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14th International Conference on Exploring Service Science (IESS 2.4)

Technology for Sustainability in the Educational Context: A portrait of the Italian Universities

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Research Aim

-  To investigate the topic of sustainability within the educational context, that is the link between the adoption of digital and smart technologies, including AI applications, and sustainability within higher educational institutions.
-  To investigate the Italian universities mapping them considering the link between their degree of sustainability and their degree of technology innovation.

RESEARCH QUESTIONS:

What are the strategies, policies, practices, and initiatives developed and introduced by Italian universities to be sustainable through the adoption of digital and smart technologies? How do Italian universities deal with the phenomenon of sustainability through digital and smart technologies in their organization? What is the degree of sustainability orientation of Italian universities using technology?

Methodology

QUALITATIVE RESEARCH

Multiple case study on Italian universities for outlining their degree of sustainability using digital and smart technologies.





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Agenda

- 1. Sustainable universities through digital and smart technologies: Theoretical and contextual background**
- 2. Methodology**
- 3. Results and discussion**
- 4. Concluding remarks, limitations, and next steps**



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1. Sustainable universities through digital and smart technologies: Theoretical and contextual background 1/3

During the last thirty years, **sustainable development** has been receiving an increasing attention by the **academic community**, following the spread by organizations of behaviors and actions based on the logic of socio-environmental responsibility and the use of accountability tools that allow stakeholders to be accountable for the commitment of the organizations in pursuing sustainability objectives.

Universities have begun to play a **role of agents and subjects of change**, respectively, the promotion of research and training courses about economic, social, and environmental sustainability, and the definition and internal implementation, above all, of policies, practices, and initiatives able to sustainably perform.







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1. Sustainable universities through digital and smart technologies: Theoretical and contextual background 2/3

 **Sustainability means revolutionary transformation**, developing a broad reflection on the organization's inherent behavioral and cultural aspects to redefine and build new practices, relying on technological solutions, anticipating future challenges, improving efficiency and the compliance of regulation, targeting aims beyond the organization, networking with other institutions through partnerships with academic, government, private, public organizations, adopting a new set of values, attitudes, and behaviors.

 The **sustainable universities criteria** are: **technical features**, looking at the development of technological advances in curricula, research, operations, campus experiences; **behavioural features**, in terms of assessment and reporting, educators training, academic collaboration; **systemic features**, in terms of transdisciplinary, outreach and collaboration beyond universities, advocacy.



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1. Sustainable universities through digital and smart technologies: Theoretical and contextual background 3/3

 Three stages of the revolutionary transformation for sustainability development of the universities:

- STAGE 1, called “operational optimization”, universities should increase the efficiency of the technical solutions applied to reach sustainability challenges and to comply with legal requirements;
- STAGE 2, named “organizational transformation”, they could act to infuse sustainability within the organization, and to prioritize engaging with the behaviours and attitudes of students, teachers and other internal stakeholders;
- STAGE 3, called “systems building”, universities could develop a change in their vision and values to create a sustainability culture, contemporary collaborating in doing this actions with other actors in society, extending them beyond the limits of their organizations.

2. Methodology

1/2

METHODOLOGY: Multiple case study through archival data and documentation analysis (also web research).

SEARCH CRITERIA: The sampling was, therefore, carried out through the University portal, selecting only universities that met the selected criteria, i.e. "presence in the University portal, ANVUR-MUR accreditation, and website presence".

The sample is made up of **92 case studies of universities** throughout the country that present a different degree of sustainability related to technological innovativeness.





2. Methodology

2/2

STEPS OF THE ANALYSIS

CASE SELECTION: Use of a non-probabilistic sampling to answer the research questions by identifying specifically only the Italian universities that meet the defined criteria: presence in the University portal, ANVUR-MUR accreditation, website presence.

DEFINITION OF THE RESEARCH TOOLS AND PROTOCOLS FOR THE REALIZATION OF THE PORTRAIT OF ITALIAN UNIVERSITIES: **Primary and secondary data sources** have been identified [university documentation available online, reports, official and non-official websites of the Italian university system (MUR, Istat, UNESCO, specialized associations, World Ranking, etc.), university websites, SNS (Facebook, Instagram, Twitter, etc.), press and magazines, ANVUR and RUS website and university reports]. The Italian universities responding to the selected criteria that have been selected and contribute to forming the survey sample are **92**. The portrait of the 92 selected Italian universities has been drawn outlining their degree of sustainability through the technology. A **manual content analysis** was conducted for all the documentation collected. The framework of the strategies, policies, practices, and initiatives promoted and implemented by the investigated Italian universities was built by collecting and processing information and data through reports (MUR, Istat, etc.), analysis of archival data, university documentation, university websites, university social network sites (SNS), press and magazines, focusing on issues related to inclusion and digital technologies. **All the solutions, policies, practices, and initiatives aimed to promote a sustainable performance through digital and smart technologies of universities analyzed were identified and investigated.**



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3. Results and discussion

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A brief portrait of the Italian Universities

SAMPLE OF UNIVERSITIES DISTINGUISHED IN TERMS OF SIZE/NATU	RUS MEMBER	PRESENCE OF PROTECTED CATEGORIES POLICIES	PRESENCE OF DISABILITY MANAGEMENT POLICIES	DIGITAL ASSISTANTS	CALL CENTER	TECHNICAL & ONLINE SUPPORT	WEB-SITE	WEB-SITE ACCESSIBLE	APP	COURSES (E-LEARNING PLATFORM)	VIRTUAL TOUR
Mega Universities	10	7	10	2	11	20	12	4	8	12	3
Large Universities	20	15	20		4	10	23	2	17	23	3
Medium Universities	21	10	22		7	21	24	4	16	24	6
Small Universities	13	13	17	2	4	13	29	4	15	31	3
State Universities	55	37	49	2	23	54	59	13	41	60	10
Non-state Universities	12	9	14	3	4	12	17	0	9	18	4
Telematic Universities	1	5	6		3	11	11	1	6	11	1
North Universities	25	21	26	2	9	24	32	4	23	32	5
Centre Universities	27	19	30	3	12	32	32	6	21	34	6
South Universities	11	9	17		5	17	18	2	9	18	1
Islands Universities	5	3	5		4	5	6	2	3	6	3



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3. Results and discussion

2/2

1. Digital innovation, that is the increasing development and adoption of digital and smart technologies, has increasingly involved Italian universities. **Technological transformation process introduces new opportunities and challenges for academic institutions to better perform in the sustainability perspective.**
2. **Mega, large and medium universities stand out more for promoting and adopting technological solutions to be much more sustainable**, almost all universities offer at least one online course and use digital technologies and tools especially related to eLearning, multimedia and audio-visual production. Starting from these preliminary results, in terms of empirical implications, **universities should be more sensitive to sustainability to promote and introduce blended or online learning courses, virtual support tools or digital assistance and specific programs.** It should be useful for universities, through the same RUS network, to systematize much more their main technological solutions in the sustainability perspective and share all their experiences activating an effective collaboration for being much more sustainable also through technological solutions.
3. **Most universities focus their attention on environmental sustainability, without sharing their practices but the technological solutions adopted are still limited** (energy savings systems; water dispensers; waste recycling tools, etc.).



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4. Concluding remarks, limitations and next steps

Concluding remarks

- There is a **geographical and dimensional gap** between universities in terms of the adoption of digital and smart technologies for being much more sustainable.
- There is the need to internally promote at universities, recognized as exclusive managers of the training of future generations, a **process of radical change** in the individual and organizational culture to truly acquire the fundamental principles of sustainability. Otherwise, sustainable universities should create educational and administrative guidelines for strengthening sustainability in the university environment.

Limitations

- ✓ Exploratory nature of the study.

Next steps

- ✓ To directly involve the viewpoint of staff and students conducting in-depth semi-structured interviews about technological solutions provided from their university for becoming much more sustainable.
- ✓ To investigate directly specific universities to collect useful information and data about the concrete degree of sustainability orientation of universities through digital and smart technologies.



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Thanks for your attention!

**Any questions,
comments,
suggestions?**



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