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A DATASET ON THE DIGITAL TRANSFORMATION OF UNIVERSITY COURSES DURING THE COVID-19 PANDEMIC

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Abstract: *This paper presents a dataset created from a survey on the experiences of professors from business schools at Latin American universities, in the digital transformation of their courses, due to the COVID-19 pandemic. The dataset collects the insight that professors had about the national and institutional policies on information and communication technologies (ICT) in higher education; the methods, strategies, and resources used by professors; and the outcomes at the end of the courses. The purpose of this work is to inform the academic community of the existence and availability of this dataset for analysis, criticism, or possible use by other researchers.*

Keywords: digital transformation, business schools, higher education, Latin America, COVID-19, ICT

Resumen: *Este artículo presenta un conjunto de datos creado a partir de una encuesta sobre las experiencias de profesores de escuelas de negocios de universidades latinoamericanas, en la transformación digital de sus cursos, debido a la pandemia de covid-19. El conjunto de datos recoge la percepción que los profesores tenían sobre las políticas nacionales e institucionales sobre tecnologías de la información y la comunicación (TIC) en la educación superior; los métodos, estrategias y recursos utilizados por los profesores; y los resultados al final de los cursos. El propósito de este trabajo es informar a la comunidad académica de la existencia y disponibilidad de este conjunto de datos para su análisis, crítica o posible uso por parte de otros investigadores.*

Palabras clave: transformación digital, escuelas de negocios, educación superior, Latinoamérica, covid-19, TIC

1. Introduction

Digital transformation in higher education has generated vast academic literature. A review of this literature can provide the necessary theoretical framework to approach the subject from different perspectives. There are works on the digital transformation of universities in the context of the fourth industrial revolution [1], as well as on educational innovation as an agent of this transformation [2], [3] and the challenges posed by the digital age [4] [5], [6]. Some focus on the strategic management of technology [7] and the practical principles of online learning [8]. There are also articles on the usage of ICT in certain academic fields such as commerce education [9] and case studies in specific universities [10] and geographic areas [11]. There are even writings in 2019 that speculated possible futures for education and technology in

the upcoming decade [12]. That future scenario suddenly came in the early months of 2020, when the COVID-19 pandemic changed the teaching-learning processes of many educators, who had to fully resort to technology and digital media to continue their classes with the resources that they had within reach. Since the onset of the pandemic, literature immediately appeared on the necessity of online learning in higher education [13], educational experiences in design in Latin America [14], digital transformation and educational innovation in this region [15], and recommendations and assessment instruments in higher education [16]. The articles published in the first six months of this health emergency that we reviewed have an institutional focus and are based on a documentary analysis. This led us to ask ourselves about the insights, methods, resources, and strategies professors had and used to facilitate online teaching, encourage student participation, and assess students' work fairly, when changing the face-to-face courses into 100% virtual became a necessity. What occurred in the virtual classrooms between March and August 2020 and what can we learn from the experiences of those who were in the online classrooms at that moment? These questions were the basis of our research.

2. Method

An exploratory cross-sectional descriptive study was conducted on a sample whose inclusion criteria were professors from management schools in higher education institutions, who transformed their courses from face-to-face to online as a result of the COVID-19 pandemic. The survey was the selected method of data collection due to the high level of participation it offers, the convenience of access for participants, and the opportunity to collect data until its deadline. The questionnaire consisted of 6 dichotomous questions and 22 checklist type multiple choice close ended questions. It was divided into two sections corresponding to sociodemographic data and the dimensions of our research. Thirteen of the questions allowed for the selection of more than one answer. The questionnaire was administered using Google Forms and was sent by email to the database of the Latin American Council of Management Schools (CLADEA for its Spanish acronym),¹ as well as contact lists in Latin American universities. The survey was carried out between September and November 2020. The desired number of responses was 250 yet 282 were received, representing a 112,8% response. The collected responses were assigned a code for data entry and analysis. Descriptive statistics analysis of the data was performed using SPSS for all single response questions. In some questions, a manual counting was carried out, to code and accurately present the diversity of responses of the participants.² All responses were organized in tables. In the case of questions that allowed selecting more than one answer, the table was made by taking the data directly from the Google Forms response summary, since this survey administration software groups the frequency response of each of the options. In addition, the results were presented in bar graphs (in questions with five or more answers or long answers) and pie charts (in questions with four or fewer answers).

3. The dataset

The research dataset and metadata are hosted in Harvard Dataverse and are available in English (<https://doi.org/10.7910/DVN/IVOXB7>) and Spanish (<https://doi.org/10.7910/DVN/HSLGLI>). The dataset is comprised of 28 tables with frequencies and averages, and 28 figures containing the results of data analysis. The responses of participants produced 14.227 records on the dimensions of the questionnaire indicated in Table I.

¹ Our research is part of the work of the Latin American Universities Facing Digital Transformation research group organized by CLADEA.

² An example of these is the question about the country where participants were teaching most of their courses, as different ways of writing the name of the same country were recorded.

TABLE I. Dimensions of the Questionnaire

Dimension	Questions		Records ³
	Number ¹	Weight ²	
National and institutional policies	4	20%	1.128
ICT Training	1	5%	282
Change of course modality	4	20%	2.859
Teaching-learning methods	3	15%	3.274
Technology tools	2	10%	2.065
Student performance assessment	2	10%	2.556
Outcomes assessment	4	20%	2.063
Total	20	100%	14.227

¹ Number of questions per dimension.

² Weight of the dimension in the questionnaire.

³ Number of records per dimension.

Survey respondents were offering most of their courses in private and public universities in 20 countries from America and Europe, mainly in Latin America as shown in Fig. 1; consequently, the vast majority of those who answered the questionnaire are Spanish speakers. The exact figures by country appear in the answer to Question 8 of the section on sociodemographic information of the dataset.

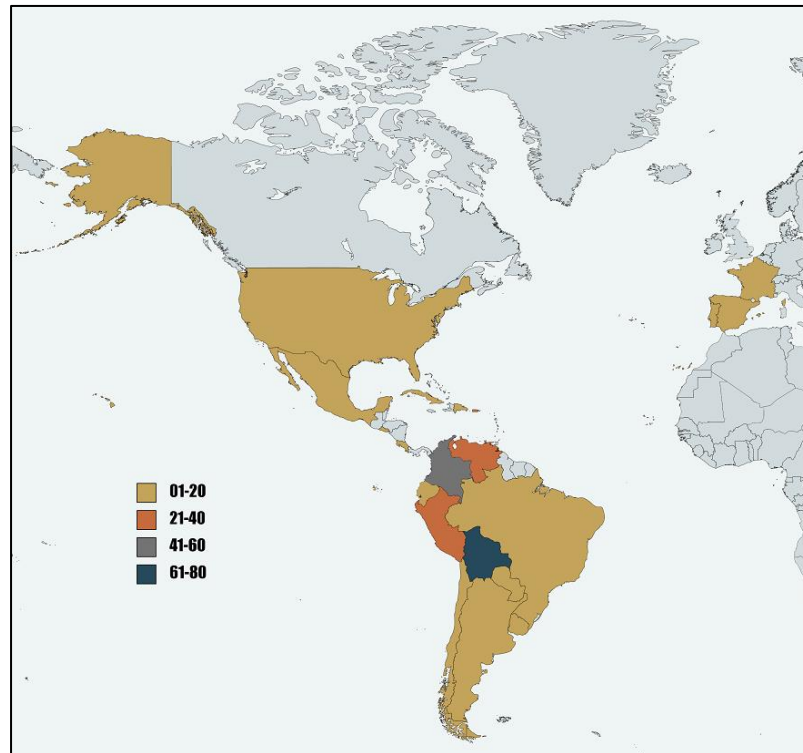


Fig. 1. Geographical Distribution of Participants by Teaching Place.

Source: Own elaboration in <https://mapchart.net/>.

The dataset is published in open access under Creative Commons License Attribution-NonCommercial 4.0 International (CC BY-NC 4.0).³ Beyond publishing and informing the academic community of the existence and availability of the research data, we encourage researchers to access, retrieve, use, and share these liberally. Also, we welcome any feedback and are open to collaboration in new research projects that strengthen or expand our work.

4. Conclusion

Research into the challenges faced by university professors adapting their curricula from face-to-face courses into 100% virtual during the COVID-19 pandemic is highly relevant. This research project was an initiative and a step forward to gather information on the experiences of professors from business schools at Latin American universities during this global health emergency. Our work explored how they continued their courses online and some key elements for successful teaching and learning in virtual environments. We have provided information on the dataset that collects the findings of our survey on various aspects of their efforts of digital transformation and their results. We believe that this research should be expanded to include other academic fields and geographic areas, as well as the perspective of the students.

5. Acknowledgements

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6. Conflict of interest

The authors declare no conflicts of interest.

7. Disclaimer

This dataset is intended to be used for educational and research purposes only.

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Dortmund International [Interactive] Research Conference 2021

The International Research Conference (IRC) at the Dortmund University of Applied Sciences and Arts (FH Dortmund) took place on June 24th – June 26th 2021 for the twelfth time.

Despite the Corona pandemic, the Dortmund IRC was successfully held in June 2021, for the second time in a digital setting. The Dortmund IRC sees itself as a platform and forum for international and interdisciplinary scientific networking. Around 300 people from 23 different countries took part in the annual event. A welcoming by the Prorektor for International Relations and Diversity, Prof. Dr. Katrin Löhner, opened the Conference, which was followed by a greeting of the organisation team, and the InduTwin (Industrial Twin Bachelor Programme) project's representatives, who co-chaired and co-organised the IRC this year.

The conference was broadcasted live from the User Innovation Center (UIC), the Innovation Hub of FH Dortmund, which is located in the Institute for the Digital Transformation of Application and Living Domains (IDiAL). With a total of 46 accepted and presented contributions, an all-time-IRC high number was reached in the current year. Of these:

- 30 contributions in a (live) presentation format,
- 7 contributions in a poster format, and
- 9 contributions in a video format.

were presented. The best contributions in each format were awarded prizes at the closing ceremony.



The most attended stream "Session on Digital Transformation & Virtual Education" registered around 90 participants. In addition to the presented papers, workshops, guest lectures, panel discussions and social activities were offered which were characterised by a relaxed atmosphere. In addition, the participating partners of the international EuroPIM consortium (European Partnership for Project and Innovation Management) presented new research projects, upcoming events and future plans in an open discussion session. The representatives of the Erasmus+ Knowledge Alliance "Projects for the Digital Transformation (ProDiT)" opened the section "News and Stories from Consortium", followed by other colleagues who also had the opportunity to present their projects and plans. Furthermore, as another highlight and special guest, the Solar Car Team Bochum presented its more than 20 years of history during a workshop. Following the

presentation, the team conducted an online workshop tour and presented the progress of the new project. Finally, all participants could enjoy a live online ride in a solar car. Other recent topics such as Open Educational Resources (OER), contributed by Sina Nitzsche (coordinator and researcher at the Department of Digital Education at FH Dortmund) and modern data analytics techniques for extracting new insights from project data sources to solve organisational and societal problems, contributed by Nigel L. Williams (Research Director in the Organizations and Systems Management Subject Group at the University of Portsmouth) enriched the conference and rounded off the programme.

By incorporating numerous interactive elements, this year proved once again that an online conference does not mean less interactivity. All participants considered the two-and-a-half-day event a complete success. FH Dortmund succeeded in setting new quality standards this year with IRC 2021 and in becoming even bigger and more interactive.

This conference has its own spirit and power since it was founded by our honoured and very much missed teacher and friend Prof. Dr. Dr. h.c. mult. Peter A. Reusch in 2010.

A special thank you goes to the organizing team, headed by Ekaterina Mikhaylova and Ekaterina Hermann, the whole EuroPIM team, the student support team, and all the active and supportive members of the team & IRC family.

For the 7th time, the conference was followed by the Summer School in Dortmund, starting on June 28th and ending on July 2nd. The Summer School was taking place online and was organized into the following 6 streams:

- Automotive Systems (Carsten Wiecher)
- Scaled Agile Framework (SAFe) (Olha Mikhieieva)
- Software Engineering Project (Jonas Sorgalla)
- Sustainability and Quality in Project Management (Jose Ramon Otegi-Olaso)
- Computer Vision (Jörg Thiem)
- PhD Summer School (Nicola Vollmar)

In 2021 the conference had different sessions as highlighted above and various panel discussions. Presented papers were organized into the following sessions, covered on three days:

Thursday, June 24th:

Session on Project Management, Quality & Sustainability (José Ramón Otegi-Olaso)

- If We Were the Rulers of the World. Part III: Guidelines of a Project to Protect the World (Dr. Werner Wetekamp)
- The Concept of the Project and Program Portfolio Management Methodology in Integrated Functional Environments (Nataliia Yehorchenkova, Oleksii Yehorchenkov)
- The Consideration of Sustainability in Project Management and Technological Innovation for Organizational Strategy (Olanrewaju Isaac Odewale)
- Sustainable Project Management Versus Responsible Project Management: Evolution or Complement (Leticia Fuentes-Ardeo, Jose Ramon Otegi-Olaso)

Workshop “**Project Management Research and Practice Journal**” (Beverly Pasian)

Session on **Digital Transformation** (Christian Reimann)

- Role of BIM in Mitigating Information Asymmetry and Transparency: Reality Versus Expectation (Tausif Ahmed Ishtiaque, Ole Jonny Klakegg)
- The Necessity to Use Blockchain in IoT/ IIoT (Shazia Muhsi, Fatemeh Moradian Tehrani)
- Development of Machine Learning Maturity Scale (MLMS) Framework in the Context of Industry 4.0 (Sabit Shaikholla)

Poster Session

- Auto-refining Reconstruction Algorithm for Limited Angle Humanoid Reconstruction in Holographic Teleconferencing Applications (Audrius Kulikajevas, Rytis Maskeliūnas, Robertas Damaševičius, Marta Włodarczyk-Sielicka)
- Impact of COVID-19 Virus on IT Organizations: A Study of a Virtual Working System (Jovial Jose, Swapna Talla)
- Environmental Conditions Affecting the Sustainability of Open Metallic Structures (Marta Terrados-Cristos, Marina Diaz-Piloneta, Javier García-González, Cristina Alonso-Álvarez, Ana Fernández-Iglesias)
- How Could Organizations Help Their Employees Build Sense of Coherence During COVID-19 Outbreak? (Sevgi Emirza)
- Effects of Technical Risk on the Performance of Construction Projects (Suleman Malik, Anam Khan, Rao Aamir Khan)
- Exploring Predictive Analytics for Stock Prices: Looking towards Prescriptive Analytics (Aamod Vyas, Saket Mohanrao Lakhpati, Uphar Singh, Ayush Sinha, O.P. Vyas)
- Constructing Digital Transformation Index of Local Communities in Ukraine (Maryna Novozhylova, Olga Chub)

Session on **Workplace and Employability** (Mariella Olivos)

- Project Management as an Active Teaching Device That Fosters Students’ Employability (Erina Guraziu, Rodrigo Latorre Vivar)
- Alcoholism and Its Impact on the Workplace. A Brief Analysis (Diana del Consuelo Caldera González, María Guadalupe Arredondo Hidalgo, Eva Conraud, Miguel Agustín Ortega Carrillo)

Session on **Applications of Engineering and Computer Science** (Guillermo Artana)

- Development and Validation of a Gamified Videogame for Math Learning in Attention Deficit Hyperactivity Disorder (ADHD) Children (Rodrigo Castro Sugahara, Deyby Huamanchahua Canchanya)
- Numerical Simulation of a High-Speed Bumper Made With 6061-T6 Aluminum Alloy (Javier Serrano Pérez, Mónica Araceli Camacho Gonzalez, Maria del Consuelo Rueda Márquez, Nikté Martínez Palma)

Friday, June 25th:

Keynote Speech “**Open Educational Resources: Why it Matters and How You Can Join the Movement**” (Sina Nitzsche)

Session on **Education, e-Learning & Blended Learning** (Bassam Hussein)

- The Formation of Foreign Language Professional-Communicative Competence of IT Students and Teaching EPP with ICT (Aissulu Kaldarova and Tulebike Kulgildinova)
- Impact-Factor or Infarct-Factor: The Case Study of Scopus Publications in Kazakhstan (Zhannura Manapbayeva)
- Education Service Digitalization: Lessons of the Pandemic COVID-19 (Olena Verenysh)
- Safe Exam Browser for E-Assessment in Learning Management System (Muhammad Anjum Malik)

Session on **Digital Transformation in Health** (Ingo Kregel)

- Quality Management in a Holistic Care Platform (Tim Krueger, Jelena Bleja, Prof. Uwe Grossmann)
- Industry 4.0: Role of IoT in Healthcare (Krishna Vaghasiya, Shreya Bose)
- A Study on Smart Wheelchairs: Improving the Quality of Usage for People with Mobility Disabilities in Smart Cities (Vignesh Somasundaram, Andreas Becker, Tien Tran)
- Review of Secured Methods for Implementing Unified Health Information Records and Proposal of a Health Recommender System (Heba Al Bizreh, Emmanuel Awoin, Mouhammad Zain Uddin)

Workshop “**Solar Car**” (Alexander Bokelmann, Matthias Drossel)

Session on **International Higher Education Cooperation and COVID-19** (Christine Beckmann)

- The Challenges for International Cooperation of the Peruvian Network for the Internationalization of Higher University Education: An Exploratory Study (Mariella Olivos, Sheyla Salazar)
- Transformational Competences for Internationalization Facing COVID-19 and Post-COVID-19 Scenarios (Yamila Fernanda Silva Peralta, Carlos Daniel Antenucci, Margarita María Guarín Acosta)
- COVID-19 and Teacher Continuing Education: The InnovaT Project Strategies to Support Higher Education in Chile and Peru (Ligia Franco Pasqualin, Liliya Terzieva, Carlos Alario-Hoyos, Carlos Delgado Kloos, Regina Ticona Herrera, Maria Maldonado)

Session on **Digital Transformation & Virtual Education** (Moramay Ramirez)

- Strategies to Face the Challenge of Virtual Education (Ema Elena Aveleyra, Melisa Alejandra Proyetti Martino)
- A Dataset on the Digital Transformation of University Courses During the COVID-19 Pandemic (Ángel Carrión-Tavárez and Javier Gutiérrez-Ballivián)

- Digital Transformation and Its Implications for Latin American Universities (Lourdes Maritza Ortiz Sosa, Gisela Carrero Morales, Vanesa Santiago Ríos, Grace Di Leo, Mariela Camargo Román, Mariella Olivos)

Saturday, June 26th:

Video Session

- Software Implementation of Methods for Object Recognition at Production Site (Yurii Shemberko, Elina Tereschenko, Natalia Myronova)
- Development of Project-based Organisational Structures to Respond to VUCA Environments (Markel Delgado Valcárcel, Francisco Sánchez Fuente, Jose Ramón Otegi-Olaso)
- Transformation of Labour Potential in Dimension of Digitalization Economy (Oleksandr Levchenko, Dmytro Plynokos, Ilona Tsarenko)
- Health Monitoring for Diabetics with a Software-Intensive Solution (Farhad Saadatjouy Asr, Saadiya Damani)
- Student Journey Configurator Prototype: An Application of Usability Engineering Concepts (Krishna Vaghasiya, Fatemeh Moradian Tehrani, Shreya Bose, Sabit Shaikholla)
- FHydrate – Prototyping for Sustainable Tree Watering in Public Area (Sedat Akar, Daniel Azbel, Torben-Eric Jesser, Elisabeth Schulze-Hulitz, Prof. Dr. Dino Schoenberg)
- Development of a Time-of-Flight 3D and Polarization Camera for Automotive Applications (Ladan Alaei, Michael Karagounis, Thomas Rotter, Andreas Pile, Felix Schneider, Remzi Karaarslan, Jitikantha Sarangi)
- Biomedical Applications with the Usage of Virtual Reality (Daria Trunova, Galyna Tabunshchuk, Peter Arras)
- Architecture of Intellectual Information and Training System (Assel Smaiyil, Abu Kuandykov, Marco Brambilla, Zhibek Sarsenova)

Workshop “**Project Management Research and Practice Journal**” (Beverly Pasian)

Keynote Speech “**Project Management Data Analytics Lab**” (Nigel Williams)

Session on **Project Management** (Olena Verenych)

- Leadership in Application of Agile Project Management Methodology (Sergey Bushuyev, Natalija Bushuyeva, Denis Bushuiev, Victoria Bushuieva)
- Success-Oriented Structured Model of Managing International Development Projects in Ghana (Barrister Kenneth Appianing Asomaning, Vladyslav Dombrovskiy, Okyere Philbert Aboagye, Iryna Turchenko, Mykhailo Dombrovskiy, Anatoly Sachenko)
- Cost Overruns in Infrastructure Projects: A Review. The Case of the Spanish Construction Sector (Guillermo Alonso, Francisco Ortega Fernandez, Pablo Nistal Diaz, Ana Fernández Iglesias, Henar Morán Palacios)
- Overview of PhD Research in Convergent Knowledge Management in Multinational Projects (Olena Sharovara)

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