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Sustainable Change Management in Business Higher Education in Central Europe

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Abstract

In the situation of changing environment in higher education demands in Central Europe and worldwide with requirements for different types of delivery, it is necessary manage focus on quality of in all possible variants of teaching-learning process. This paper brings case study of Czech business university, where the shift to online delivery and efficient change management brought exponential increase of enrollment. The policies used are discussed, along with the results of students' evaluation. The aim is to define successful approach of university change management to utilize the impact of interruptions, crisis or unexpected change for innovation of education process and knowledge. The data collection aimed at period from 2019 to 2022. Significant factors influencing quality perception by students who attract their peers are presented: flexible administration, teaching and examination, online accessible materials, upskilled faculty along with individualized student-centered approach, new technology and distance teaching skills.

Keywords

Quality Assessment, Perception, Performance, Digital Technologies, Individualization in Education

I. Introduction

Quality assurance of distance education programs is a continuous process that needs to be enhanced in Danube region. Research highlights the need to identify the learners' profile (satisfaction, expectations, readiness and skills) to ensure success and quality of online learning (Van Wart et al., 2020). The global pandemic has created a unique experiment in distance learning, and it is important that this learning opportunity is not wasted. In order to consistently support capabilities while addressing strengths, weaknesses, opportunities, and threats, a long-term strategy that provides flexibility in design, use, support and

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approach is essential (Linnes et al., 2022). Flexibility and creativity are necessary to maximize the potential of distance education and at the same time to limit its disadvantages (Kruszewska et al., 2020). It is clear that many students are embracing new technologies and it is important that faculty guide students in using new technologies. Self-direction in student learning offers enormous benefits when thoughtfully implemented. Preparing students and learning facilitators for rapid change may be a fundamental approach for many higher education institutions moving forward. Universities that continue to treat traditional teaching as "commonplace" after Covid-19 may lose students to competing universities. Blended learning programs that integrate asynchronous and synchronous communication strategies, experiential learning, and in-person and digital training have great potential in higher education (Linnes et al., 2022).

Distance education requires different skills and competencies than traditional classroom learning (Al-Asfour, 2012). Dumulescu et al. (2021) pointed out that it is crucial to support participants' readiness for e-learning. At the same time, research shows that instructors are not sufficiently prepared to develop and teach practical online courses (Nisiforou et al., 2021). Therefore, there is a need to provide examples of good practice and identify elements within course designs that have positive or negative impacts on course quality (Baldwin et al., 2018; Kibaru, 2018).

This paper focuses on using change as facilitator to growth. This paper shows an example of higher education institution that doubled its number of students by implementing distance education in Covid successfully. Results of this paper is supplemented by data collected through a period of four years including Covid period in a university that had enrolled between 2,000 before Covid to 4,000 students after technological and systematic individual and online skill-development approach transformation through Covid period. The aim is to define successful approach of university management to utilize the impact of interruptions, crisis or unexpected change for innovation of education process and knowledge and practical impact on increased enrollment. Findings of this study can be used by higher education institutions to further refine their approach to work with students individually and using shift to distance education as an opportunity to grow and improve their enrollment.

II. Theoretical Background

According to Istijanto's (2021) study, aspects of perceived quality differences that influence student satisfaction when transitioning from traditional classroom to online distance learning are campus facilities, learning process, teaching staff, and administrative staff. The study found that the so-called input components of learning (campus facilities, teaching staff and administrative staff) have a direct effect on student satisfaction in the conditions when they switch to online distance education. It means that educational institutions must pay attention to these inputs and manage them effectively. Campus facilities (internet connection, digital libraries, advanced information technology and online system) must be ready for the change. Pedagogical staff (lecturers) and administrative staff must also have adequate competence in the field of online learning. The study found that the learning process has the greatest influence on student satisfaction. According to Ke et al. (2013), these are activities that students do as part of learning over a period of time (courses, testing,

practical training, scientific research tasks). It means that universities should not only focus on input components; modern campus facilities, qualified teaching staff and administrative staff mean nothing if they cannot be effectively applied in the learning activities of students (Instijanto, 2021). The less experienced students are, the more important it is for universities to manage their learning experience. Universities therefore need to have the learning process mapped out and potential points of failure identified (Murphy, 2011). By doing so, they can maintain and improve the student experience even as the learning mode changes. Universities must focus on the learning process as experienced by students (Swan, 2017).
A study by Dagiene et al. (2022) focused on factors that influence the success of online learning: quality of institutions and services, quality of infrastructure and system, quality of courses and information, and online learning environment. The study identified the following factors of sustainable quality of distance education: (1) technical base; (2) administrative actions aimed at the quality of study processes; (3) controlling the study process; (4) student support; (5) academic staff support, including methodological and technological support; and (6) collaboration and sharing of best practices within the academic community. The authors emphasize that the quality of the study needs to be ensured through a quality control process.
Annamdevula and Bellamkonda (2016), Doña-Toledo et al. (2017), Mattah et al. (2018) and Sharabati et al. (2019) investigated the influence of service quality on student satisfaction; the service quality attributes were broken down differently. The extant literature review conducted Teeroovengadum et al. (2016) and categorized service quality into five dimensions: administrative quality, support facilities quality, core education quality, transformative quality, and physical environment quality. Studies conducted so far have confirmed that overall perceived service quality affects student satisfaction. Hossain et al. (2018) and Mattah et al. (2018) found that student satisfaction is significantly influenced by the quality of services and facilities, lecturers and academic programs. However, as stated by Istijanto (2021), these attributes have not yet been sufficiently investigated in the context of the transition to online distance education, as occurred due to the Covid-19 pandemic, when this transition was not planned by the universities, but was triggered by external conditions.
Examining students' preferences and attitudes is also recommended by Adanir et al. (2020) and Fidalgo et al. (2020). Their studies confirmed that one of the most important elements for student engagement is the existence of interaction. This can be provided through comments in presentations, forum discussions and weekly instructor-led meetings (Heilporn and Desrochers, 2020). The emphasis is on individual communication (Trespalacios and Lowenthal, 2019) and the provision of adequate support (Ng and Baharom, 2018). Studies also emphasize that students need to work in a collaborative environment, which contributes to student satisfaction (Lee et al., 2019; Shonfeld, 2021).
A significant role in this issue is played by students' attitude towards online education and distance education (Peytcheva-Forsyth et al., 2018). Knowledge of attitudes and perspectives can assist universities and academic staff in developing and implementing an appropriate model and form of online learning to meet student needs. Studies have highlighted the importance of distance learning and examining student attitudes towards

online learning (Ciftcia et al., 2010). According to some studies, learners' attitudes and perspectives towards online learning are a key factor for their learning outcomes (Zhang and Bhattacharyya, 2008). Some studies have confirmed that students' positive attitudes towards online learning are decisive for their readiness and inclusion in distance learning. Al-Fraihat et al. (2020) proposed a model for evaluating the effectiveness of distance education. It focuses on the idea that effectiveness and success are influenced by the degree of satisfaction of participants, which, on the contrary, increases or decreases based on external social factors (perception and support of learners and instructors), degree of quality (of information, technical aspects, pedagogy and services), scope of applicability, accessibility and meaningfulness.

As pointed out by Gruber et al. (2010), student feedback and comments on the services provided to them are among the most important factors that educational institutions should consider. The use of feedback is a key factor in identifying student's priorities that impact student's academic satisfaction. Monitoring and evaluating student's satisfaction with the educational services provided (taking into account their diversity, needs and preferred learning styles) is indispensable especially when introducing online learning in the new normal (Layco et al., 2022). Colleges should have a continuity of education plan to ensure that student learning is not disrupted even in the event of disasters (such as natural disasters, storms, fires, and pandemics).

A study by Layco et al. (2022) focused on students' learning style preferences, academic satisfaction, and academic performance in online distance learning within the new normal education framework. The results showed that most students are learners who learn best when information is presented using pictures, graphs, tables or text form (they can notice important key concepts). The findings further showed that students' learning style preference is significantly correlated or associated with their academic satisfaction and performance in online distance education. Thus, students' learning style preferences, academic satisfaction, and performance in online distance learning in the new normal education are interrelated to each other. The study recommended that schools pay attention to the flexibility of curriculum content, the quality and relevance of study materials of online learning courses, the availability of learning management systems and platforms, the quality of student programs and services, and a well-set study plan; these parameters contribute to students' academic satisfaction and performance. Teachers should improve their technology-pedagogical competencies (online instructional and assessment strategies); these variables are directly related to student satisfaction and performance. Understanding these aspects can be vital for all stakeholders.

From the presented theoretical background, it is possible to notice general factors affecting student satisfaction with distance education and necessary conditions students need to evolve with the process, e.g., school environment, digital libraries, advanced information technology and online system must be ready for the change as well as pedagogical staff (lecturers) and administrative staff must also have adequate competence for transition and modern approaches to technologies and techniques. This case study will present the implementation of the process in a case university. The change implementation is documented with measurement of student satisfaction through the period.

III. Methods and Materials

To cope with change the case university has robust evaluation process for its students, faculty and administrators. Students are reviewing courses, subjects and teachers/faculty and study satisfaction on trimestral basis and annually and the management is reviewing all results three times a year after each trimester to redefine actions and change initiatives accordingly. Administrators are also evaluated using monthly and yearly evaluation on their established goals and objectives by their respective immediate supervisors.
The University conducts regularly and periodically (every trimester, thus three times per academic year) evaluation of all exams, thesis, seminar papers, graduate satisfaction, subjects, teachers and courses taught. The surveys used contains subjects, teachers and courses survey, evaluation of study group by teacher survey, graduate satisfaction survey, exam evaluation, thesis and final exam evaluation, seminar paper evaluation and students' turnover/drop off survey. Therefore, each trimester all actions are revised, new data assessed and implications applied within the action cycle. This paper brings case of this assessment before, during and after Covid period to provide an overview of actions taken based on continuous data collection, analysis, evaluation and implementation of changes in real time based on the changing environment and students, faculty and staff needs through significant changes happening via the pandemic situation. This study demonstrates that ongoing assessment and discussion of real-life data with fast actions taken bring advantage and improve overall assessment from all stakeholders, benefits school via positive world of mouth and furthermore financially due to increasing enrollment as a result of positive impact. This study shows example of successful approach of university change management to utilize the impact of interruptions, crisis or unexpected change for innovation of education process and knowledge.

Case Study Background

The case school divides academic year into three parts per four months, called trimesters. First trimester starts in September and continues gradually. Students can pass exams after their course ends, usually after the third month of a trimester, or any time later. Exams are open daily via e-testing rooms in the campus. All data from all students and all exams are automatically recorded in information systems and are analyzed after the end of each trimester. The program delivery methods (for all programs) in each trimester are: in classroom or online – lessons, workshops, seminars, exercises, individual consultations, excursions, independent and self-study of study texts and materials, project work, seminar papers, thesis and paper writing, computerized online and distance learning, video-learning, e-learning, self-testing.
The number of contact hours to earn three semester hours: 45 contact hours (5 to 6 ECTS) consisting of: 20 hours in classroom per lecture, 12 hours of workshop/seminar, 10 hours of discussion, 3 hours of project work (individual consultations in-class); plus 3 hours of video-learning and 2 hours per self-testing. These are standards equivalent to the Carnegie Credit Hours units. Lectures and seminars are connected for all subjects and are taught in 3-hour blocks (four 45-minutes blocks), which include both lecture and seminar/workshop.

Students take a 90-minute lecture and after a break, the seminar/ workshop takes 90 minutes. In total, there is one training block where the seminar is used to consolidate and practice knowledge, skills and competences presented immediately after the lecture.
For all programs' evaluation, such as enrollment figures, student evaluations of courses and instructors, success/completion rates, attendance rates, dropout rates, complaints, student feedback, and observations by school and program leaders are collected. The university is collecting these data from each student per each course they take and evaluate results every trimester, address those results and solve them firstly at management level and then with teachers and guarantors and course instructors. Any deviating values are addressed and problems are solved. Based on that, actions are taken such as teachers' appreciation, bonuses or further education within teaching skills, methods and techniques etc. If an inappropriate evaluation of course or teacher occurs more than once, serious actions are taken and the subject is either re-designed, cancelled, and teacher is replaced. Only teachers with high levels of evaluation are kept as internal staff and adjuncts.
Again, all areas mentioned: student and faculty assessment, test results, results of theses, projects, final exams, entry level tests, comparative tests, staff and lectures assessment is being automatically recorded in ERP system and being processed, analyzed and discussed within management of the school within one month after the end of each trimester. This continual assessment brings vast amount of data and trends that is being used for decision making in various areas, such as planning, HR, marketing, environmental changes, course or program changes, delivery changes, tests adjustments, IT/ERP system changes etc.

Design and Data Collection

All students who participate in the education process have to take part in the surveying of teaching, lesson and course quality; all surveys are mandatory. Therefore, the results are representative for the university. The data collection instrument includes questions to measure the quality of education at the university. The data for study was collected in a questionnaire investigation by a computer assisted web interviewing (CAWI). The questions were designed based on theories and researches in education quality assurance. The questionnaire address three main areas, which includes lessons and their content, the course/subject and its structure and usefulness, and the teacher's quality. Other than the quality of education, the questionnaires also measure study materials, texts and presentations, the teacher's personality and abilities, the technology used in the educational process, connection with practice, technical and organizational facilities and equipment.
The survey questions included short statements, such as: Teacher: explains adequately, connects theory and praxis, is an expert in the field, motivates to learn, places attention to skills practicing, uses modern techniques; and other similar statements. The same for areas of subject and course delivery.
Respondents' reactions to questions related to subjects, courses and teachers is measured. Attitudes to the given matter is restricted by offering a set of several statements. The extremes of the five-point scale represented bipolar concepts of the evaluation dimension. All the questions are measured in a Likert type scale with verbal anchors in 1 (strongly

agree/full satisfaction) and 5 (strongly disagree/full dissatisfaction) or, provided it was not possible to favor either of the sides, neutral value (the median value was characterized by number 3). The scale permitted not only the specification of respondents' attitudes but also their intensity.

Oral feedbacks from students are gathered continuously through the Student Services Office (Information and Advisory Center), Academic Managers and faculty members. Students' issues and feedback are presented at the monthly Academic Management meetings where each non-academic and academic units are represented. Student and key stakeholders are also fully automated at the university and as such, data, information and comments are instantly made available to key decision makers in both the Academic Management Departments and non-academic Management groups.

Based on constant evaluation of all courses and teachers every trimester the university experiences high level of satisfaction of students, because all inappropriate courses, structures and teachers were already eliminated. The process is ongoing and new courses and teachers are constantly evaluated to gain feedback on its quality and whether to continue with its realization or cooperation. This system is employed for all study programs, courses, lessons and teachers.

The presented data collection shows period starting in September 2019 till July 2022 to show differences based on shift to online during Covid-19. Students were responding to the experience of in person, and during 2020 and 2021 in online or distance learning. The academic year is divided into three trimesters: fall, winter, spring, e.g., first, second and third trimester (see table 1). Students are studying on average ten subjects per year, divided into trimesters. The subjects are either compulsory (fixed theoretical or profile subjects) or voluntary (practically oriented courses developing competences based on knowledge achieved in theoretical compulsory subjects).

The number of students who participated in data gathering is shown in table 1. All students were studying bachelor and master degrees in business university in the Czech Republic. The sample contained only active students. The evaluated areas were related to evaluation of subjects, lessons and professors. All questions were using scale where 1 was the best evaluation ad 5 the worst. Students had always opportunity to write text comment. All answers (except for comment) were mandatory.

As it is possible to see in Table 1, the number of students enrolled in courses declined in first start of Covid period (Winter and Spring 2020), but started to rise significantly since Fall 2020. This situation occurred due to the fact that students got used to the online education and informed their peers at other schools that the university provides continuous education and services, whereas other universities were not teaching or examining students during Covid periods.

Table 1: Data collection in the period monitored

No of student responses per period	Compulsory	Electives
Fall 1T 2019/20	2084	216
Winter 2T 2019/20	1075	263
Spring 3T 2019/20	1309	197
Fall 1T 2020/21	2641	388
Winter 2T 2020/21	3207	438
Spring 3T 2020/21	3065	444
Fall 1T 2021/22	4088	259
Winter 2T 2021/22	4417	429
Spring 3T 2021/22	6012	241

Source: University information system

Data Operationalization and Analysis

All the primary data is evaluated using statistical methods and tests. The dependence among characteristics is tested to assess the relationships between searched attributes, to verify the data obtained and its further analysis. The tools of two-dimensional statistics were employed using Pearson's Chi-square test, Spearman's correlation and multidimensional methods, when applicable. To evaluate the results Microsoft Excel and IBM SPSS statistics is used.

Qualitative data from open text responses and interviews were processed and analyzed by content analysis based on recommendation from Hendl (2016). The resultant data were coded and tables were created listing number of occurrences and the results were interpreted according to set categories. All qualitative data were analysed based on the text responses summary and transcript of answers from interviews. All data were analyzed to find differences between standard situation and changes happening during shift to fully online learning and experience with distance education.

The quantitative content analysis systematically examined and interpret the interview data. The data collection phase encompassed 173 semi-structured interviews conducted through Microsoft Teams by eight trained interviewers. All interviews were recorded with participant consent and meticulously transcribed verbatim into a structured Excel database, ensuring data integrity and facilitating subsequent analysis.

The content analysis process adhered to Disman's (2018) methodological framework and was executed in several sequential stages. During the initial coding phase the transcripts were read to identify meaningful text segments and recurring patterns. This process led to the development of preliminary codes based on keywords and phrases that captured the essence of respondents' statements. A comprehensive coding manual was created, containing explicit definitions and examples for each code to ensure consistency in the analysis.

The category development phase involved systematic clustering of keywords and related word groups into broader conceptual categories. These categories were refined through an iterative process to ensure they were mutually exclusive and exhaustive. The team developed a hierarchical category structure with main categories and corresponding subcategories, each precisely defined with clear operational criteria. This structure emerged from the data and was continuously refined as the analysis progressed.

The coding process implemented nominal quantification to track frequency of occurrences. Four coders independently analyzed the same texts to ensure inter-rater reliability, with regular meetings held to resolve coding discrepancies and refine category definitions.

Statistical analysis of the quantity of coded data revealed significant patterns and relationships. The team conducted frequency analyses of keyword occurrences within each category and subcategory, followed by cross-tabulation of categories to identify potential relationships. Correlation analysis was used to examine associations between categories, while frequency distribution tables and visualizations helped illustrate the emerging patterns. Statistical significance testing validated the relationships between variables, providing robust support for the findings.

Quality assurance measures were implemented throughout the analysis process. Regular calibration sessions among coders maintained consistency in the application of codes. The team thoroughly documented all coding decisions and category evolution, conducting systematic reviews of coded segments to ensure adherence to category definitions. Reliability checks through random sampling of coded segments further enhanced the credibility of the findings.

The quantitative content analysis successfully revealed latent patterns and relationships that were not immediately apparent in the initial reading of interview responses. This methodological approach effectively transformed qualitative interview data into quantifiable units while preserving the contextual richness of respondents' experiences. The resulting statistical analyses provided compelling evidence for the study's findings and facilitated the identification of significant patterns across the dataset.

IV. Results

Academic programs at the case university are delivered as full-time, part-time and distance form of study. The specific demands of the given form of study are taken into consideration in the content structure of teaching and exam periods (lessons timetable) of the academic year.

* Part-time form of study is realized in the form 1-day educational camps on weekends (Saturday or Sunday, 3 times per trimester per study course).
* Full-time form of study is realized in the form of 2 to 3-day teaching blocks on working days (Monday to Friday, 5 to 7 times per trimester per study course).
* Distance form of study is an individual, on-line form based on online lectures and self-study with opportunity to consult with teachers and academic staff, use on-line and video consultation, video-learning and e-learning and possibility to pass exams during a whole year.

The University implements a comprehensive course delivery system that integrates both core and elective subjects within its academic programs. The curriculum structure is designed to accommodate student preferences, which are systematically gathered through surveys and interviews, along with input from key stakeholders including employers, practitioners, and external evaluators. The elective subjects enable students to broaden and deepen their curriculum according to their preferred areas of expertise.

A distinguishing feature of the educational approach is its strong practical orientation, with over 50% of courses being delivered by industry practitioners and managers. This approach facilitates the practical application of theoretical knowledge through workshops and group projects involving real-world business cases. Students are encouraged to develop innovative thinking, creativity, and both independent and collaborative work skills through preparation of projects for actual companies.

The institution's professional network is significantly enhanced by its alumni, many of whom hold senior management positions or own businesses. This connection ensures that students are exposed to current industry practices and real-world problem-solving scenarios. The University emphasizes the involvement of lecturers in business practice to provide students with opportunities to apply their acquired knowledge to authentic problems they may encounter in their future careers.

The University demonstrated exceptional preparedness for digital education delivery, having implemented online teaching components since 2017. Faculty members underwent comprehensive training in various technological platforms including Skype, Teams, and Moodle, as well as specialized training in online teaching methodologies. The training encompassed crucial aspects such as time management, student engagement strategies, and the adaptation of teaching materials for online delivery. Prior to the COVID-19 period, the institution had already established a requirement for up to 20% of theoretical subjects to include online consultations and lessons, ensuring both students and faculty had practical experience with digital delivery methods.

The institutional information system (SIS) serves as a centralized platform for academic resources and administrative functions. Students have comprehensive access to study materials, including e-learning resources, electronic texts, and video content. Through the system, students can manage their e-index and study records, register for examinations, submit written assignments and theses, and communicate with administrative staff. The system is tailored to integrate all necessary components in one location, providing access to study regulations, program documents, accreditation information, and other essential resources.

Communication between students and faculty is facilitated through multiple channels. Students can arrange personal or online consultations through an online reservation system, contact faculty via email using a standardized email format (name.surname@university-name.edu), or utilize the internal Communicator application within the university information system. Faculty members maintain regular consultation hours and are required to provide at least 30 minutes of availability after each lesson block for student queries. Students can also access video conferencing options and pre-recorded lectures to support their studies.

The University maintains a Counseling Center as part of its Development Center, offering professional, psychological-pedagogical, and legal support services. Students can access coaching for academic and personal matters through various modes including written correspondence, video conferencing, or in-person meetings. All study materials, including texts, instructions for written assignments, and information from seminars, are accessible through the intranet using a structured search engine. Students have free access to download all study materials, including video-learning resources with interactive tests, glossaries, and presentations for both compulsory and elective subjects.

Systematic Data Gathering and Quality Assurance Process

The University has an established process to monitor and react to study and faculty evaluation, enrollment, retention, completion, student feedback, and follows the process described below:

1. Academic management meetings are convened on a monthly basis to evaluate all data relating to student outcomes.
2. The respective offices, student services, financial aid, retention, etc. present their analysis based on gathered data.
3. Strategies are developed and shared with faculty to address issues.
4. The Academic Managers track and monitor initiatives on a continuous basis to ensure desired results.
5. These results are shared with faculty on a trimester basis to ensure that they continue support of initiatives.

The University maintains a comprehensive system of support processes that undergo constant monitoring and improvement by management. The enhancement of services includes strategic staffing additions for student consultation and specialized training to improve service efficiency. All services are accessible online with 24/7 availability and via telephone for 70 hours per week. Each written communication, including notices, questions, and messages, is documented and stored for evaluation and feedback purposes, as are all telephone communications.

Management regularly addresses non-standard inquiries or comments from students, applicants, graduates, and other stakeholders, whether received through personal consultation, written correspondence, or telephone communication. Significant feedback triggers process redesign for improved functionality. These modifications are implemented promptly following discussion and approval at monthly management meetings. Changes are communicated to faculty, staff, and students through multiple channels including email, meetings, and internal systems. When new internal regulations are established based on substantial feedback, they are announced to all stakeholders and, when required, registered with the Ministry of Education or accreditation agencies and published on the university's web pages. Staff and faculty undergo training to ensure compliance with new procedures before their implementation.

The institution employs a continuous assessment system for evaluating outcomes and achievements. This process relies on internal feedback from students and teachers, as well as external input from the advisory board, employers, partners, and community members. Formal evaluations of process outputs occur three times per academic year, encompassing student performance, faculty assessment, support systems, and motivational programs. These evaluations inform methodological adjustments, recruitment strategies, and individual study plan development.

Academic staff development receives systematic support, particularly in teaching methods and publication activities. The university actively recruits new academic staff with appropriate qualifications, practical experience, publication records, and academic credentials who share modern educational values and understand contemporary student needs. Staff retention and motivation are prioritized through innovative stimulation methods.

The academic management team collaborates closely with faculty to implement institutional values and performance expectations. These are communicated during trimester meetings, departmental gatherings, and research agenda discussions. Recent improvements include the establishment of innovative educational workspaces, enhanced research support, and strengthened administrative oversight.

Educational departments coordinate individual study programs, incorporating both academic instruction and practical expertise from professionals in state institutions and private sector organizations. Teaching staff convene three times annually to review course content, teaching methodologies, and student evaluations. This process ensures curriculum relevance and enables responsive program modifications based on market changes and environmental factors.

Study materials undergo regular updates, with comprehensive revisions every five years or as needed in response to regulatory changes. All educational texts are subject to single-blind peer review, with at least one external reviewer holding a PhD qualification. Faculty members annually update examination materials and thesis topics, adjusting difficulty levels based on student performance metrics.

The University's administrative department and advisory center manage various academic processes, including test recognition, individual study plan development, tuition administration, and thesis supervision. They provide comprehensive support for educational departments, faculty, and students, handling matters such as appeals, examination scheduling, enrollment, admissions, program information, study extensions, and graduation requirements. This administrative framework ensures efficient management of academic operations while maintaining high standards of educational quality.

The division and evaluation of materials is shown in table 2.

Table 2: Data assessment among stakeholders

	Leadership	Faculty	Administration	Students	Other stakeholders
Courses and lessons evaluation	x	x		x	
Preparation of teaching materials	x	x	x	x	
Technical-organizational aspects	x	x	x	x	
Learning outcomes	x	x		x	x
Faculty assessment	x	x		x	x
Relevance of teaching	x	x		x	x
Study plans	x	x		x	x
Program structure, inclusion	x	x		x	x
The adequacy of the curriculum	x	x		x	x
Market preferences	x	x	x	x	x
Ethical aspect	x	x	x	x	x
Strategic management and planning	x	x	x	x	x
International openness	x	x	x	x	x
Development of human resources	x	x	x	x	x
Publishing results, projects	x	x		x	x

Source: University internal documentation

Information flow supporting distance education

The University maintains a comprehensive online information system accessible through its website, providing essential resources for students, faculty, and stakeholders. This system includes internal regulations, strategic documents, mission statements, and administrative procedures. Updates and modifications are implemented and communicated on the same day, with continuous daily review and enhancement of web content. The platform incorporates various interactive applications, including video-learning, online forums, video consultations, and digital library resources.

The Student Information System (SIS) serves as the core component of the University's digital infrastructure, accessible through secure authentication. This comprehensive system encompasses multiple functionalities including:

* The system provides academic scheduling, examination management, and electronic student records (eIndex) that document exam results, credits, and evaluation of written assignments. Students can access a comparative overview of their academic progress, submit various administrative requests, and manage their coursework submissions. The digital infrastructure includes an extensive eBook collection, eLearning platform, and personalized email services.
* A distinctive feature of the system is its integrated communication infrastructure, facilitating interaction between students, administrative staff, and faculty through multiple channels. The VideoForum application enables real-time video consultations,

responding to the needs of both domestic and international students. Research indicates that online direct communication has become an integral component of modern education, reflecting the preferences of contemporary students who favor alternative and flexible approaches to accessing information and knowledge.

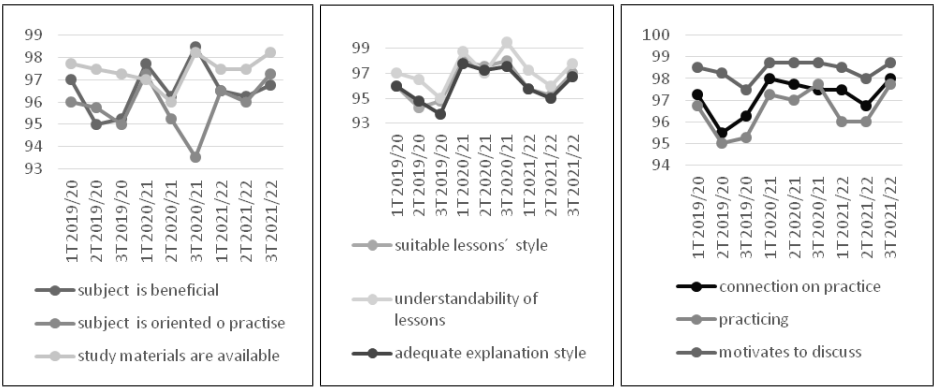
* The eLearning and online learning components significantly enhance the educational experience, providing students with additional time for reflection on complex topics and encouraging thoughtful participation in discussions. This approach particularly benefits introverted students and international learners, fostering greater response diversity and creative thinking.
* The Information and Advisory Center (IAC) provides dedicated support through full-time staff focused on student consultations and advisory services. The center implements a proactive approach to student support, conducting systematic outreach to first-year students and identifying those who may require additional assistance. Staff monitor academic progress through the information system, identifying and contacting students who may be experiencing academic difficulties to provide targeted support and retention interventions.
* The system's comprehensive nature ensures that students can manage their academic responsibilities efficiently, from examination registration to course selection and academic progress monitoring. Support services are available through multiple channels, including telephone contact seven days a week and direct online or in-person consultations with administrative and advisory staff. This integrated approach to student support and information management reflects the University's commitment to providing accessible, technologically advanced educational services while maintaining personalized support for student success.
* The system also facilitates specialized tools such as a credit calculator, study configurator for course selection, and an automated ChatBot for administrative inquiries. These technological innovations enhance the student experience while streamlining administrative processes. All study materials, including syllabi, faculty information, and contact details for communication and consultation, are readily accessible through the system, ensuring comprehensive support for the academic community.

Student Satisfaction Assessment Results – Comparison of pre- and post-Covid

The comparative analysis of student course evaluations spanning the pre-COVID, COVID, and post-COVID periods reveals remarkable consistency in satisfaction levels, as illustrated in Charts 1 and 2. The evaluation framework encompassed three distinct dimensions: course structure, subject content, and teaching staff performance.

The data analysis demonstrates that overall satisfaction levels maintained exceptional stability, consistently ranging between 96–97% across all periods. Chart 1, focusing specifically on compulsory subjects, reveals only one notable deviation: the practical orientation component experienced a temporary decline to 93% during the initial wave of COVID-19. However, prompt intervention measures successfully restored this metric to its previous high performance levels.

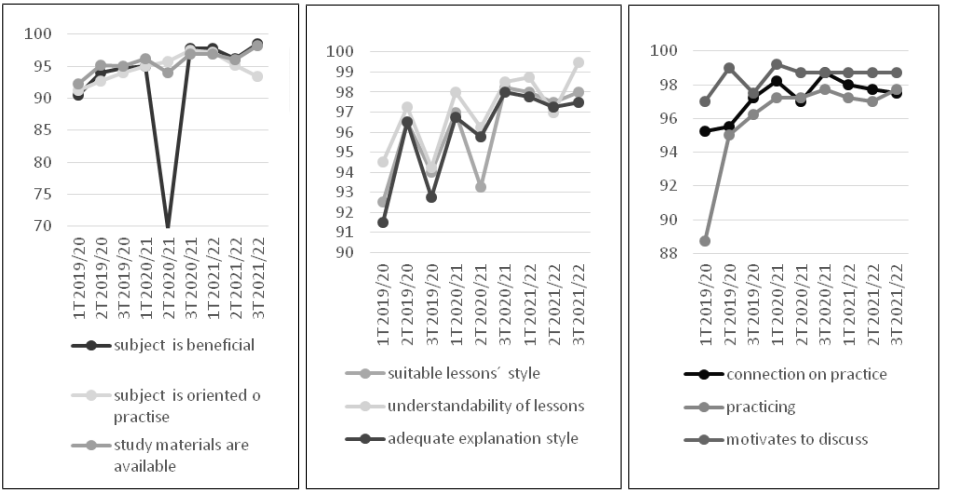
Chart 1: Subject, Courses and Faculty evaluation in 2019–2022 (compulsory courses)



Source: University information system

A detailed examination of Chart 1's three components indicates a subtle pattern: a slight decline during the first wave of COVID-19, followed by a robust recovery period. Notably, the post-intervention period not only witnessed a return to pre-pandemic levels but actually demonstrated improved satisfaction rates exceeding pre-COVID benchmarks.
This statistical evidence suggests that the institution's educational delivery system demonstrated significant resilience during the pandemic period, with implemented interventions effectively maintaining and ultimately enhancing educational quality standards across all evaluated dimensions.

Chart 2: Subject, Courses and Faculty evaluation in 2019–2022 (electives)



Source: University information system

Chart 2 presents results of practically-oriented elective workshops. Similarly, there was a declination followed by intervention to orient courses more practically online and the results reached high values right after the intervention. This approach shows necessity to continuously evaluate the data and make changes immediately after any problematic situation occurs. The case university was training faculty with lower assessment on online teaching techniques, technologies and provided sharing of best practices among faculty and peers.

The test of students' interest and enrollment into courses in the second wave of Covid and after Covid significantly differs ($p = 0.000$) compare to before Covid and the first wave of Covid. The quality of online interactions and support services led to increased enrollment and kept high student satisfaction, e.g., between 95 to 99% of satisfied students since 2021 in all studied areas – courses, subjects and teachers for both compulsory/theoretical subjects and electives/practical skill-development workshops.

As referenced in table 1, the number of students enrolled in case University started to rise significantly since Fall 2020 after successful implementation, testing and referencing of online quality assurance and technology use. The success of online teaching strategies and support was shared among students and their peers and resulted into over 200% increase in enrollment.

Key Success Factors Derived by University Management

Key factors determining success derived from the university management and academic meetings that evaluated the offerings and feedback from students (given qualitative answers in questionnaires and interviews), faculty (answers from meetings, focus groups and surveys), administration (based on department meetings outputs), applicants (applicant survey results), business advisory board (advisory meeting minutes) and alumni (alumni surveys) were considered in four main areas: (1) *flexible administration, teaching and examination:* ability to attend courses, pass exams or consult or solve studies seven days a week (online during pandemic and both in person and online since then), individual study plans, all courses online live or on demand, video consultations, on-line education and distance learning, distance programs including online examination, possibility to prolong studies without meeting special conditions or possibility to shorten the study period when some credits are transferred, enrolment three times per academic year (possibility to start studies three times a year – October, January and April), graduation and final examination three times a year with a possibility to choose a term or skip a term, flexible approach to changes, communication via social media with students and applicants, wide range of lessons and workshops available seven days a week, possibility to study only on weekends, possibility to study for handicapped students, high involvement in social activities and CSR, fast responses on requests – administration and communication online, online administration – payments, e-shop, study records and applications, exam results etc., free courses on actual culture and economic trends – online, possibility to gain scholarship up to 100% (progressive students, mothers, social workers, sportsmen on the national or international level, war veterans etc.), and differentiated prices per academic year based

on demanded services; (2) *online accessible materials:* all textbooks online and available for all students, including e-learning, video learning, video tutorials, possibility to attend other courses that does not belong to a student's study plan or consult with teaching staff individually; and (3) *upskilled faculty* with strong orientation in technologies and experience in practice adult learning: credentialed faculty with industry experience oriented on practical skills, connection with practice and practically oriented lectures, teaching managers and practitioners, attractive study programs oriented on practice.

New approaches and changes implemented as a result of changed environment during Covid were: (1) *individualized student-centered approach* within recruitment, individual consultation and tutors in the first year of study, higher focus on leading of students, identification of their weaknesses and potential threats to drop-off and address them by solving issues and give them a buddy or consultant, new system of consultations, online ordering, orientation of academic staff on students' success, support of academic writing, fast and straight communication between teaching staff and management, additional services on demand for students (i.e. personal study consultant, mobile reminders, straight telephone number to information center, career consultations etc.); (2) *new technology:* portal and communication access in real time for all students, administrators and faculty, innovated system of fast and continuous feedback between students and teachers and administration, innovated online system of evaluation of students' seminar and other papers, video tutorials on education process and administration, expert consulting; (3) *distance teaching skills:* improved methods and approaches to online teaching among all faculty, focus on practicing and development of skills online, including workshops for academic staff regarding new generation, teaching techniques and methods.

V. Discussion

Based on results, students' experiences with online learning are greatly influenced by the factors: organizational support provided during online education, the role of instructors (methods of instruction, communication methods, assessment methods) as well as the home study environment and the resource readiness. Certain factors such as flexibility, convenience, and motivation to use technology can contribute positively while factors such as internet and connectivity issues, lack of concentration and isolation can negatively affect student experiences. The results are in accordance with studies presented by Iqbal et al. (2022), Istijanto (2021), Dagiene et al. (2022), or Swan (2017).

The case study demonstrates that student preferences align closely with universal learning design principles as key determinants of course quality. These elements encompass course structure, visual presentation, content delivery, interactive components, and support mechanisms within the online cooperative environment. This alignment is consistent with recent research findings (Konstantinidou and Nisiforou, 2022; Heilporn and Desrochers, 2020; Trespalacios and Lowenthal, 2019).

The implementation of comprehensive information systems and learning management platforms, as evidenced in our case study, creates effective spaces for collaboration and student-faculty interaction. This finding supports Liu et al.'s (2020) research on the importance of efficient platforms in educational delivery. The consistently high student satisfaction

rates (96–97%) observed across pre-COVID, COVID, and post-COVID periods underscore Heilporn and Desrochers' (2020) and Trespalacios and Lowenthal's (2019) assertions regarding the relationship between collaborative space and student satisfaction.

The university's integrated Student Information System (SIS) exemplifies Dlamini and Ndzinisa's (2020) findings on the importance of learning management systems in facilitating assessment and feedback processes. The system's comprehensive features, including video consultations, online forums, and digital resource access, demonstrate how technological integration can enhance educational delivery while maintaining high quality standards.

Our findings particularly reinforce Linnes et al.'s (2022) emphasis on the necessity of flexibility and creativity in distance education. The university's early adoption of online components since 2017, combined with comprehensive staff training and systematic quality monitoring, illustrates how institutions can maximize the potential of distance education while effectively mitigating its potential disadvantages. This proactive approach contributed to the institution's resilience during the COVID-19 transition, as evidenced by the maintenance and subsequent improvement of student satisfaction rates.

The case study's findings regarding the effectiveness of integrated support systems and multiple communication channels align with broader research on universal learning design principles (Ng and Baharom, 2018; Lee et al., 2019; Shonfeld, 2021). The successful implementation of these principles is reflected in the consistent student satisfaction levels, with only minor fluctuations during the initial COVID-19 period, followed by improvements exceeding pre-pandemic levels.

VI. Conclusion

The necessity to keep up with current preferences of new generations and demand of new technology and social network usage is taking over all sectors and especially higher education has to take a lead in students' development towards new environment. The case university active approach towards new technologies and individualization and on-demand services to students was key to success, high quality assessment and rise of enrollment.

The key factors determining success in online/distance higher education on case university was proven as: (1) flexible administration, teaching and examination, (2) online accessible materials, and (3) upskilled faculty. New approaches and changes to address changed environment need to include: (1) individualized student-centered approach, (2) new technology and (3) distance teaching skills.

Successful implementation of systematic approach to distance education described in this case study resulted into over 200% increase in enrollment. On the other hand, there were negative effects recorded due to Covid situation. Part of students dropped due to difficult family situation, financial constrains or excessive workload is specific conditions. Those individual areas still needs to be addressed. Further, the Covid period brought a gap in practicing, internships and practical orientation of courses. These issues brought avenues to further changes that are still in process, such as possibility of remote internships etc.

The theoretical contribution of this case study is construct of factors impacting quality assessment and perception of quality in distance/online higher education. Further, the

impact of quality of online courses, teaching process on students' interest and attendance was proven. The practical contribution lies in definition and validation of factors determining success in online/distance higher education and its impacts.

Limitations

The study faces several methodological constraints. First, the data collection was limited to a single educational institution over a four-year period, which may restrict the generalizability of findings to other contexts. While the results are presented as a case study and provide valuable insights for other higher education institutions implementing quality assurance in online environments, the unique characteristics of the studied institution may influence the outcomes. Second, the study's temporal scope, while substantial, may not capture long-term trends or the full cycle of institutional change. Third, the research may be subject to institutional bias, as stakeholders involved in the quality improvement process might have vested interests in positive outcomes.

Despite these limitations, the results strongly support the strategic importance of quality assurance and its positive impact on institutional innovations and recruitment efforts. The findings demonstrate that systematic quality monitoring and continuous improvement based on feedback loops can lead to tangible improvements in educational delivery and increased attractiveness for various stakeholders, including current and prospective students, faculty, and staff.

Future research could focus on a multi-institutional comparative analysis to examine impact of quality assurance processes and how those vary across different types of higher education institutions, potentially identifying best practices and context-specific challenges. The research may also continue, as longitudinal studies spanning longer periods could better assess the sustainability of quality improvements and their long-term impact on institutional performance metrics. Valuable approach, but with significant issues to disclose data might bring an investigation of the relationship between quality assurance measures and specific outcome variables, such as financial results, student retention rates, graduation rates, and post-graduation employment success. Research focusing of the role of technologies in quality assurance processes would bring value to institutions to better prepare for future educational delivery models.

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