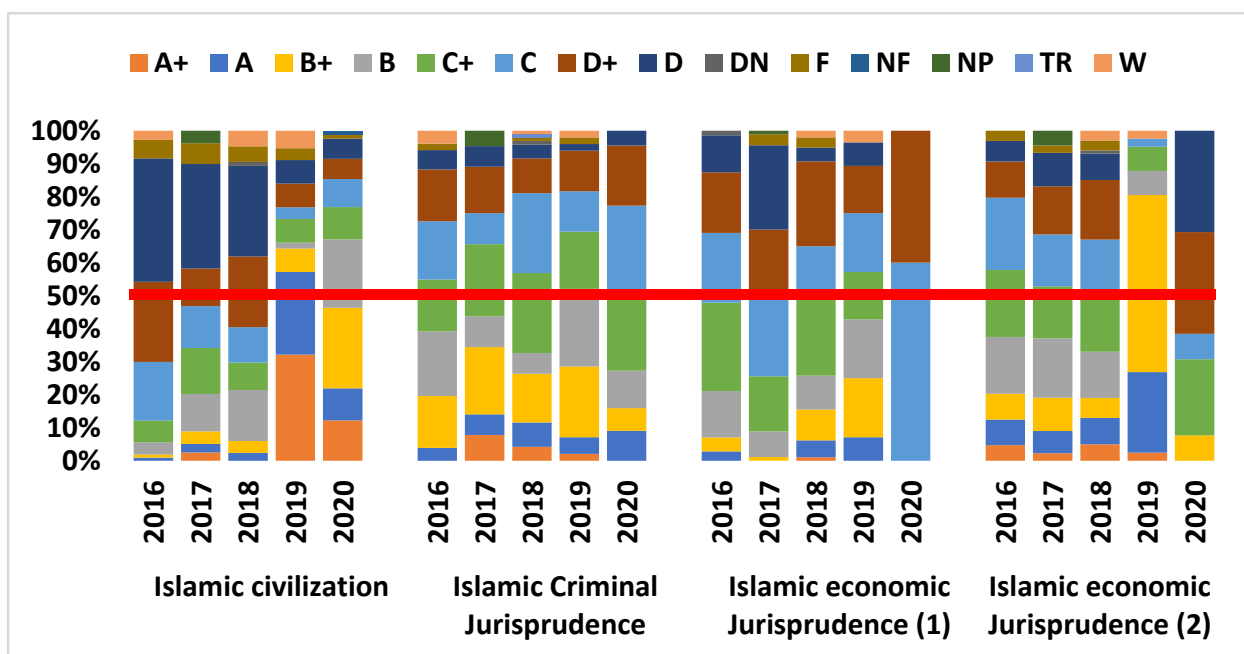


Figure 2. Student Performance in Bachelor of Arts (Islamic) Degree.

In the case of Islamic Inheritance Jurisprudence (1), during 2016, 8% of students received an A grade, and 27% received B; in 2017, 16% received an A grade and 19% received a B grade; in 2018, 19% of students received an A, and 21% received a B grade; in 2019, 3% of students received an A grade, and 9% received a B, whereas in 2020, 0% received an A and 38% received a B grade. In the results of Islamic Inheritance Jurisprudence (2), it was found that, during 2016, 5% of students received an A grade, and 24% received B grade; in 2017, 18% received an A grade, and 14% received B grade; in 2018, 11% students received an A grade, and 18% received a B grade; during 2019, 0% of students received an A grade, and 7% received a B grade; and in 2020, 0% of students received an A, and 5% of students received B grades. For the Political System in Islam course, during 2016, 24% of students received an A grade, and 44% received a B grade; in 2017, 24% received an A grade, and 41% received a B grade; in 2018, 36% of students received an A grade, and 40% received a B grade; in 2019, 73% of students received an A grade, and 15% of students received a B grade; and, in 2020, 38% of students received an A grade, and 48% of students received B grade. As is evident from Figures 2 and 3, the performance of students declined during 2020 and the majority of students received lower grades than previous offerings of the same course.

For the History program, Ancient History of Arabia, Arabs' Modern History, History of the Independent Islamic State, History of the Greeks and Romans, Historical Arabic Doc & Texts, History of the KSA, and History of the Ottoman Empire courses were selected. In case of the Ancient History of Arabia course, 0% of students received an A grade, and 2% of them received B in 2016. In 2017, 1% received an A grade, and 3% received a B grade. In 2018, no A or B grades were recorded. In 2019, 21% secured an A grade and 18% a B grade, whereas in 2020, no students received either an A or B grade. In the case of the Arab's Modern History course in 2016, 10% of students received an A grade and 10% a B grade. In 2017, 3% received an A grade and 3% a B grade. In 2018, 3% received an A grade

and 11% a B grade. In 2019, 0% of students received an A and 12% received a B grade. In 2020, 0% of students received an A and 7% of students reached a B grade. In the case of the History of Independent Islamic State course, 19% of students received an A grade and 38% B grade in 2016; in 2017, 16% received an A grade and 28% received a B grade; in 2018, 13% received an A grade, whereas 32% received a B; in 2019, 94% students received an A and 5% received a B; and in 2020, 2% of students received an A grade and 22% received a B grade. In the case of the History of the Greeks and Romans course, 1% of students received an A grade and 2% received a B in 2016. During 2017, 1% of students received A and 6% secured a B grade. During 2018, 3% received an A grade and 24% a B grade. In 2019, 5% received an A grade and 20% received a B, whereas in 2020, 0% received an A and 33% received a B grade. As shown in Figure 4, in case of Ancient History of Arabia, there was an increased student performance after the accreditation year as the first half of students showed better grades than in previous years. In the other three courses, however, there were no such visible improvements.

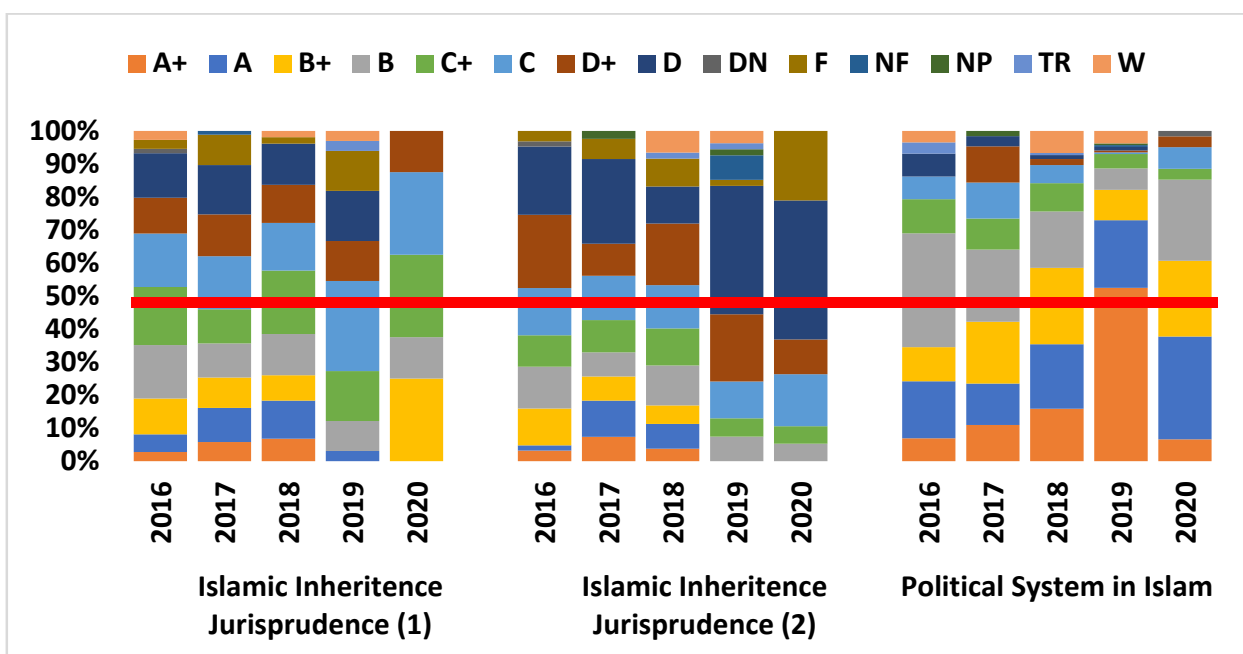


Figure 3. Student Performance in Bachelor of Arts (Islamic) Degree (Cont'd.).

In the case of Historical Arab Docs and Texts course, during 2016, none of the students received an A, and 41% received a B. In 2017, 8% received an A and 29% received a B. In 2018, 5% received an A and 37% a B. In 2019, 98% received an A and 0% received a B, whereas in 2020, 21% received an A and 48% received a B. In the results of the History of the KSA, it was found that during 2016, 5% of students received an A and 14% received a B. In 2017, 9% received an A and 21% received a B. In 2018, 2% of students received an A and 33% received a B. During 2019, 13% of students received an A and 36% received a B, whereas, in 2020, 0% of students received an A and 3% of students received a B grade. In case of the History of the Ottoman Empire course, during 2016, 13% of students received an A and 33% received a B. In 2017, 10% received an A and 45% received a B. In 2018, 17% students received an A and 41% received a B. During 2019, 22% of students received an A and 33% received a B, whereas, in 2020, 2% of students received an A and 12% of students received a B grade. As it is evident from Figure 5, the performance of students decreased and the first half of students received lower grades in 2020 compared to previous years.

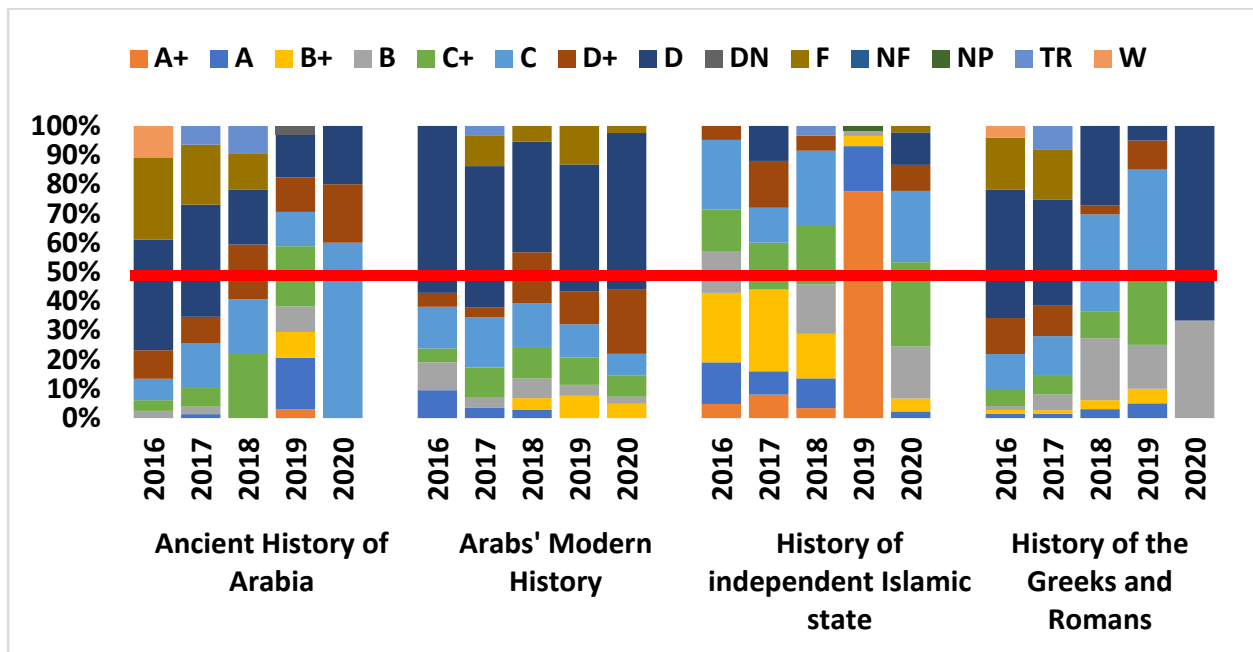


Figure 4. Student Performance in Bachelor of Arts (History) Degree.

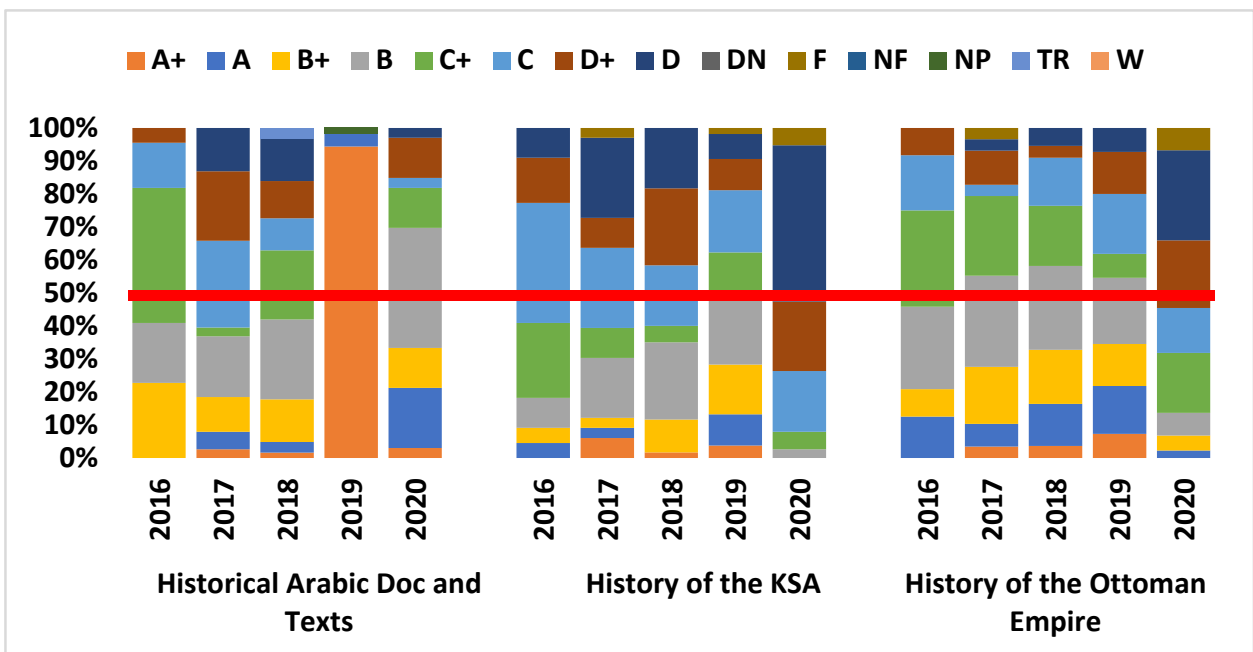


Figure 5. Student Performance in the Bachelor of Arts (History) Degree (Contd.).

For the dentistry program, Biochemistry, Dental Morphology, Dental Pharmacology, Dental Public Health, Gen. Microbiology & Immunology, General Pathology, and General Physiology courses were selected. In the 2014 offering of the Biochemistry course, there were only 36% of students who received an A grade, and 22% received a B. In 2015, 6% of students received an A grade and 34% received a B grade. In 2016, 26% of students received an A grade and 22% a B grade. In 2017, 17% students secured an A grade and 46% received a B grade, whereas in 2018, 17% students received an A grade and 29% received a B grade. In the case of Dental Morphology, in 2014, 14% of students secured an A grade and 49% received a B grade. During 2015, 11% of students received an A grade and 54% of students received B grade. In 2016, 7% of students received an A grade and 40% of students received

a B grade. In 2017, 4% of students received an A grade and 49% of students received a B grade. In 2018, 17% of students received an A grade and 58% of students received a B grade. In the case of the Dental Pharmacology course, 16% of students received an A grade, and 19% of students secured a B in 2014. In 2015, 27% of students received an A grade, and 31% received a B grade. In 2016, 21% of students received an A grade, and 31% received a B grade. In 2017, 12% received an A grade and 25% received a B grade, whereas in 2018, 10% of students receive an A grade and 32% received a B grade. In the case of the Dental Public Health course, 1% of students received an A grade, and 35% of students received a B grade in 2014. During 2015, 0% of students received an A or B grade. During 2016, no one secured an A or B grade as well. In 2017, 18% of students received an A grade and 29% of students received a B grade, whereas in 2018, 16% of students received an A grade and 18% of students received a B grade. As shown in Figure 6, in all four courses, there was no considerable difference in the performance of students before and after the accreditation. The first fifty percent of students had almost the same grades across all five years.

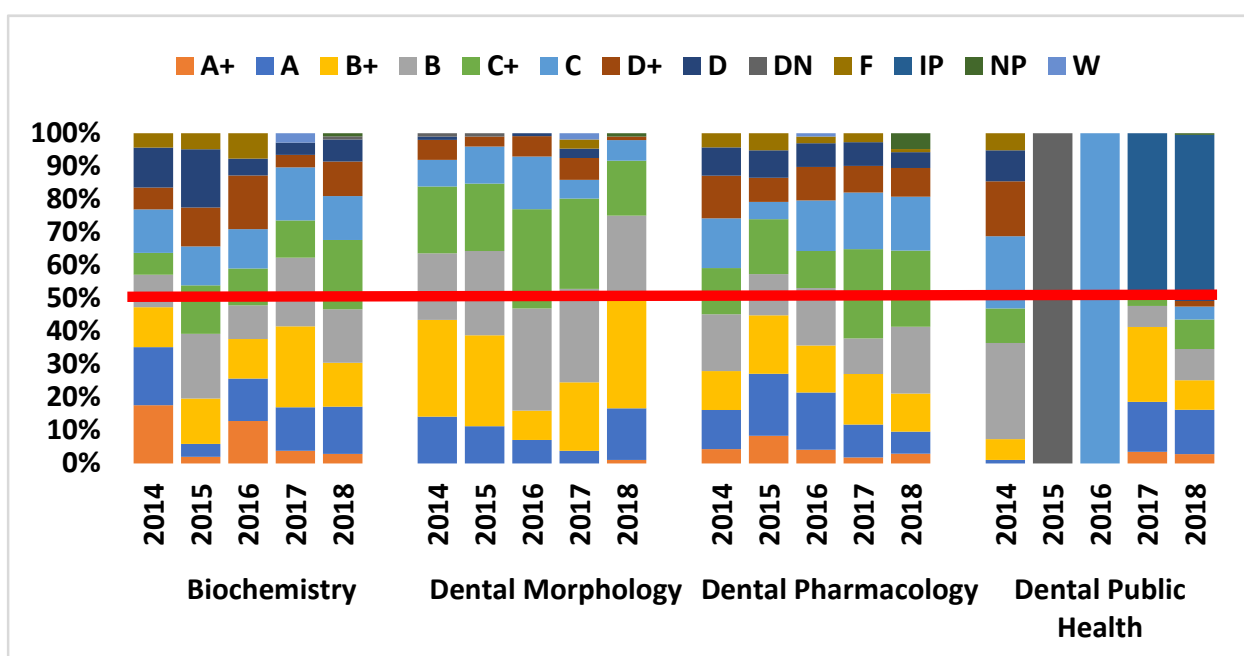


Figure 6. Student Performance in Bachelor of Science (Dentistry) Degree.

In the case of the general Microbiology and Immunology course, during 2014, 20% of students received an A grade and 36% of students received a B grade. In 2015, 9% of students received an A grade and 42% students received a B grade. In 2016, 100% students received an A grade. In 2017, 61% of students received an A grade and 27% students received a B grade, whereas in 2018, 35% of students received an A grade and 42% students received a B grade. In the results of the General Pathology course, it was found that during 2014, 30% students received an A grade and 38% students received a B grade. In 2015, 34% of students received an A grade and 32% students received a B grade. In 2016, 27% of students received an A grade and 53% received a B grade. During 2017, 44% of students received an A grade and 46% received a B grade, whereas in 2018, 19% of students received an A grade and 46% of students received a B grade. In case of the General Physiology course, during 2014, 50% of students received an A grade and 35% of students received a B grade. In 2015, 23% of students received an A grade and 39% received a B grade. In 2016, 17% of students received an A grade and 38% received a B grade. During 2017, 24% of students received an A grade and 52% received a B grade, whereas in 2018, 30% of students received an A grade and 45% of students received a B grade. As shown in Figure 7, in the General Microbiology and Immunology course, the performance of the students was

improved compared to the two years before the accreditation, where first 50 percent of students secured up to a “B+” grade. In 2016, all students received an A, and in 2017 and 2018, the grades were still better than 2014 and 2015. As shown in Figure 7, in all four courses, there was no considerable difference in the performance of students before and after the accreditation. As shown in Figure 7, there were not many significant variations in students’ performances in all three grades; rather, of the first fifty percent of students received lower grades in 2018.

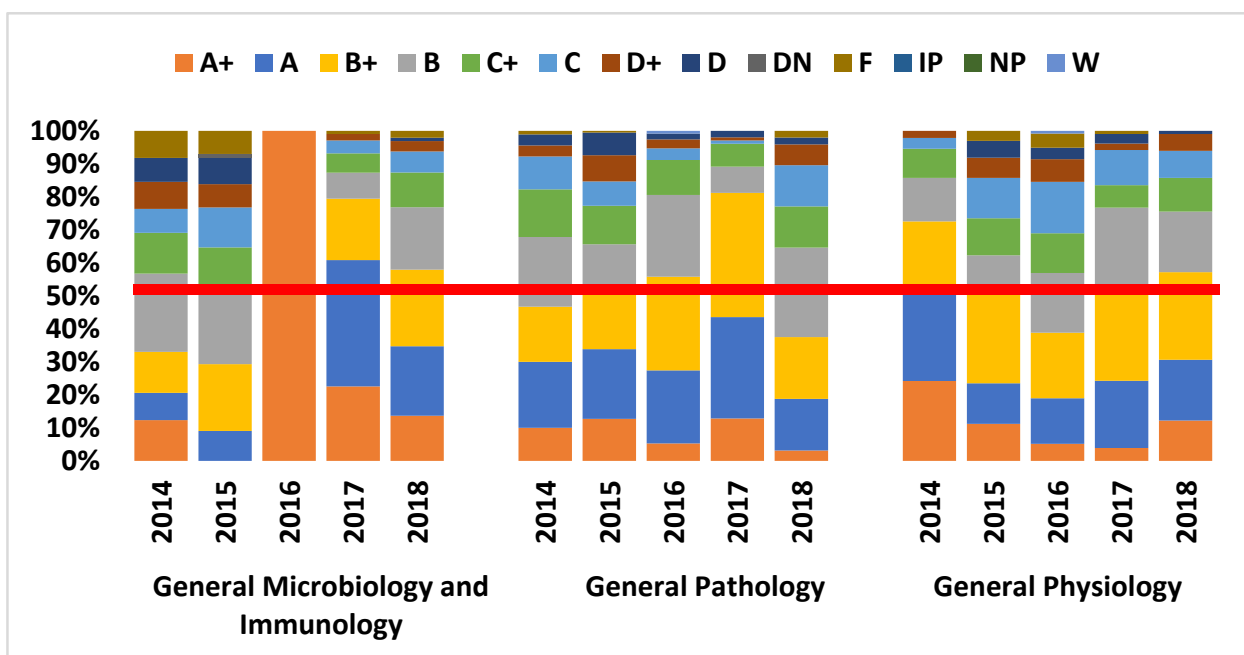


Figure 7. Student Performance in Bachelor of Science (Dentistry) Degree (Contd.).

For the nursing program, the Fundamentals of Nursing (1), Fundamentals of Nursing (2), Medical Surgical Nursing (1), Medical Surgical Nursing (2), Nursing Informatics, Obstetric and Gynecologic Nursing, and Psychiatric and Mental Health Nursing courses were selected. For the dentistry program, the Biochemistry, Dental Morphology, Dental Pharmacology, Dental Public Health, Gen. Microbiology & Immunology, General Pathology, and General Physiology courses were selected. In the 2014 offering of the Fundamentals of Nursing (1) course, only 4% of students received an A grade, and 48% of them received a B grade. In 2015, 12% of students received an A grade and 36% received a B grade. In 2016, 25% of students received an A grade and 62% secured a B grade. In 2017, 29% of students secured an A grade and 58% of students secured a B grade, whereas in 2018, 26% of students received an A grade and 49% of students received a B grade. In the case of the Fundamentals of Nursing (2) course, in 2014, 3% of students received an A grade and 28% received a B grade. In 2015, 2% of students secured an A grade and 31% received a B grade. In 2016, 16% of students secured an A grade and 45% of students received a B grade. In 2017, 43% of students secured an A grade and 36% of students received a B grade, and in 2018, 36% of students secured an A grade and 56% of students received and B grade. In the case of Medical Surgical Nursing (1) course, 0% received an A grade, 43% received B grade in 2014, in 2015, again 0% received an A grade, and 44% received B grade, in 2016, 0% received an A grade, 9% received B grade, in 2017, 0% received A and 14% received B, whereas in 2018, 9% were in grade A and 61% received B. In the case of the Medical Surgical Nursing (2) course, 19% of students received an A grade, 57% received B grade in 2014. During 2015, 5% students received an A grade and 62% secured a B grade. During 2016, 3% of students received an A and 36% a B. In 2017, 4% received an A grade and 35% received a B grade, whereas in 2018, 11% of students received an A grade and 75%

of students received a B grade. As shown in Figure 8, the student performance in all four courses improved after accreditation, as the first fifty percent of students received better grades than in previous years.

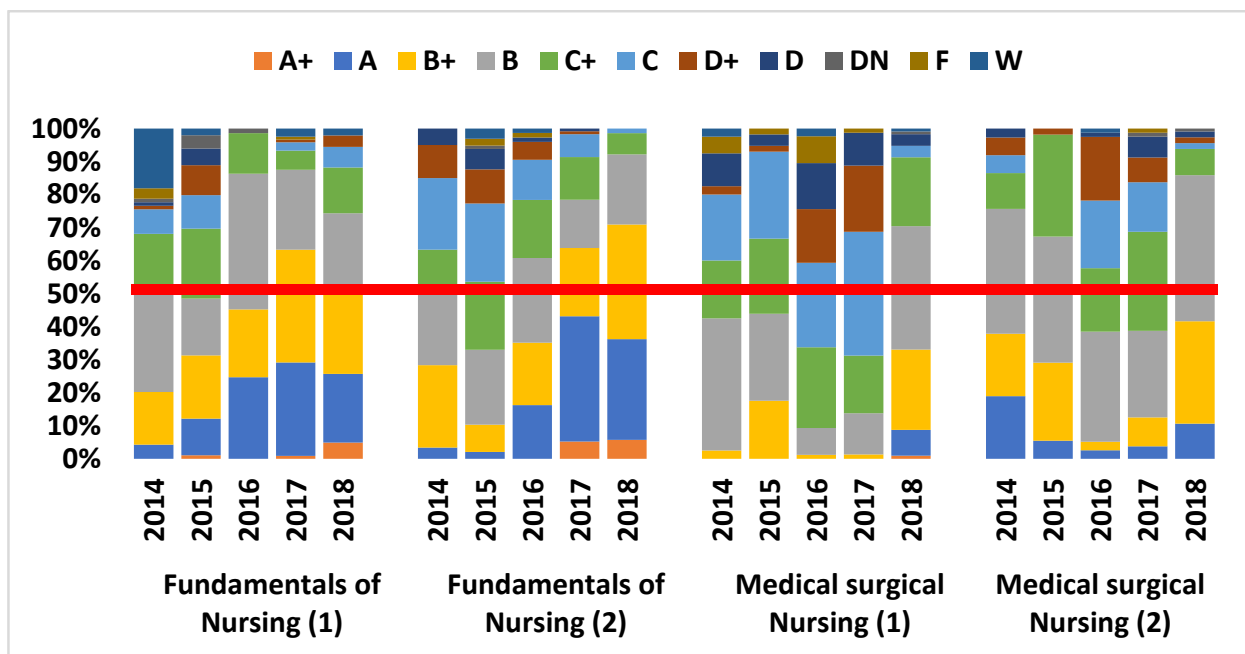


Figure 8. Student Performance in Bachelor of Science (Nursing).

In the case of the Nursing Informatics course, during 2014, none of the students received either an A or B. In 2015, 5% of students received an A grade and 63% received a B grade. In 2016, 17% received an A grade and 53% a B grade. During 2017, 1% of students received an A grade and 24% of students received a B grade, whereas in 2018, 33% of students received an A grade and 65% received a B grade. In the results of the Obstetrics and Gynecologic Nursing course, it was found that during 2014, 8% of students received an A grade and 67% received a B grade. In 2015, 11% of students received an A grade and 74% of students received a B grade, in 2016, 0% of students received an A grade and 51% received a B grade. During 2017, 6% of students received an A grade and 46% of students received a B grade, whereas in 2018, 10% of students received an A grade and 71% of students received a B grade. In case of the Psychiatric and Mental Health Nursing course, during 2014, 21% of students received an A grade and 52% received a B grade. In 2015, 3% received an A grade and 63% received a B grade. In 2016, 9% of students received an A grade and 48% received a B grade. During 2017, 5% of students received an A grade and 34% received a B grade, whereas in 2018, 48% of students received an A grade and 32% of students received a B grade. As shown in Figure 9, the Nursing Informatics and Psychiatric and Mental Health Nursing course saw improvement in students' performance, whereas there was no considerable impact on student performance in the Obstetrics and Gynecological Nursing course.

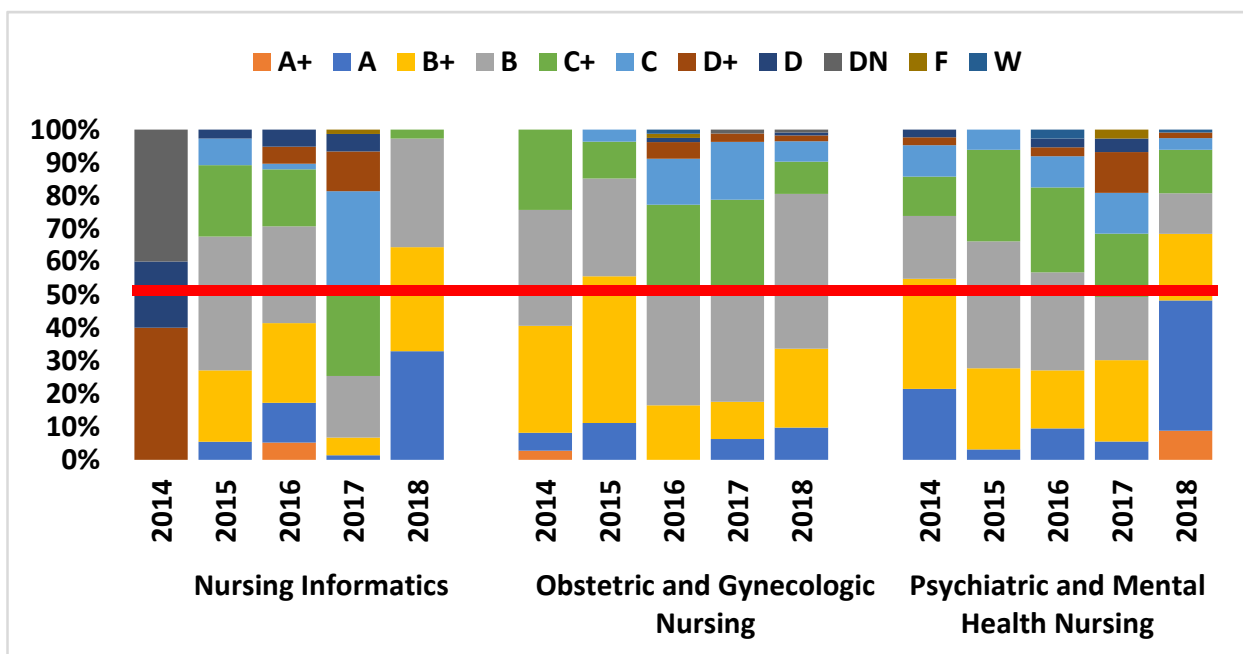


Figure 9. Student Performance in Bachelor of Science (Nursing) Degree (Cont'd.).

5. Discussion

Preparing for accreditation is a daunting task for academic institutions, and the significant time between visits to academic institutions by accreditation bodies pose similar challenges as nomadic knowledge management [34,35]. The volume of required documentation, the long time lapses between accreditation visits, and a shortage of resources may lead academic institutions to establish ad hoc practices rather than institutionalized practices. As a result, the improvements in academic processes, which are the main reason for accreditation, are pushed to the background, and the desire to achieve the accreditation takes the forefront [36]. From the data in our study, we extracted two key observations. Firstly, in both science programs, immediately after the accreditation year, the student satisfaction level dropped a bit. Secondly, although we found a positive impact on the student performance in a majority of the courses' results, this impact was not visible across all programs, indicating the need for more sustained efforts from all stakeholders. Based on this finding, we can see that our hypothesis that accreditation helps in improving student performance is weakly proven. However, this relationship could be further enhanced if accreditation benefits could be realized in all activities aimed at improving the quality of education. Therefore, we recommend that to sustain these quality improvements, there is an innate need for continuous improvements rather than a cyclic process hitting its peak nearing the accreditation visits.

Improving student performance requires a convergent effort from all stakeholders, so to develop a continuous improvement model, we analyzed the NCAA requirements. Then, we linked our content analysis data with the best practices discussed in the literature. As a result, shown in Figure 10, we have presented a model documenting the best practices to continuously drive the quality improvement in academic institutions. The model highlights how each standard can be managed better to improve student learning. At each organizational level, from university to college/faculty to department, an effective strategic management plan can help in chalking out effective strategies to allow these institutions to benefit from opportunities and mitigate threats from the external environment while developing distinctive competencies and improving weaknesses [37–39]. The use of data analytics and decision support applications can help in obtaining accurate, detailed insights into the organizations and provide a basis for strategic targets to progress in line with organizational vision and missions while adhering to their values [40,41].

Management support is another prerequisite for delivering quality work within an organization. In the context of quality education, the establishment of university, college/faculty, and departmental councils could provide a check and balance mechanism, in addition to an appropriate venue for thoughtful deliberations [42,43]. Similarly, the formation of advisory boards with representation from industry, the community, academia, government, and other stakeholders could help in strengthening the industry–academia liaison and minimize the skill gaps for the future employment of students [44,45].

Since teaching and learning is the backbone of educational institutions, there is a need to design appropriate academic programs having a balanced integration of theory and skills to prepare graduates for national and international job markets. With well-documented procedures in place to establish new programs and periodic reviews of existing programs involving all stakeholders, institutions can ensure that the highest level of academic quality is upheld. The learning outcomes of programs and individual modules should be well documented, and appropriate measuring strategies should be in place to monitor student performance. A variety of direct and indirect measurement tools should be used to achieve 360-degree feedback for continuous improvement [25,27]. These continuous improvement plans need to be regularly monitored to ensure that assessment results are actually resulting in quality improvements. The provision of learning management systems to students and faculty members ensures that the learning process is supported outside the class environment as well [46,47].



Figure 10. Model for Improved Student Learning.

Students are the main stakeholders of the education process, so provision of quality services to facilitate their learning and increase satisfaction is of paramount importance. We propose the establishment of dedicated Student Affairs and Registration departments to support students in managing their registration and examination records and security and to provide them with services in a timely manner. To encourage inclusive learning, the establishment of advisory departments within academic institutions to support students with social and physical disabilities helps these students to perform better in academic activities. A written set of codes of ethics and responsibilities helps in shaping the desired behavior among students and helps them to become responsible citizens in the future. Job placement rate is a critical indicator for the success of any academic program, so academic

institutions should establish a job placement center to facilitate the job searches of their graduates, connect with alumni for their participation in quality improvement, as well as to generate alumni endowment funds.

Educational institutions also play an enormous role in supporting communities to improve society [48]. It has been observed that the establishment of an effective recognition and reward mechanism for faculty members and students enhances motivation to take community service initiatives. In addition, establishing a community support office at the institutional level helps all colleges to document institution initiatives in a central community service bank. Furthermore, different volunteering opportunities can be advertised by this office to set up multi-disciplinary teams of different academic departments.

Research and innovation are the backbone of any academic institution, and universities need to establish appropriate policies to encourage research activities [48,49]. Alongside academic departments, dedicated research centers focusing on core competencies of the faculty and national needs should be established to produce research for social change. The establishment of a centralized department within an academic institution can help in initiating different research grant programs at the institutional level, as well as a collaborating with the faculty in finding suitable research grants. Moreover, such an office can serve as a focal point in filing patent applications resulted from research. Similarly, local chapters of leading academic societies can help in connecting with the latest trends in academia and industry as well. Finally, rewards for high-quality publications by the faculty and students enhances their motivation to conduct further quality research.

Faculty are the main players in an academic institution, and their motivation is vital to keep the entire learning process focused [50]. To hire and retain good faculty, there is a need for documented recruitment and promotion procedures. Such documented procedures provide assurance that institution-wide hiring and promotion criteria are fair. The academic institutions must also conduct continuous professional development activities for their academic staff within their area of specialization, as well as in other pedagogical areas, so that the faculty is well-equipped to make student learning a joyful experience for all involved.

The provision of institutional resources is vital for the maintenance of the operations. This includes financial as well as physical resources such as buildings, laboratories, a solid IT infrastructure, and any other related equipment [51–53]. Keeping in view the dynamic challenges faced by institutions and achieving business continuity in operations, an effective risk management plan should be in place across all academic units [54–56].

6. Conclusions

Academic accreditation is considered an important factor in improving quality of higher education. In this paper, we have evaluated student performance across four academic programs over a period of five years, where two years were immediately before accreditation and two years were immediately after accreditation. Overall, we have seen a weak direct relationship between accreditation and student performance improvements, as the improvements in academic achievement have been documented sporadically. To benefit from best practices adopted during the initial accreditation drive, we proposed a model which should be used consistently to improve quality education. In terms of managerial implications of studies, higher management in the academic institutions can benefit from this model by adopting quality frameworks in line with the presented model to foster sustainable quality practices. A variety of learning theories have been developed to comprehend the learning process, so these learning theories can be used to allow stakeholders to better understand the quality processes. One of the limitations of this study is that there are many other factors, such as a changes in cohorts or an individual learning resource person who may have directly improved the students' learning. In the future, we aim to observe the same set of cohorts to observe accreditation's impact on their learning. Another limitation of the work is that our focus has been mainly on student performance, so we have not applied rigorous statistical analysis on student performance results. In the

future, we intend to collect student and faculty feedback and apply more rigorous statistical analysis to gain more insights into existing data.

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