



THE CORRELATION AMONG DIFFERENT TYPES OF EXAMS IN AZERBAIJAN

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Abstract

It is crucial to examine the alignment of different exam results conducted by various organizations to improve the quality of assessment. The research used a document analysis method with recent, publicly available national and international reports addressing the research question. The following main question was examined through the document analysis: What exams have the highest correlation and are more trustworthy in Azerbaijan for short and long-term outcomes? The data were analyzed to discover any statistical comparisons of university admission exams with the 9th and 11th grade SEC exams, school grades, and other assessments. Research shows that the State Examination Center's exams align with its own evaluations and international assessment (OECD). They can be considered methodologically rigorous, providing a more valid yardstick for measuring student knowledge and achievement. Overall, exams by the SEC had a high correlation coefficient compared to Higher Education Institutions' assessments. As more and more international students want to pursue their education in Azerbaijan, these findings can be valuable for their decision-making and tertiary level.

Keywords: educational evaluation, exam correlation, large-scale exams, national and international measurement

Introduction

Azerbaijan, located at the crossroads of Europe and Asia, intends to join the global marketplace with its assessment strategies as a young country. "Oil wealth has served Azerbaijan well, helping the country achieve high growth rates, significant poverty reduction, accumulation of large foreign exchange reserves, and reduction in debt levels" (Moreno & Patrinos, 2020, p. 2). Hence, the multicultural country is committed to enhancing its education level and attracting more international students. Even though Azerbaijan education is young and evolving, it could integrate into the world education system with Bologna Process, curriculum, or dual-title programs. Besides, with its hospitality, modernism, affordability, and multilingualism, Azerbaijan continues to integrate into collaborations and international assessments. For example, Azerbaijani higher institutions are included in the Times Higher Education ranking and attract more and more international students. All these help Azerbaijan to eliminate post-colonial traits in the education system and adopt a worldwide evaluation system, which depicts Azerbaijan as a global country. Analyzing multiple exam results implemented by different organizations is vital and promising for enhancing South Caucasus countries' enlightenment. Finally, in near future youth around that region can take the exams in Azerbaijan to be accepted for international admission.

There are different kinds of assessments of education level, literacy, and skills by national and international institutions in Azerbaijan. The MSE (Ministry of Science and Education), SEC (State Examination Center), and global evaluations like TIMSS, PISA, and PIRLS assess students at certain ages and grades. In Azerbaijan, children/teenagers mainly take exams at the preschool level, grades four (i.e., final primary grade) and six by MSE programs, nine (i.e., final middle school grade) and eleven (i.e., final high school grade) school-leaving exams, university (e.g., undergraduate, graduate) admission exams by the SEC. Besides, more and

more international students apply and take exams for Azerbaijani universities. Students receive undergraduate and graduate GPAs and diplomas from their higher institutions. This research intends to compare different correlations of exam results using the SEC, the MSE, the SSC, and OECD annual reports and summarize the short and long-term outcomes.

History of Azerbaijan Education System

Generally, Azerbaijan education has four pillars: preschool (kindergarten), 1-11 grades (schools), secondary special (colleges), and higher education (universities). Since Azerbaijan gained its independence in 1991, the Ministry of Science and Education (henceforth MSE) was reestablished (during 1918-1920, it was the Ministry of Public Enlightenment). The MSE is responsible for all levels of education, educational policy implementations, program and curriculum development, all exchange programs, and school-based assessments.

The second president of Azerbaijan, Abulfaz Elchibey ordered to found the State Student Admission Committee (SSAC) in 1992 to create opportunities to get admission to the higher institutions for all. Centralized Testing Admission by SEC was based on the “Turkish model of centralized university entrance examinations...to end the comprehensive and ‘perfect’ system of bribery and protectionism” (Kazimzade & Silova, 2009, p. 257). Azerbaijan was the first post-soviet country to apply for centralized exams for university admission (Eminli, 2019). The SSAC functioned from 1995 to 2016 and, since 2017, has been reestablished as the State Examination Center (henceforth SEC).

There were forty-two Higher Educational Institutions (henceforth HEIs) in Azerbaijan by 2022. The very first university was Baku State University, founded in 1919. HEIs mainly provide GPA and diploma assessments. Lastly, Azerbaijan actively participates in international assessments like TIMSS, PISA, PIRLS, and global subject Olympiads. The exams provided by different organizations are summarized in Table 1.

Table 1
The Exams Provided by Different Organizations

#	MSE	SEC	HEIs	International
1	First Grade Admission	9 th Grade School-Leaving Exams	GPAs	TIMSS, PISA, PIRLS, TALIS
2	4 th Grade Exams	11 th Grade School-Leaving Exams	Diplomas	Olympiads
3	6 th Grade Exams	Undergraduate Admission Exam	Ph.D. Admission	
4	Exchange Program Admission (2019-2023)/ Dual Programs	Graduate Admission Exam	Staff Admission and Exams	
5	Student Transfer	Residency Admission Exams		
6	School Teacher Employment Exams	Ph.D. Language Exam		
7	School Principal Employment Exams	International Exams (SAT, TOEFL, GRE, ACCA, IC DL, Pearson, Etc.)		
8		Vocational College Admission		

Since its independence more than 30 years Azerbaijani government has aimed to provide prosperous, equal, and comprehensive education to all citizens and foreigners. The education system was built to give young people equal opportunities to achieve personal success and take a worthy place in society based on their skills and efforts. It is not a secret that in Azerbaijan, “success” for almost all parents and school children, as in the world (Kamenetz, 2015), is to graduate high school and achieve high scores in the entrance exams leading to scholarships, the perspective of the job market, education abroad, and long-term plans. More than ten thousand international students from around the world study in Azerbaijan (SSC, 2022). Students from Türkiye, Russia, Iran, Georgia, Kazakhstan, the People’s Republic of China, Bangladesh, Jordan, Iraq, etc., chose Azerbaijan for their higher education. Therefore, the current research results will also impact international (e.g., mainly from Central Asia and East Europe) student admission and exchange programs and expand global cooperation.

Literature Review

Correlational research can predict or play an outcome indicator for the predictive validity of student success in the educational field. For twenty years, educational researchers have conducted data mining to predict students’ academic performance based on previous exam results. It helps to perform “a learning analysis framework in higher education and contribute to the decision-making processes” (Yağci, 2022, p. 1). As a rule, earlier levels of exams have a strong positive correlation with the upper level of exams conducted by the same organization (Kühbeck et al., 2019). As stated by Russell et al. (2012), in that case, “earlier examinations could be viewed as predictors of upper-level Organization for Security and Cooperation in Europe performance” (p. 138). Such research results substantiate the previous findings in the literature “and may be helpful for the predictive modeling of student performance” (Kühbeck et al., 2019, p. 6).

Interesting results appear in correlational research comparing exam results conducted by different institutions. Usually, anchor (trial) exam results are correlated with the proficiency test results for simulation reasons and are observed as another indicator by world-leading testing companies (Sinharay & Holland, 2016). Thus, organizations can use exam scores to indicate the students’ future performance following admission (He et al., 2015). For example, it is already known that high school students’ excellent results (i.e., credits) predict a high GPA in college in the later stages.

Although American colleges and universities have applied a wide variety of admission procedures and have used other criteria as well, almost all of them have accepted high school grade point averages or GPAs and SAT scores (or, in some cases, American College Testing or ACT program test scores) as the two significant factors in the process (Jordan, 1996). Since such correlational results are often found reasonable (Stemler, 2012), some admission offices only consider high school final GPA (Golden, 2005) and do not require extra international exam results for admission. That is to lessen exam stress and additional expenses, especially during the pandemic.

According to Papay et al. (2011), multiple exams can create a structural barrier for students, discouragement, and lead to emotional and financial burdens. Much related research work worldwide is based on academic performance and test anxiety, depression, burnout, and physiological stress of different educational levels, especially during COVID-19 (Prakashka et al., 2021). “Failing the examination may affect students’ perceptions of themselves and their academic abilities, which may, in turn, affect their ideas about the returns to additional schooling” (Papay et al., 2011, p. 3). The authors present examples of math and English Language Arts (ELA) exams and offer that passing one examination may encourage students through the retesting process. Therefore, correlational works have been done among different

subjects and social statuses (Uretsky & Stone, 2016) essential for the admission criteria. These findings align with Holme et al. (2010) results that high school exit exams have been associated with costs for the most disadvantaged students.

The correlation between school grades and college admission is high in many countries like the USA, Japan, and Canada. According to Geiser and Santelices' (2007) research on 80,000 students, high-school grades can best predict undergraduate admission. Turkish researchers' results (Karatas et al., 2013) also show a high correlation between school leaving and undergraduate admission exams. He et al. (2015) also found a significant correlation between entrance exams and academic performance. Mainly correlation occurs in language and math assessments (Ismail, 2008; Kaleli-Yılmaz & Hanci, 2016). However, many countries have unified or centralized state exams, considered the primary admission tool (Khavenson & Solovyova, 2014). Finally, some correlational work was done based on exam scores and study techniques (Gurung et al., 2010).

International and national assessments can show different patterns and results; however, education policymakers try to correlate the results for future outcomes. Some countries (e.g., Sweden, Japan, Israel, Canada, USA, Türkiye) perform different aligned studies comparing international exam scores (e.g., TIMSS, PISA) with national exams and school grades to adjust political decisions about a nation's curriculum and e-assessment (Aydin et al., 2011; Lay & Ng, 2021; Kjellstrom & Pettersson, 2005; Sarigoz, 2023; Wiberg, 2019). For instance, "U.S. delegate said that the TIMSS and PISA results helped to justify the reforms of the No Child Left Behind Act" (Wiberg, 2019, p. 329). Also, because of the declining results in international assessments (i.e., TIMSS), Japan decided to abandon creativity in the school curriculum and instead implement a more traditional and academically rigor curriculum (Bjork & Tsuneyoshi, 2005; OECD, 2012; Takayama, 2008; Takeuchi, 2019).

There are many research works related to the modern education system of the Azerbaijan Republic, higher education equitability (Isakhanli & Pashayeva, 2018), university admission ways (Drummond & Gabrscek, 2012; Kazimzade & Silova, 2009), and some drawbacks of the higher education system (Ibadoglu, 2021). Many studies have used various international comparisons of the education system and admission process (Abbaszade, 2021; Alasgarova, 2022; Aliyev, 2011). However, no studies have attempted to compare different correlation results of exams and define assessment types in the Azerbaijan education platform. With the correlational findings, international organizations in educational assessment, world-known universities/institutions, and exchange programs can expand or merge mutual/dual collaboration with Azerbaijani education. Also, it can enhance regional and international literacy, general assessment awareness, and students' trust in exams by displaying testing validity and reliability conducted in Azerbaijan.

In the shade of all success and impact, annual national and international reports (MSE Annual Report, 2020; OECD, 2019; World Bank Group, 2018), there have never been any unique first-hand focus group data (FGD) about the correlation of different exams in Azerbaijan. Like the neighboring countries, Azerbaijan lacks correlational research, publications, and document analysis. Therefore, this research can be a supplemental tool for future large-scale studies of the region countries and increase their assessment trust.

Research Problem

The problem in this research is to summarize and highlight the correlation among exams provided by the SEC, MSE, HEIs, and international organizations (e.g., OECD) during 2018–2022 and come up with exam results that are valid for short and long-term outcomes through document analysis.

Research Significance

First, this work shows what type of exam can be a “success” indicator for youth and children of the region. So that after investigating the most trustworthy exam type, organizations can use it and use fewer resources, less time, and limited finance for admission. Also, this research looks to provide insight into the different exam types and their correlation to bringing new opportunities and global goals into the South Caucasus region. This can lead to more collaboration of various organizations and success for including applicants from all over the area. Since 2001, the number of foreigners studying in Azerbaijani universities has quadrupled. The number of Azerbaijanis studying abroad has fluctuated since 2015. Thus, both sides can continue escalating in developed countries if the assessment of the Azerbaijani education system correlates with international exams and proves itself as a comprehensive and reliable indicator of students’ cognitive capacity.

Research Aim and Research Questions

The research aimed to provide evidence for the best assessment in grades K-11 and higher education, ensuring valid and reliable examinations for national and international learners. This research sought to explore two questions:

1. What kinds of exams have the highest correlation and are more trustworthy in Azerbaijan?
2. What kinds of compared exams predict short-term and long-term outcomes?

The hypothesis established for this research was that exams within the SEC have a high correlation, whereas exams of other organizations have a low correlation. Also, there is supposed to be a moderate correlation between the SEC and international assessments.

Research Methodology

Sample

The SEC, MSE, and SSC have compiled a comprehensive scientific-statistical annual reports with results of trial exams, school exit exams, and university undergraduate (i.e., bachelor’s) and graduate (master’s) admissions for around the last ten years. This research uses the official reports with a longitudinal student database to track the four-year outcomes for a sample of almost 80,000 students each year. Participants are mainly school graduates (e.g., grades 9/11), university admission exam participants, sub-baccalaureate graduates, and graduate exam participants.

Subjects are the different types of exams, including the 9th-grade school-leaving exam, 11th-grade school-leaving exam, school grades, trial exams by SEC, university admission exam, sub-baccalaureates diplomas, and university admission exam scores, undergraduates’ diploma scores, and graduate admission exam scores, different subjects scores, etc. Our dataset comes from all cities and districts of Azerbaijan except for Khankendi (i.e., under the Armenian occupation). Statistical data analysis was supposed to be done by examining each student’s different exam scores and other variables. There is no information about assumptions and outliers.

Instruments

The document analysis method was used as a valuable qualitative research method to investigate the correlation between national and international assessments. The public records

of official organizations were chosen, relying on each document's authenticity, credibility, and representativeness. Chapters about exams and their results' correlations were considered while doing triangulation. Correlational data were used as units of meaning, and categories were national and international exams/assessment results. Eleven reports published on official websites were selected:

1. OECD, (PIRLS 2021, TIMSS 2019, and PISA 2018) International Results Report;
2. MSE, the Ministry of Science and Education of Azerbaijan, Annual Report (2020, 2021);
3. SSC, State Statistical Committee of the Republic of Azerbaijan, Education, Science and Culture (2021, 2022);
4. SEC, Scientific-Statistical Analysis of the Final Exam Results on Students' Admission to Higher and Secondary Outstanding Educational Institutions of the Republic of Azerbaijan and Public Education Institutions for the four academic years (2019, 2020, 2021, 2022).

The following limitations have affected this research: Secondary archival data were used, which is less expensive but can have data accuracy issues. There is no information about those students who did not apply, missed the exams, or those with excellent grades who often choose an education abroad. Some students could not continue their education because of fees or other family commitments. The data could contain missing elements as well. However, the SEC, MSE, SSC, and OECD annual reports are the only comprehensive data on 'Azerbaijan's education. Finally, the SEC reports form a criterion-related validity and can be compared with international exams.

Data Analysis and Procedures

Using a report of correlational designs with archival data (i.e., document analysis), relationships were established between independent and dependent variables after an action or event had already occurred. "Archival data is a correlational research method that uses already gathered information about the variables in correlational research. Correlational research is backward-looking. The strength of a correlation between quantitative variables is typically measured using a statistic called Pearson's Correlation Coefficient (or Pearson's r)" (Forumplus, 2020, p. 17). The significance level was $p < .05$. Thematic analysis was used to recognize the correlational patterns within the selected data. After the first analysis, the critical eye of coding and the themes were processed in the NVivo program. Overall, a thorough and systematic review of reports was implemented within the constant comparative method.

Research Results

PISA and SEC 9 Grade Math Exam

Azerbaijan (Baku) participated in the Programme for International Student Assessment (PISA) in 2022, 2018, 2009, and 2006 with 15-year-old students (grade 9). According to the 2018 year results (as the 2022 assessment is not public yet), Baku (Azerbaijan) students scored lower than the OECD average in reading, mathematics, and science (See Appendix A). "In Baku (Azerbaijan), 6827 students, in 197 schools, completed the assessment, representing 20271 fifteen-year-old students (46% of the total population of 15-year-olds)" (OECD, 2019, p. 8). The same results can be seen in the 2019/2020 SEC grade 9 math report. 31.18% of them scored 0 - 20, 30% scored 21 - 40, and only 4.26% scored 80 - 100 points out of 100-point-scale

exams. It means more than 60% of 9th-grade students could not achieve the mean score for the math exam. According to the SEC report, only 8.7% of 9th-grade graduates could succeed in college admission. A direct correlation between PISA and SEC math results for grade 9 in 2019 could be seen.

Since more than 90% of students pass through different types of exams by SEC, paying attention to the correlation among the exams and highlighting the perfect exam scores is vital. Therefore, the primary indicator was the university admission exam versus other related assessments. First, the following correlations are given in the 2020 – 2021 and 2021 – 2022 SEC Annual Reports:

Total University Admission Exam Scores vs. High School Grades

The applicant's online application form includes school-leaving final grades for each subject. Based on the grades mentioned in the application, the average attestation grades of the applicants were calculated and compared with the points they gained in the university admission exams. Based on the SEC report, the exam scores of the applicants with all grades "5" (i.e., excellent) in the certificate compared with the applicants with all grades "3" (i.e., fair). The results of 96.27% of graduates who finished high school with a "3" in all subjects were also inferior by within 0 - 200 points. However, only 30.82% of the students who graduated with excellent marks could justify the attestation grades. These results show that the low grades given in schools are objective, while the high grades are relatively inflated. Therefore, the SEC committee rejects including school grading to the university admission, avoiding future subjectivity and bribery. The SEC announced that they could consider future university admission school assessments if there is a high correlation ($r > .9$) (SEC, 2022).

University Admission Exam Scores vs. High School Grades on Different Subjects

A straightforward comparison was seen in the correlation between high schools' various subject grades and university admission exam scores. Relatively objective assessment in high schools is conducted in the instructional language (Azerbaijani/Russian), mathematics, and foreign languages. The correlation coefficient for these subjects is in the range of $r = .53 - .54$. Correlation coefficients in literature, history, physics, chemistry, biology, and geography are in the range of $r = .34 - .42$ ($p < .05$), a low positive. It is essential to mention that school grades are done by subject teachers (appointed by the MSE).

University Admission Exam vs. School-Leaving Exam

A high and significant statistical relationship between the school-leaving and university admission exam results ranges from $r = .79$ to $.84$ (Table 2). Both exams are conducted by the SEC. Based on these indicators of the correlation coefficient, the SEC puts forward the following question: Can applicants pass only one exam from three subjects and get admission to the undergraduate programs? University admission exam tests do not provide high accuracy in assessments in the low aptitude range. School-leaving exam tests are not practical enough to evaluate the medium and high ability range. In other words, if the SEC applies university admission exams (more difficult) to applicants instead of the school-leaving exam (more accessible), then most teenagers will not receive a positive grade, and the quality of the assessment will be lower. Vice versa, using school-leaving exams instead of university admission exams will harm the quality of applicants with intermediate and high ability levels. It should be borne in mind that a fair university admission examination system is one of the most important motivating factors influencing the quality of education in Azerbaijan and leveling high in the region.

Table 2
Correlation Ratio Between University Admission Exam vs. School-Leaving Exam ($p < .05$)

Groups	Instructional Language	Math
I		.838
II		.832
III	.789	

Note: Data from SEC, 2022.

University Admission Exams vs. Sub-Baccalaureate Diploma Grades

Since 2019, in a mutual agreement by the SEC and the MSE, the sub-baccalaureate (college graduates) could apply for university admission with only diploma grades. However, they had an opportunity to pass both school-leaving and university admission exams as school graduates. The SEC research shows no regression between the diploma scores of the sub-baccalaureate who took part in the university admission exams (2022), as the correlation coefficient was $r = .15$ ($p < .05$). Numbers show that diploma scores were not objective. Some sub-baccalaureates were randomly admitted to higher education institutions, not according to their level of training. All this indicates that the level of preparation of sub-baccalaureates who have the opportunity to be admitted to higher education institutions without passing the SEC exams is much lower than the level of prepared applicants admitted to higher education institutions based on the exam results. Such kind of chaotic admission, in turn, can lead to specific problems in higher education, teaching low and medium-prepared students. It is worth mentioning that the grading of sub-baccalaureates' diplomas is conducted by college teachers (assigned by the MSE).

University Admission Exams vs. Trial Exams by the SEC

Trial exams have a special place in preparation for the university admission exams. In trial exams, the applicants get acquainted with exam procedures and techniques. Applicants can assess their level of knowledge based on the test model and exam criteria used in the exams. The correlation coefficients were calculated and analyzed between their respective exam indicators to determine the relationship between the trial results and the university admission exam results. Table 3 presents the calculated values of the correlation coefficients between the trial exams and entrance exam results with the highest entrants' scores by specialty groups. As seen from the table, there is a close stochastic relationship between the results of the trial and university admission exams of applicants in all specialty groups. This relationship is reflected in the relative scores on both exam subjects and the total scores. The highest regression equation is reflected in the results of applicants representing specialty group I. In this group, the density of the linear relationship is very high between the total scores of applicants in the trial and university admission exam, with a correlation coefficient is $r = .88$, $p < .05$.

Table 3

Correlation Ratio Between Trial and University Admission Exam Results, 2021

Groups	Overall	Exam Subject							
		Native L.	Literature	Math	Physics	Chemistry	Biology	History	Geography
I. Mathematics, physics, engineering, architecture, design, agriculture;	.875			.810	.790	.808			
II. Economics, management, international relations, regional studies, sociology, and geography;	.872			.789				.767	.796
III. Humanities, pedagogy;	.860	.777	.737					.787	
IV. Medicine, chemistry, biology, psychology, agriculture;	.867				.792	.795	.760		

Note: Data from SEC, 2020, p. 59

The following correlational information was taken from the SEC Annual Report for the 2019-2020 academic year.

Two University Admission Exams in 2019

In 2019, the applicants could participate twice in the second stage (university admission exam) as a Test-Retest method. When analyzing the exam results of both university admission of the same specialty group, it was found that university admission results in the second exam were relatively better than those in the first exam. The average difference was 12.4 points between the results of both admission exams. The difference between the results of about 76 - 77% of entrants in these two exams was less than 50 points, and 98 - 99% - less than 100 points. Note that the correlation coefficient between the results was .94 (a very high correlation). That is one type of internal consistency example. Unfortunately, admission exams were limited to one after 2019 due to various issues.

Summarizing, Table 4 shows how school grades, sub-baccalaureate, and undergraduate diplomas have a low or moderate correlation with SEC exams. The lowest correlation is between sub-baccalaureate diploma grades and university admission exams ($r = .15$ weak correlation), raising doubts about the future opportunities for college graduates to get admission to higher institutions with only diploma grades. There is no information on the correlation between TIMSS results and school grading. Also, it was impossible to find any direct correlation between international and national competitions, Olympiads, and local grading.

Table 4
Summary of Correlations among Different Types of Exams

Exams	SEC Undergraduate Admission	SEC Graduate Admission	GPA (HEIs)
PISA (9-grade math)	High		
School Grades (5-Excellent) (MSE)	31%		
School Grades (3-Fair) (MSE)	96%		
School Grade (Azerbaijani, Math, English) (MSE)	$r = .53-.54$		
School Grades (Literature, History, Physics, Chemistry, Biology, Geography) (MSE)	$r = .34-.42$		
School-Leaving exam (SEC)	$r = .79-.84$		
University admission exam (SEC)			High
Trial Exams (SEC)	High		
Sub-baccalaureates' diplomas (Colleges)	$r = .15$		
Undergraduates' diplomas (HEIs)		$r = .23-.54$	
Admission Exams in 2019 (SEC)	$r = .94$		

Discussion

After analyzing multiple official documents over several years, the overall conclusion for the most reliable assessment can be defined. As can be seen, the SEC plays a vital role in almost all the youth's lives, especially with school-leaving exams in 9th and 11th grades and university undergraduate and graduate admission exams. These are mainly Math, English as a foreign language, and native language exams for school-leaving exams. Hundreds of school and university students must pass these exams, which require preparation and tutoring for one or more years. Hence, people have already relied on the unified exam style and have used its services for thirty years.

The analytical report published by the Social Research Center (SRC, 2021) noted that about 90% of the respondents expressed confidence in the system of the examinations conducted by the SEC. The open socio-technical system has protection against external manipulation. It is based on deterministic processes, ensuring university admission transparency and public confidence in the SEC (Abbaszade et al., 2021, p. 14).

Hence after scrutinizing reports based on correlational results, research questions can be addressed:

The First Research Question asked what kinds of exams have the highest correlation and are more trustworthy in Azerbaijan. There were significant correlations between the scores for the exams conducted by the SEC, which is natural. The higher the grade from one SEC exam, the higher the second SEC exam result. After analyzing all provided correlational results, it can be concluded that the SEC proved the exams responded to criterion, content, and construct validity for years (Drummond & Gabrscek, 2012). As stated by Hajiyev et al., (2021):

Approximately 100 thousand applicants participate in test exams for admission to higher schools. According to the law of great numbers of mathematical statistics, the average score obtained

by 100 thousand applicants may be considered acceptable as a quality indicator of secondary education in the country. Therefore, we consider that specification can be considered a more advanced one for the countries where the average score obtained by the applicant in the admission exams for the higher schools in the country (p. 1397).

The correlation between the two university admission exams in 2019 is ranked first with a very high $r = .94$ (SEC, 2020). Also, applicants who scored high in school-leaving exams scored high in undergraduate admission and vice versa. The trial and university admission exams are other examples of the high correlation between SEC exams linked with other sources of exam research. Therefore, there can be concluded that all SEC exams have both concurrent and predictive validity within one.

Naturally, Azerbaijanis are interested in SEC results more than high school grades or university GPAs, and the SEC exams are always more debatable and discussed. There is a widely accepted belief among the nation that any graduate who succeeds in any field, profession, or entrepreneurship would once have a resume with a high score from the SEC. Almost for twenty years, the presidents of the Azerbaijan Republic meet with high-scored students (Azətaç, 2002). There are hundreds of examples in Azerbaijani society for this case when a successful young employee (with international experience, broad knowledge, and considerable skills) had high SEC exam results rather than excellent school grades. Therefore, recently, there has been discoursing about accepting the SEC English exam results as IELTS internationally. Since the SEC's reliable work attracts international organizations to give the right to exams like TOEFL, GRE, ACCA, and SAT; therefore, hundreds of foreigners come to Azerbaijan for these exams. If SEC's English exam results are accepted as an international assessment, then Azerbaijani and neighboring applicants could take it affordably and effectively.

Research Question Two- What kinds of compared exams predict short-term and long-term outcomes? In analyzing documents, only the SEC reports gave exact correlations; therefore, the focus was mainly on its results. First, the correlation between PISA and SEC 9th-grade math results shows a versatile comparison, thus giving the right to accept the SEC assessment as valid and reliable both for short and long-term outcomes. Second, all the abovementioned correlational results show positive SEC assessment outcomes.

A short-term exam score predictor can be a research work done by ADA University and the SEC. ADA University is the only (by 2019) HEI that can accept students for the undergraduate level by Scholastic Assessment Test (henceforth SAT) with a localized interview stage. The SEC conducted a study at ADA University to compare the results of the admission and SAT exams among the students admitted to this higher education institution in 2019. The student's first-term GPAs at ADA University were considered a standard comparison indicator. "As a result, it was found that the students admitted to ADA University by SEC exams presented better GPAs than students admitted by SAT (plus interview). In other words, the results of the admission exams conducted by the SEC are more justified in selecting applicants who want to continue their education at the bachelor's level than the results of the SAT exam" (SEC, 2020, p. 140). Concluding, students admitted with high SEC exam results also present high GPAs within a year.

Another short-term indicator of the SEC exams can be students' trial and exam results as well as the latest exam results augmentation. Comparing the last two-year IX school-leaving exams shows that as soon as the SEC combined this exam with the undergraduate exam for university admission, "the pupils' average score in the IX grade final exam of the current year increased 9 points or 8%" (MSE Annual Report, 2020, p. 104). The same picture is with XI graduates, whose final exam scores rose from 112.79 (2019) to 116.17 (2020). These can indicate that the school-leaving exams are accepted more seriously and tend to increase since school-leaving exams are combined with admission exams and implemented by the SEC.

A long-term outcome can be seen comparing the last five years. First, more Azerbaijani high school students tend to apply and get admission to the undergraduate level in the country, which is conducted by SEC (MSE, 2021). A gradual increase is observed in the admission to public higher education institutions from 2016/2017 to 2020/2021 (See Appendix B). Second, the same rise has happened in university admission exam scores (209 - 265) since 2016 (See Appendix C). It can be stated that the population trusts the SEC exams' accurate and impartial assessment and tends to improve scores to achieve better results and available scholarships. Finally, it can be seen that the percentage of matriculants who scored 0 - 100 tends to decrease, whereas students with 300 - 500 and 500 - 700 points increased (See Appendix D). It is essential to highlight that the last two years (2019, 2020) have had declining trends due to the Covid pandemic.

Overall, it can be concluded that average university admission scores and the number of examinees are escalating due to innovative educational and examination system transformations. The SEC evaluation type is the most trustworthy among all the mentioned evaluations, and the committee is doing everything to have short and long-term predictive examination results. Finally, Azerbaijan holds a justified position among East European countries with its valid and reliable exam assessment by the SEC.

Conclusions and Implications

According to the document analysis and compilation of correlational work, it can be concluded that Azerbaijan State Examination Center (SEC) provides a valid and justifiable assessment. The Center delivers comparative results with short and long-term outcomes. Therefore, almost all high school graduates prepare and participate in the exams for tertiary education. Every year, the number of admitted students also increases, opening opportunities to all. Finally, it is worth saying that international students can rely on the Azerbaijani evaluation system and apply for admission.

The findings of this research revealed the hypothesis that exams within the SEC have a high correlation and can play as a "success" indicator. Instead, exams between other organizations have a low correlation after looking from the SEC perspective. Therefore, it is impossible to select a more trustworthy and reliable exam type or exam recourse so far, except for the SEC. As mentioned earlier, almost all schoolchildren must take or pass the SEC exam/exams. Thus, there can be concluded that the school-leaving exams (e.g., 9th and 11th grades) and undergraduate admission exams are among the most critical exams and indicators of "educational success" in Azerbaijan.

However, the present research results suggest that there are still many points to improve in the Azerbaijan Education System. Only the SEC and OECD correlation reports were compared in this research work. Also, it would be valuable to witness MSE and HEIs' reports on correlational assessment and measurement, especially if there is any correlation between school grades and exam scores, which is a delicate topic for all educational experts.

The main requirement for the SEC exams would be comparison and correlation with international exams (when applicable). The SEC exams are mainly criterion-related tests; at times, experts, mentors, teachers, and students have complaints regarding the difficulty of the questions. Therefore, long-term observation is needed for criterion validity (i.e., predictive if a high-scored student from SEC also scores high in dissertation defense and graduate exams from international institutions) and concurrent validity (i.e., compared with TIMSS, PISA, SAT, TOEFL, GRE, etc.). After much research, the examination committee can propose new models or requirements since there is a discourse about accepting SEC English results as other international tests. All these results can help to lessen exam stress and keep only valid exam types in the Azerbaijani education system in the future.

Another dubious aspect is that about 90% of school graduates take any form of the SEC exam, and only 40%-50% of applicants succeed until university admission. Another question for future research is whether the SEC exams are too complicated and require more convergent evidence. Finally, the last claim is that the SEC assessment, with its multiple-choice and a couple of open-ended tests, is insufficient for university admission. It is reported that both SEC and MSE work collaboratively to assess and measure school programs and curricula and adapt international assessment styles for the long-term success of Azerbaijani children.

Recommendations

The SEC is one of the most critical specialized central bodies for international and national exams in the South Region. The SEC made tremendous accomplishments, and the process is still ongoing. The SEC and the MSE's achievements last five years accounted for positive responses from educational experts, applicants, and parents. However, there are some points to focus on for the future of students' success:

1. More correlational work should be implemented to compare SEC and international exams like TIMSS, PISA, and PIRLS. It is advised to correlate advanced and high benchmark students' (2022) results with national assessments.
2. It would be beneficial to see correlational reports by MSE regarding elementary, middle, and high school students' grades and the TIMSS/PISA reports.
3. The SEC provides international exams like TOEFL, GRE, SAT, Pearson, etc. It would be valuable to correlate language and math results with SEC exam results (if applicable).
4. Collaborating with HEIs to find the correlation between university admission exam scores and students' final GPA would be valuable.
5. Other comparisons within the exchange and dual-title programs should be implemented to attract more international students.

With the help of many more correlational results, it would be clear which method or exam is more reliable and valid for the Azerbaijan education system and expand its function within the region. It requires long-term investigation, mix-methods, and mutual collaboration.

Acknowledgments

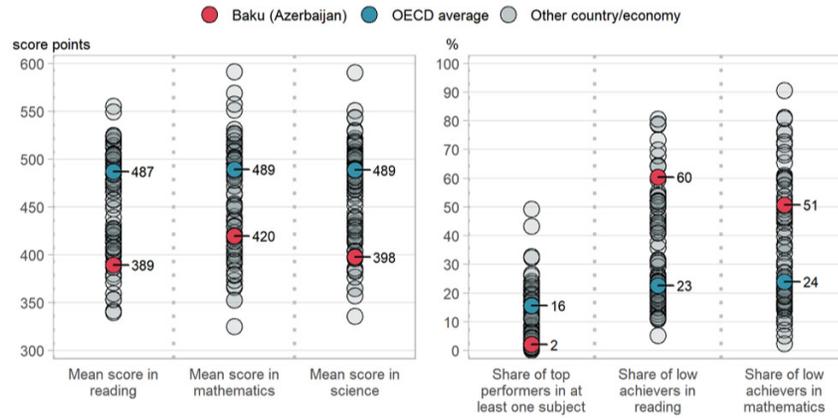
I thank the journal's editor and reviewers for perfecting my research work.

Conflicts of interest

There was no funding for this research, and the author has no conflicts of interest to declare.

Appendix A.

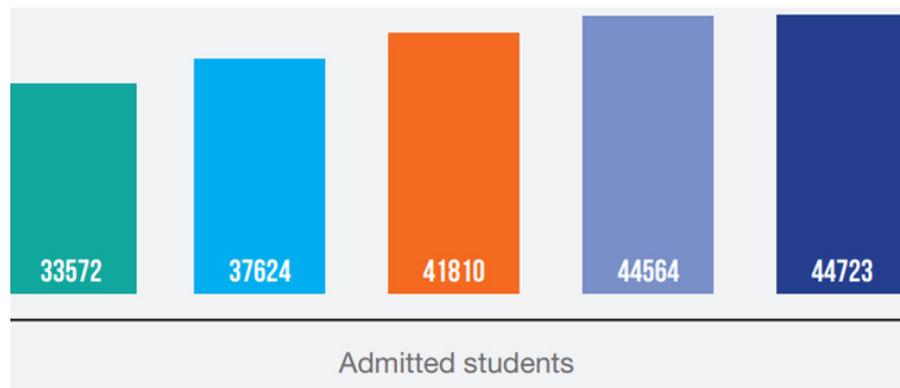
What do 15-year-old students in Baku (Azerbaijan) know and can do? Snapshot of performance in reading, mathematics, and science.



Note: Data from OECD, 2019, p. 1

Appendix B.

Admission to higher education institutions over 2016-2020



Note: Data from MSE Annual Report, 2020, p. 112

Appendix C.

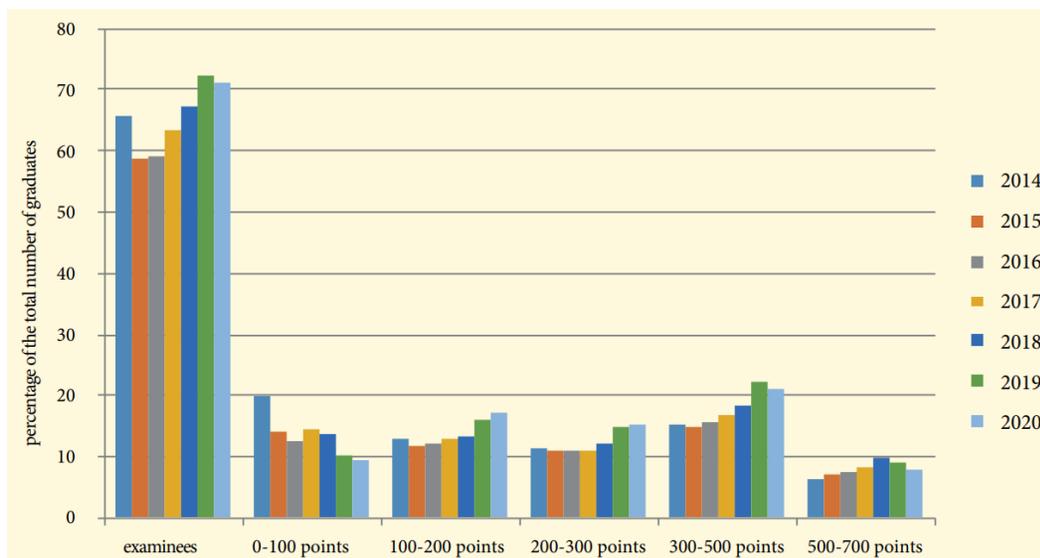
Comparison of matriculants' average exam scores over the years



Note: Data from MSE Annual Report, 2020, p. 114

Appendix D.

A comparison of the distribution of applicants in the entrance exams of 2014–2020 (taking into account all graduates) in points



Note: Data from Abbaszade, et.al., 2021, p. 13

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Gunel A. ALASGAROVA. The correlation among different types of exams in Azerbaijan

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