

SUSTAINABLE DIGITAL TRANSFORMATION IN HIGHER EDUCATION: A THEORETICAL MODEL LINKING ICT, INSTITUTIONAL SUPPORT AND TEACHERS' QUALITY OF WORK LIFE

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ABSTRACT

Digital transformation has become an integral part of higher education, influencing teaching, learning, assessment, communication and institutional administration. However, the sustainability of digital transformation depends not only on the availability and use of Information and Communication Technology (ICT), but also on the institutional environment in which teachers work. The theoretical paper examines the relationship between ICT integration, institutional support and Quality of Work Life (QWL) of teachers in the framework of sustainable digital transformation in higher education. Based on Socio-Technical Systems Theory, Job Demands-Resources Theory, and Organisational Support Theory, the paper develops a comprehensive theoretical model describing how technological and organisational factors shape teachers' work experiences. The model proposes that effective ICT integration may improve professional efficiency, flexibility, and teaching practices and that inadequate technological resources and excessive digital demands can add workload and work-related pressures. Leadership, technical assistance, professional development, workload management and participatory decision-making are therefore institutional support that is put in the category of enabling mechanisms. The paper further proposes teachers' QWL as a key link between ICT-supported institutional practices and sustainable digital transformation. The model provides a human-centred way to understand digital change and offers a theoretical foundation for future empirical research and institutional policy development.

Keywords: Sustainable Digital Transformation; Higher Education; Information and Communication Technology; Institutional Support; Quality of Work Life; Teachers.

1. INTRODUCTION

Higher education has undergone considerable change during the last decade as digital technologies have become increasingly embedded in teaching, learning, research and institutional administration. Information and Communication Technology (ICT) has become an important part of universities and colleges because of its applications in academic practices such as learning management systems, online and blended education, digital assessment, virtual communication, research cooperation, and administrative services. The rapid expansion of artificial intelligence, cloud-based platforms, digital learning resources and data-supported educational systems has further accelerated this transition. As an outcome, the digital transformation is no longer considered simply as the emergence of new technological tools. It has now become a wider institutional process that changes the way higher education institutions organise their operations, provide educational services and support the individuals who work in them.

The increased application of ICT presents a number of higher education opportunities. Digital technologies are able to give more access to academic resources to teachers, help in communication

with students, support flexible teaching practices and simplify some administrative and assessment activities. They are also able to promote innovative pedagogical practices by enabling multimedia learning, collaborative learning and learning outside of the physical classroom. Institutionally, digital systems can enhance communication, information management and coordination within academic and administrative departments. These advantages have encouraged higher education institutions to invest substantially in digital infrastructure and technology-enabled educational practices.

Nevertheless, the introduction of technology does not necessarily lead to effective or sustainable digital transformation. The most effective implementation of digital initiatives is determined by the manner in which technology is introduced, handled and experienced by the individuals who are supposed to use it. Teachers occupy a particularly important position in this process because they translate institutional digital policies into everyday academic practice. They must acquire new platforms, redesign teaching resources, communicate in a variety of digital platforms, conduct online or technology-based tests and adapt their pedagogical processes to changing technological conditions. In many cases, these responsibilities are added to existing responsibilities related to teaching, research, student mentoring, administration and institutional service.

ICT, therefore, can serve as a resource as well as a source of extra work. Reliable technologies will help to minimize repetitive work, enhance flexibility and enhance professional performance when they are accessible and supported by relevant institutional structures. On the other hand, systems that are poorly designed, inadequate infrastructure, inadequate training and a high rate of technological change may increase the burden on teachers. Digital communication can also blur the boundary between work and personal time. Teachers may be expected to respond to messages outside normal working hours, update multiple online systems and continuously acquire new digital competencies. Hence, the impact of ICT on academic work cannot be explained through the analysis of the availability or frequency of technology use. The organisational conditions under which digital technologies are adopted also need attention.

Institutional support becomes particularly significant in this context. Sustainable digital transformation requires more than the purchase of hardware, software and online platforms. Teachers need reliable technical assistance, relevant professional development, supportive leadership and sufficient time to adapt their teaching practices. Institutions should also take into consideration the workload distribution, teachers' participation in technological decision-making and the suitability of digital systems to actual academic requirements. When teachers are involved in decisions concerning technologies that directly influence their work, implementation may become more responsive to classroom realities. In contrast, technology introduced mainly through top-down administrative decisions may create difficulties when the requirements of digital systems are not adequately aligned with teachers' professional responsibilities.

Such concerns lead to the concept of Quality of Work Life (QWL). In the context of higher education, the QWL of teachers can be understood in terms of the overall conditions in which academic labour is carried out and experienced. It includes job satisfaction, workload that is manageable, professional autonomy, development, work-life balance, positive relationships, decision-making and professional well-being. Each of these dimensions can be affected by the digital transformation. As an example, online resources can be accessed flexibly, which may allow teachers to handle some of their responsibilities more efficiently, but excessive online duties can contribute to the workload and interfere with personal time. In the same way, technology can enhance professional autonomy by providing teachers with the freedom to choose the appropriate digital practices, but it might reduce autonomy when digital systems impose the use of rigid procedures without adequate academic consultation.

For this reason, teachers' QWL should not be treated as an issue separate from institutional digital transformation. A digital strategy can achieve short-term implementation targets and cause long-term challenges when it regularly further increases workload, technological pressure or discontent among academic staff. Sustainable transformation requires technologies that remain useful and adaptable over time while also supporting the people responsible for implementing them. From this perspective, sustainability has a human and organisational dimension in addition to a technological one. An institution cannot reasonably regard its digital transformation as sustainable if technological development is achieved at the expense of the quality of teachers' working lives.

This perspective also has wider implications for the governance of higher education. Institutional governance and public policy are directly interconnected with the choices regarding digital infrastructure, staff development, resource distribution, and working conditions. The local, regional and national environments in which higher education institutions are present differ significantly in terms of technological resources, financial capacity and access to digital infrastructure. Compared to institutions in highly developed technological settings, institutions in non-urban centres might have different difficulties with the implementation of digital initiatives. Sustainable digital transformation thus involves consideration of institutional context, equitable resource distribution and governance structures that have the potential to address the requirements of academic communities. Digital transformation in higher education, in this sense, is not only an issue of educational technology, but also a matter of organisational governance, workforce sustainability, and institutional development.

Although research on digital transformation in higher education has expanded considerably, important areas remain insufficiently integrated. One group of research focuses on ICT adoption, digital competence and technology-supported teaching. Another examines institutional readiness, leadership and organisational support, while research on academic work focuses on job satisfaction, workload, well-being or Quality of Work Life. These streams of research provide valuable insights, but examining them separately may not fully explain why similar technologies produce different experiences and outcomes across institutions. A more theoretical approach is needed to be able to see how ICT, institutional support and the QWL of teachers interact in the context of the wider process of sustainable digital transformation.

The present paper addresses this need by developing a theoretical model linking ICT-enabled digital transformation, institutional support and teachers' Quality of Work Life in higher education. The model draws on Socio-Technical Systems Theory, Job Demands–Resources Theory and Organisational Support Theory to explain the relationship between technological change, organisational conditions and teachers' work experiences. It considers ICT as both a potential professional resource and a possible source of additional demands, while institutional support is viewed as an important mechanism that can strengthen the positive effects of technology and reduce its adverse consequences. Teachers' QWL is positioned as a central link through which technological and institutional conditions contribute to the sustainability of digital transformation.

Combining these elements, the paper aims to take the discussion out of its technology-focused interpretation of digitalisation and place it in a more human-focused and institutionally based approach. Its central argument is that sustainable digital transformation cannot be achieved through technological investment alone. It requires an appropriate balance among technological capability, institutional support and the quality of teachers' working conditions. The proposed theoretical model provides a framework for examining how higher education institutions can pursue digital development while maintaining supportive, productive and sustainable academic workplaces. It also provides a basis for future empirical research and institutional and policy debates on responsible digital transformation in higher education.

2. CONCEPTUAL BACKGROUND AND LITERATURE REVIEW

Digital transformation has emerged as one of the major forces reshaping higher education, influencing teaching, learning, research, administration and institutional governance. Recent scholarship has moved beyond viewing digitalisation merely as the adoption of technological resources and increasingly considers it an organisational process involving technological, human and institutional change. According to Trevisan et al. (2024), the digital transformation of higher education has significant implications for sustainability and the development of sustainability competencies; smart and sustainable campuses; and the theorisation of sustainability through digital transformation represent key areas of research. Similarly, Omar and Abdullahi (2024) observe that research on sustainable digital transformation in higher education has expanded considerably, particularly in developing countries, with digital transformation, innovation, sustainability and technology-enhanced learning emerging as prominent themes.

2.1 Digital Transformation in Higher Education

Digital transformation in higher education extends beyond the conversion of conventional activities into digital formats. It includes changes in institutional processes, teaching practices, communication

systems, academic responsibilities, and organisational strategies. The virtual classroom, learning management system, digital assessment, cloud-based service, online research environment, artificial intelligence, and learning analytics have become increasingly significant in contemporary higher education.

Trevisan et al. (2024) emphasise that digital transformation and sustainability are becoming increasingly interrelated within higher education institutions. Their review indicates that digital technologies can contribute to sustainability through institutional innovation, sustainability competencies and smart-campus practices. Nevertheless, the connection between technological development and sustainability needs more theoretical consideration.

From the perspective of developing countries, Omar and Abdullahi (2024) provide further evidence of growing scholarly attention to sustainable digital transformation. Their bibliometric analysis of research covering the period from 1991 to 2024 identifies increasing interest in digital transformation, technological innovation and sustainable development within higher education. Notably, they argue that digital strategies should take into account the specific socioeconomic and cultural conditions of the developing countries instead of presuming that a single model of transformation can be used universally. This situational aspect is especially significant because higher education institutions differ significantly in technological infrastructure, financial resources, digital competence, and institutional governance. As a result, the sustainability of digital transformation cannot be assessed based on the quantity of technology introduced. It should also be considered in relation to the capacity of institutions and their employees to adapt to technological change over time.

2.2 ICT Integration and Teachers' Work

ICT has substantially altered the professional responsibilities of higher education teachers. Digital platforms are used in lesson preparation, teaching, assessment, communicating with students, collaborating with researchers, and reporting to administration. When these technologies are correctly applied, they can make things more flexible, enhance access to information and make communication more efficient.

At the same time, increased dependence on technology can create new forms of work pressure. Teachers are expected to acquire new digital competencies, learn unfamiliar platforms and manage multiple technological systems alongside their established academic responsibilities. This has contributed to increasing scholarly attention to technostress among higher education teachers.

Recent research on the positive dimension of technostress demonstrates that the relationship between technology and teacher well-being is not necessarily negative. A 2024 study in *Technology in Society* examining techno-eustress among higher education teachers found that technological, individual and organisational factors can contribute to positive experiences of technological demands. The study reported that the perceived usefulness of technology and organisational conditions can contribute to techno-eustress, which in turn is associated with job satisfaction and work performance. This implies that the impacts of ICT are significantly influenced by the environment in which teachers use it.

More recent evidence strengthens this argument. A 2025 study of the digital transformation and faculty work-life balance concluded that rapid technological adoption can bring about workload intensification, technostress and adaptation challenges. At the same time, the study reported that proactive institutional support, suitable technological infrastructure, professional development and appropriate institutional policies can considerably improve faculty Quality of Work Life. These findings demonstrate that ICT should not be treated as an independent determinant of employee outcomes. Its effects are shaped by institutional arrangements and the resources available to academic staff.

The issue has become even more relevant with blended and hybrid teaching. A 2026 study involving 388 academicians from Indian higher education institutions examined QWL, job satisfaction, technostress and psychological well-being in blended learning environments. The study conceptualised technostress as an important condition influencing the relationship between educators' QWL and psychological well-being. Such evidence indicates that the digital working environment has become an important component of academic QWL.

2.3 Institutional Support for Digital Transformation

The role of institutional support is crucial in determining whether digital transformation is an enabling process or another source of professional pressure. Support can involve quality ICT infrastructure,

professional development, technical assistance, supportive leadership, institutional policies, workload management, and teachers' opportunities to be involved in technology change decisions.

The significance of institutional support can be seen in the recent studies on faculty experiences of digital transformation. The 2025 study of faculty work-life balance and institutional resilience determined that insufficient institutional support can add to the challenges of digitalisation, but specialised training, technology infrastructure and proactive institutional policies can positively affect faculty QWL. Institutional action is thus considered the key to successful technology integration in the study.

Institutional support must not be restricted to providing technological equipment. Teachers also require time to develop digital competence, opportunities to experiment with technologies and mechanisms for communicating difficulties experienced during implementation. Leadership is especially important because institutional leaders decide how resources are allocated, workloads are managed, and training opportunities are provided, as well as the extent to which teachers participate in decision-making.

Organisational support can also be used to understand this relationship. When academic employees perceive that the institution values their contribution and responds to their professional needs, they may be more willing and better equipped to engage with organisational change. On the other hand, the implementation of new technologies without sufficient consultation and support can lead to digital transformation being perceived as an administrative necessity, but not a professional resource.

This is reinforced by recent discussions of strategic human-resource management. Arora (2024) argues that digital competency development, professional growth, employee engagement and flexible institutional practices are increasingly important for maintaining job satisfaction and QWL in higher education during the digital era. Institutional support therefore connects technological transformation with the human-resource practices necessary for sustaining academic work.

2.4 Teachers' Quality of Work Life

Quality of Work Life refers to the overall quality of employees' professional experiences and includes job satisfaction, working conditions, workload, professional autonomy, work-life balance, organisational relationships, career development and psychological well-being. Within higher education, QWL is especially important because teachers simultaneously perform teaching, research, student mentoring, assessment, administrative and institutional responsibilities.

Recent Indian research provides relevant evidence in this area. Arunachalam et al. (2024) examined QWL among 547 faculty members working in Indian higher education institutions. Their results indicated that 73 per cent of participants were satisfied with their QWL, and that their perceptions differed significantly across various dimensions of QWL based on gender and academic specialisation. The authors nevertheless identified areas requiring institutional and policy attention and argued that appropriate strategies for improving QWL could strengthen faculty satisfaction and retention.

QWL is also closely associated with psychological and organisational outcomes. Dewangan and Goswami (2025) examined organisational role stress, QWL, organisational citizenship behaviour and psychological well-being among university faculty members. Their work presents these variables as interconnected aspects of the professional experiences of university employees rather than isolated organisational results. This is specifically relevant to digital transformation since technological changes can alter role expectations, workload and working relationships.

Digital transformation presents opportunities and risks to QWL. Technology can provide flexibility, improve access to teaching resources and facilitate communication. But it can also contribute to work intensity, encourage constant connectivity and extend academic responsibilities beyond traditional working hours. The consequences are thus based on the way institutions manage digital work.

The study by academicians who participated in blended and hybrid teaching (2026) provides particularly relevant evidence, as it defines a direct correlation between QWL and technostress, job satisfaction and psychological well-being. The findings reinforce the need to understand teachers' working lives within contemporary digital environments rather than treating QWL as independent of technological change.

2.5 Sustainable Digital Transformation: Towards an Integrated Perspective

Recent literature demonstrates considerable progress in understanding digital transformation, sustainability and faculty QWL, but these research areas remain only partially integrated. Trevisan et

al. (2024) connect digital transformation with sustainability in higher education, while Omar and Abdullahi (2024) demonstrate the growing importance of sustainable digital transformation within developing-country contexts. Arunachalam et al. (2024) provide evidence regarding QWL among Indian higher education faculty, while Dewangan and Goswami (2025) connect QWL with role stress and psychological well-being. Recent studies of digital transformation and blended teaching further demonstrate that technostress, workload and institutional support influence faculty experiences.

Taken together, these studies suggest that technological, organisational and human dimensions should not be examined independently. Digital transformation may create professional resources as well as additional job demands. Whether these demands lead to positive or negative outcomes is likely to depend substantially on institutional support. Similarly, teachers' QWL may influence whether digital initiatives are accepted, effectively implemented and sustained over time.

There is still a definite gap in theory. The current studies have already explored the digital transformation, ICT utilization, technostress, institutional support and QWL but limited studies have integrated these elements into a single theoretical explanation of sustainable digital transformation in higher education. In particular, teachers' QWL has rarely been positioned as a central mechanism linking ICT-enabled transformation and institutional support with the long-term sustainability of digital change. The present study addresses this gap by integrating ICT-enabled digital transformation, institutional support and teachers' Quality of Work Life within a single theoretical model. It proposes that the key to sustainable digital transformation is not only the technological capability, but the compatibility of digital resources with organisational support and teachers' professional well-being. In this model, institutional support provides the organisational conditions through which ICT can function as a professional resource rather than an excessive demand, while teachers' QWL represents an important human mechanism contributing to the sustainability of digital transformation.

This integrated perspective consequently shifts the discussion from technology-centred transformation to human-centred sustainable digital transformation. It recognises teachers not simply as users of institutional technologies but as central participants whose working conditions, professional experiences and institutional relationships influence whether technological change can be successfully maintained. The theoretical relationships underlying this argument are developed further in the following section.

3. THEORETICAL FOUNDATION

The relationship between digital transformation, institutional support and teachers' Quality of Work Life (QWL) cannot be adequately explained through a purely technological perspective. Digital transformation is not only transforming the tools that teachers use but also the workload, professional relationships, autonomy, the skills they need, and the interaction with the institution. The present study therefore develops its theoretical foundation by integrating three complementary perspectives: Socio-Technical Systems Theory (STST), Job Demands–Resources (JD-R) Theory and Organisational Support Theory (OST). Collectively, these theories form a foundation on which technological change can be explained in terms of its interaction with organisational arrangements and teachers' work experience. STST describes the necessity of the alignment of the technological and social systems; JD-R Theory describes the impact of the digital demands and organisational resources on the QWL, and OST describes how the perceptions of the teachers regarding the institutional support may influence their reactions to the digital transformation.

3.1 Socio-Technical Systems Theory

It provides the broad theoretical foundation for understanding sustainable digital transformation. This theory was developed based on the contributions of Trist and Bamforth (1951), who proved that organisational performance cannot be explained with reference to technological systems without referring to people and social systems that are related to them. The main idea of the theory is that organisations consist of interdependent social and technical systems, and that better results are achieved when the two dimensions are optimised together.

This perspective is highly relevant to contemporary higher education. Universities increasingly invest in learning management systems, digital assessment tools, cloud technologies, artificial intelligence and administrative platforms. Nevertheless, technological sophistication alone is not a guarantee of successful transformation. Teachers must possess appropriate digital competencies, understand the

purpose of the technologies and receive adequate organisational support to integrate them into their professional activities. Digital transformation can thus turn out to be unsustainable as technological development progresses without human and organisational conditions.

Recent research supports the continuing relevance of this perspective. Yee et al. (2024) implemented a socio-technical approach to digital transformation in higher education and highlighted that both technological and social dimensions should be considered when developing institutional digital architecture. Their work is particularly relevant to institutions operating in developing contexts, where technological initiatives may need to be adapted to local organisational conditions.

In the current model, ICT is the technical subsystem, and teachers, leadership, organisational practices and institutional support are significant components of the social subsystem. The quality of the relationship between these two systems is reflected in part in teachers' QWL. Technological change can positively affect academic work when digital technologies are aligned with professional requirements of teachers and are facilitated by training, infrastructure and relevant institutional policies. Conversely, workload pressure, frustration and resistance may occur as a result of the mismatch between technological requirements and organisational ability.

STST thus enables the conceptualisation of sustainable digital transformation as a socio-technical alignment process. Sustainability is not only achieved when technologies remain operational, but when technological systems can be incorporated into institutional practices without compromising the people utilising them. This perspective establishes the broader theoretical logic for placing teachers' QWL at the centre of the proposed model.

3.2 Job Demands–Resources Theory

While STST explains the broader relationship between technology and the social environment, Job Demands–Resources Theory provides a more specific explanation of how digital transformation may influence teachers' working lives. The original Job Demands–Resources model was developed by Demerouti et al. (2001) and subsequently extended by Bakker and Demerouti (2007) and later scholarship. The theory distinguishes between job demands and job resources.

Job demands are dimensions of work that require sustained physical, psychological or emotional effort and may consequently generate pressure. Job resources are conditions that assist employees in achieving work objectives, reducing demands or promoting professional development. Recent formulations of JD-R Theory continue to emphasise that demands and resources can operate simultaneously and that resources can protect employees against some of the adverse consequences of demanding working conditions. Bakker and Mostert (2024) note the continuing development of the JD-R perspective and its usefulness for understanding well-being within educational environments.

The implementation of digital transformation and ICT can create demands and resources. Digital job demands may include technological complexity, frequent software changes, continuous online communication, digital administrative requirements, pressure to learn new applications and expectations of availability beyond conventional working hours. These demands can, when excessive, lead to technostress, work-life conflict and reduced professional well-being.

Recent evidence illustrates the importance of this relationship. Yang et al. (2025), in a systematic review of 54 studies on teachers' technostress, identified technological factors, workplace conditions and personal perceptions as major sources of technostress. They further found that technostress can affect teachers' well-being and job performance, while organisational strategies such as digital literacy development, organisational flexibility and technical support may help reduce its effects.

ICT can, however, also operate as a job resource. Reliable digital systems can provide teachers with greater flexibility, easier access to educational resources, improved communication and more efficient ways of completing certain professional tasks. Institutional resources such as technical support, professional development, autonomy and supportive leadership can further enable teachers to use technology constructively.

This dual character is demonstrated by Nascimento, Correia and Califf (2024), who examined techno-eustress among 1,107 higher education teachers. Their findings showed that technological, individual and organisational factors can contribute to positive experiences of technology-related challenges and that techno-eustress is positively associated with job satisfaction and work performance. Similarly, research published in 2024 found that organisational support could buffer some negative relationships

between technostrain and teacher well-being and could strengthen work engagement when ICT availability demands were high.

The JD-R perspective is therefore particularly valuable for the present study because it explains why ICT cannot automatically be classified as beneficial or harmful. Its consequences depend on the balance between digital demands and available resources. Institutional support may provide the resources necessary to prevent digital demands from reducing teachers' QWL.

3.3 Organisational Support Theory

Organisational Support Theory provides the third theoretical component of the proposed model. Developed from the work of Eisenberger et al. (1986), OST proposes that employees form general perceptions regarding the extent to which their organisation values their contributions and cares about their well-being. These perceptions, commonly described as perceived organisational support, influence employees' attitudes and relationships with their organisations.

Institutional support in terms of higher education digital transformation can be expressed in proper technological infrastructure, technical support, professional development, supportive leadership, workload expectations and opportunities that are realistic and achievable for teachers and give them a chance to be involved in decision-making with regard to digital systems. Such practices communicate whether the institution views teachers simply as users expected to comply with technological change or as professional partners in the transformation process.

Recent research demonstrates the continuing relevance of OST to digital education. Chen et al. (2025) investigated organisational support and teacher digital literacy using a large sample of 68,054 teachers in PISA 2022. Their findings indicated that organisational support positively influenced teachers' digital literacy and highlighted the importance of digital training, communication platforms and institutional measures for reducing digital inequalities among teachers. The authors specifically extend the application of Organisational Support Theory to the educational context.

This perspective is particularly important for QWL. Teachers who perceive that their institution provides appropriate support may experience greater confidence, professional recognition and capacity to manage technological change. On the other hand, in cases where institutions implement technologies without adequate training, consultation or workload reorganisation, teachers may experience digital transformation as an extra organisational load. The interpretation and management of technological demands can thus be influenced by organisational support.

3.4 Integration of the Three Theoretical Perspectives

The principal theoretical contribution of the current work is the fact that these three perspectives are combined in this work and not applied individually. Each theory explains a different level of sustainable digital transformation.

Socio-Technical Systems Theory is applied at the institutional level and describes the necessity to adjust technological systems to people and organisational arrangements. JD-R Theory operates more directly at the work-experience level by explaining how ICT-related demands and resources can influence teachers' QWL. The Organisational Support Theory describes the institutional process whereby the teachers receive and interpret resources like technical assistance, professional development, leadership support and participation.

The integrated theoretical logic can therefore be expressed as:

ICT-enabled Digital Transformation → Digital Demands and Resources → Teachers' Quality of Work Life → Sustainable Digital Transformation

while Institutional Support strengthens the availability of resources and can reduce or buffer the effects of excessive digital demands.

Another significant limitation to technology-centred practices in higher education transformation is also tackled in the proposed integration. Digitalisation will not be efficient in the long term due to technology adoption alone. Sustainable change needs to be in balance between the technical system, institutional resources, and the professional experiences of the teachers. Recent evidence showing that organisational conditions influence teachers' digital literacy and that technical support and organisational flexibility can mitigate technostress further supports this integrated approach.

Accordingly, the present study conceptualises teachers' QWL as a central human outcome and connecting mechanism within sustainable digital transformation. ICT offers technological capacity, institutional support offers organisational resources, and QWL demonstrates the experience of these

conditions by teachers. When these three dimensions are aligned correctly, digital transformation can more easily turn into an enduring institutional process, not a temporary technological intervention. This integrated theoretical foundation provides the basis for developing the conceptual relationships and theoretical model presented in the subsequent sections.

4. METHODOLOGY FOR THEORETICAL MODEL DEVELOPMENT

The present study adopts a theoretical and conceptual research approach to develop an integrated model explaining the relationship among Information and Communication Technology (ICT), institutional support, teachers' Quality of Work Life (QWL), and sustainable digital transformation in higher education. Since the purpose of the study is to integrate existing theoretical perspectives and identify relationships among key constructs rather than to test hypotheses using primary data, no survey, experiment, or field-based data collection was undertaken. Rather, a review of relevant scholarly literature was conducted and conceptually synthesised to develop the theoretical relationships of the proposed model.

4.1 Research Design

The research is based on an integrative conceptual review design. This approach was selected because the constructs examined in the paper have generally developed across different areas of research. Digital transformation and integration of ICT are often addressed in the research of educational technology and information systems, whereas institutional support is studied in the fields of organisational and management studies. Quality of Work Life is discussed more often in human resource management, organisational behaviour, and research on employee well-being. Bringing these areas together provides an opportunity to develop a broader explanation of how digital transformation influences teachers' working experiences and how these experiences may contribute to the sustainability of institutional digital change.

Three complementary theoretical perspectives supported the model-development process: Socio-Technical Systems Theory, Job Demands–Resources Theory, and Organisational Support Theory. These theories were selected because they respectively explain the interaction between technological and social systems, the balance between work demands and available resources, and employees' perceptions of institutional support.

4.2 Literature Search Strategy

Relevant literature was identified through major academic databases and scholarly search platforms, including Scopus, Web of Science, ERIC, ScienceDirect, SpringerLink, and Google Scholar. The search focused primarily on peer-reviewed journal articles and scholarly reviews relating to digital transformation and teachers' working conditions in higher education.

A combination of keywords was used to identify studies relevant to the proposed theoretical relationships. Major search terms included digital transformation in higher education, ICT integration, ICT and teachers, institutional support, organisational support, quality of work life, faculty well-being, teacher well-being, technostress, digital workload, digital competence, sustainable digital transformation, and higher education sustainability. These terms were also integrated in different ways to locate studies examining relationships between technological, organisational, and human factors.

Current studies, particularly those published between 2020 and 2026, were given greater attention in order to reflect contemporary developments in digital higher education. Earlier publications were retained when they provided the original or foundational explanation of the theories used in the paper, such as Socio-Technical Systems Theory, the Job Demands–Resources model, and Organisational Support Theory.

4.3 Selection and Organisation of Literature

Studies were considered relevant when they addressed at least one of the principal constructs of the proposed model or provided evidence regarding relationships among them. The priority was on peer-reviewed research on higher education teachers, academic employees, digital working environment, institutional support, QWL, technostress, or sustainable digital transformation. Studies concerned exclusively with school students, purely technical system design, or technological applications without a clear connection to academic work or institutional conditions were not central to the synthesis.

The selected literature was organised into four conceptual areas: ICT-enabled digital transformation, institutional support, teachers' QWL, and sustainable digital transformation. This organisation allowed

comparison of findings in the various streams of research and finding common relationships between the constructs.

4.4 Thematic Synthesis

The literature has been analyzed using thematic synthesis instead of statistical aggregation. Repeated ideas and relationships were identified across the selected studies. The special focus was made on the evidence indicating that ICT can be effectively used as a professional resource and as an additional job demand. Themes related to technological workload, digital competence, flexibility, technostress, leadership support, professional development, technical assistance, autonomy, work-life balance, and employee well-being were then organized based on the theoretical relevance.

Three general patterns were identified during the synthesis. First, ICT may be used to improve academic work in the context of increasing accessibility, flexibility, communication, and professional efficiency. Second, an increase in workload and stress can occur through technological change when the digital demands exceed the resources of teachers. Third, institutional support may influence the way teachers experience and react to such technological requirements. These patterns provided the conceptual basis for positioning QWL between technological and institutional conditions and the sustainability of digital transformation.

4.5 Development of the Theoretical Model

The final stage involved integrating the identified themes with the three theoretical perspectives. Socio-Technical Systems Theory provides the overall principle that sustainable transformation requires alignment between technological and social systems. Job Demands–Resources Theory explains how ICT-related demands and resources may influence teachers' QWL, while Organisational Support Theory explains how institutional practices can provide resources that assist teachers in managing digital change.

The proposed model, which is based on this synthesis, conceptualises ICT-enabled digital transformation and institutional support as key antecedent conditions, teachers QWL as a central human mechanism, and sustainable digital transformation as the overall institutional outcome. Institutional support is additionally considered an enabling condition capable of strengthening the beneficial effects of ICT and reducing the consequences of excessive digital demands. The resulting framework is thus not meant as a statistically validated model at this point. Rather, it represents a theoretically derived structure that can guide subsequent empirical investigation across different higher education settings.

5. DEVELOPMENT OF THE PROPOSED MODEL

The reviewed literature presented in the above sections indicates that sustainable digital transformation in higher education cannot be defined only by access to technology or the level of digital systems adoption. Digital transformation takes place within an institutional environment in which teachers interact continuously with technological systems, organisational policies, leadership practices and changing professional expectations. The four related constructs proposed in the model thus include ICT-enabled digital transformation, institutional support, Quality of Work Life (QWL) of teachers', and sustainable digital transformation. The central argument of the model is that technological development becomes sustainable when it is supported by appropriate institutional conditions and contributes positively to teachers' working experiences.

The model is developed from the integrated theoretical foundation provided by Socio-Technical Systems Theory, Job Demands–Resources Theory and Organisational Support Theory. Socio-Technical Systems Theory explains the need for alignment between technological and social components of higher education institutions. The Job Demands Resources Theory is useful in understanding how ICT may serve as both a professional resource and a source of further work demands. Organisational Support Theory explains how institutional practices and resources can influence teachers' perceptions of technological change. Together, these perspectives provide the basis for explaining the relationships proposed in the model.

5.1 ICT-Enabled Digital Transformation

The technological dimension of the proposed model is ICT-enabled digital transformation. It refers not simply to the possession of computers, internet facilities or educational software, but to the meaningful integration of digital technologies into teaching, assessment, communication, research and institutional

administration. In modern higher education, ICT has become highly intertwined with the daily professional duties of teachers.

Several dimensions can be considered important in understanding ICT-enabled transformation. The first is digital infrastructure, which has to have reliable internet connectivity, appropriate hardware, learning management systems and access to relevant software. Without dependable infrastructure, teachers may experience technological interruptions that increase rather than reduce workload.

The second dimension is digital access. Teachers need convenient and equitable access to digital resources both within and, where necessary, outside institutional premises. Accessibility is especially important in blended and flexible working situations when academic activities can go beyond the traditional classroom.

A third dimension concerns digital competence. The effectiveness of technology depends partly on teachers' ability to select and use appropriate tools. Digital competence is based not only on operational knowledge but also on the ability to integrate technology to pedagogy, assessment, communication and professional activities. Continuous technological development makes ongoing learning necessary rather than optional.

The fourth dimension is integration of technology in professional practice. ICT value is evident when the digital systems enhance quality or efficiency of academic activities. Technology that simply duplicates existing procedures without reducing unnecessary effort may offer fewer benefit. Successful integration must thus transform into significant changes in teaching and institutional work.

ICT can consequently operate in two directions. It can serve as a job resource through enhancing access, flexibility, communication and efficiency. At the same time, it can become a job demand when teachers face multiple platforms, frequent technological changes, excessive digital reporting or expectations of continuous online availability. The proposed model therefore does not assume that greater technology use automatically improves teachers' working lives. Instead, its effect is expected to depend substantially on the organisational environment in which technology is implemented.

5.2 Institutional Support

It represents the organisational dimension of the proposed model. It refers to the resources, practices and working conditions provided by higher education institutions to enable teachers to manage technological change effectively. From the perspective of Organisational Support Theory, teachers are likely to form perceptions about whether their institution recognises the challenges associated with digital transformation and provides reasonable assistance in addressing them.

The first crucial factor is the support of leadership. The institutional leaders influence the digital transformation through priorities, resource allocation, and communicating expectations. Leadership that encourages consultation and recognises teachers' professional needs can facilitate adaptation to technological change.

The second component is technical support. Even digitally competent teachers may experience system failures, software problems or difficulties associated with new platforms. Such issues can be avoided as an extra source of work pressure by timely technical help.

The third section is professional development. Digital transformation requires continuing opportunities for teachers to develop technological and pedagogical skills. Training is likely to be more meaningful when it responds to teachers' actual professional needs rather than functioning simply as a formal institutional requirement.

The other important dimension is workload support. Implementation of the digital systems often involves teachers acquiring new procedures, redesigning teaching materials, and keeping more records online. Scholarly and administrative work should be shared in institutions that are aware of this time requirement. Otherwise, technology that is supposed to enhance efficiency can lead to work intensification.

Participatory decision-making is also a part of institutional support. Teachers possess practical knowledge of classroom and academic requirements and can therefore contribute meaningfully to decisions regarding technological systems. Participation can enhance the suitability of digital tools as well as enhance the professional autonomy of teachers.

Finally, the management of technological change through digital governance and organisational culture dictates the long-term management of technology change. Uncertainty can be reduced by implementing clear policies related to the use of data, online communication, digital workload, responsible technology

use and institutional accountability. An encouraging organisational culture may also promote experimentation and collaborative learning without laying the whole burden of technological adaptation on individual teachers.

Institutional support is therefore expected to have both a direct and an enabling role within the proposed model. It can contribute directly to teachers' QWL and may also influence whether ICT is experienced primarily as a useful resource or as an excessive demand.

5.3 Teachers' Quality of Work Life

The central position in the proposed model belongs to teachers' QWL shows the human experience of digital transformation. QWL is perceived as a multidimensional construct that indicates the perceptions and experiences of teachers towards their professional environment. In the current model, it comprises job satisfaction, manageable workload, work-life balance, professional autonomy, psychological well-being, professional development and organisational commitment.

Job satisfaction reflects teachers' overall evaluation of their professional experience. Satisfaction can be enhanced when digital technologies help teachers accomplish academic tasks efficiently. In contrast, unreliable systems or excessive technological requirements may contribute to discontent.

Digital environments, in particular, require manageable workload and work-life balance. Technology may reduce the time required for some activities, but it can also extend academic responsibilities beyond institutional working hours. Sustainable digital practices should therefore provide flexibility without creating expectations of permanent availability.

Professional autonomy concerns teachers' ability to exercise academic judgement in choosing appropriate teaching and technological practices. Digital transformation is more apt to serve QWL when technology broadens professional opportunities, and not subject employees to unnecessary procedures. Psychological well-being is similarly important because repeated technological difficulties, information overload and pressure to adapt can contribute to strain. Institutional resources can reduce these pressures by giving teachers confidence that technological difficulties will be addressed collectively rather than individually.

Professional development adds a positive dimension to QWL. Professional confidence and career development can be enhanced through the opportunities to gain new digital capabilities in case the teachers find them relevant and sufficiently supported.

Within the model, QWL is therefore more than an outcome of digital transformation. It is proposed as a connecting mechanism between technological and institutional conditions and the sustainability of digital change. Institutions in which teachers experience supportive working conditions may be better positioned to maintain digital initiatives over time.

5.4 Sustainable Digital Transformation

Sustainable digital transformation represents the broader institutional outcome of the model. It means higher education institutions can introduce, sustain and adapt digital practices over time without compromising educational quality, organisational effectiveness, or the well-being of academic employees.

This conceptualisation differs from approaches that equate successful transformation with the number of technologies adopted. A university may introduce numerous digital platforms yet struggle to sustain them if teachers experience excessive workload, limited support or low acceptance. It is not just technological continuity but human and organisational continuity that sustainability needs.

Sustainable digital transformation can be reflected through continued technology acceptance, institutional adaptability, responsible digital practices, effective use of technological resources and the capacity to respond to future technological changes. Teacher participation is a particular concern because teachers must translate many institutional digital initiatives into actual educational practices.

According to the socio-technical perspective, sustainability is achieved when technological and social systems are mutually supportive. The proposed model consequently treats teachers' QWL as an indicator of whether technological development is being achieved under workable human conditions.

5.5 Relationships among the Constructs

The proposed model establishes a sequence of relationships rather than treating the four constructs independently. ICT-enabled digital transformation is expected to influence teachers' QWL, but the direction and strength of this relationship depend on how digital technologies affect professional

demands and resources. Effective and well-designed technologies can enhance flexibility and productivity, but digital demands that are excessive or poorly sustained can weaken QWL.

Institutional support is expected to contribute positively to teachers' QWL by providing technical resources, professional development, leadership support, workload management and opportunities for participation. The relationship between ICT and QWL is also expected to be affected by institutional support. In this sense, it performs a moderating role, helping to determine whether technological change is experienced as a professional resource or an additional burden.

The model further proposes that teachers' QWL contributes to sustainable digital transformation. Teachers who experience manageable working conditions, professional autonomy, institutional support and positive work-life balance may be better positioned to engage constructively with continuing technological change. QWL is consequently conceptualised as a potential mediating mechanism through which ICT and institutional support contribute to sustainable transformation.

The overall model can therefore be represented as:

ICT-Enabled Digital Transformation → Teachers' Quality of Work Life → Sustainable Digital Transformation

with:

Institutional Support → Teachers' Quality of Work Life

and:

Institutional Support × ICT-Enabled Digital Transformation → Teachers' Quality of Work Life

The model thus moves away from a technology-centred understanding of digital transformation towards a human-centred and institutionally supported approach. Its central assumption is that technological progress becomes sustainable when higher education institutions simultaneously invest in digital capacity, organisational support and teachers' working conditions. The relationships identified in this section provide the foundation for formulating the theoretical propositions presented in the following section.

6. THEORETICAL PROPOSITIONS

Based on the theoretical foundations and conceptual relationships discussed in the preceding sections, this study proposes a set of relationships among ICT-enabled digital transformation, institutional support, teachers' Quality of Work Life (QWL), and sustainable digital transformation. These propositions are intended to explain how technological and organisational conditions may shape teachers' professional experiences and contribute to the long-term sustainability of digital transformation in higher education.

6.1 ICT-Enabled Digital Transformation and Teachers' QWL

ICT can improve teachers' professional experiences by providing easier access to academic resources, greater flexibility, improved communication and more efficient management of teaching and assessment activities. However, its benefits depend on the manner in which technologies are designed and integrated into academic work. When digital systems reduce unnecessary effort and support professional activities, they are likely to strengthen teachers' QWL.

Proposition 1 (P1): ICT-enabled digital transformation that improves professional efficiency and flexibility is positively associated with teachers' Quality of Work Life.

Digitalisation can also create additional job demands. Teachers may experience technological complexity, continuous online communication, repeated changes in digital platforms and increased administrative responsibilities. When such demands exceed available resources, ICT may negatively affect workload, work-life balance and well-being.

Proposition 2 (P2): Excessive ICT-related demands are negatively associated with teachers' Quality of Work Life when adequate organisational resources are unavailable.

6.2 Institutional Support and Teachers' QWL

Institutional support can determine how effectively teachers adapt to technological change. Reliable infrastructure, technical assistance, professional development, supportive leadership and reasonable workload arrangements can provide teachers with the resources required to manage digital responsibilities. Participation in decisions concerning technology may also strengthen professional autonomy and confidence.

Proposition 3 (P3): Institutional support is positively associated with teachers' Quality of Work Life during digital transformation.

Institutional support may additionally influence the strength of the relationship between ICT and QWL. The same technological demand may produce different outcomes depending on the level of assistance available. Strong institutional support can help teachers manage technological challenges, whereas weak support may increase the burden associated with digital change.

Proposition 4 (P4): Institutional support moderates the relationship between ICT-enabled digital transformation and teachers' Quality of Work Life, such that supportive institutional conditions strengthen positive outcomes and reduce the adverse effects of digital demands.

6.3 Teachers' QWL and Sustainable Digital Transformation

Sustainable digital transformation requires the continuing participation and engagement of teachers. Teachers who experience manageable workloads, professional autonomy, work-life balance and supportive institutional relationships are more likely to engage constructively with technological change. QWL should therefore be considered an important human dimension of institutional digital sustainability.

Proposition 5 (P5): Higher levels of teachers' Quality of Work Life are positively associated with sustainable digital transformation in higher education.

The proposed model further suggests that QWL connects technological and institutional conditions with sustainable transformation. ICT and institutional support may contribute to sustainability partly through their influence on teachers' everyday working experiences.

Proposition 6 (P6): Teachers' Quality of Work Life mediates the relationship between ICT-enabled digital transformation, institutional support, and sustainable digital transformation.

Taken together, these propositions present digital transformation as a combined technological, organisational and human process. They suggest that sustainable transformation is more likely when ICT development is accompanied by institutional support and when teachers experience digital change as compatible with a productive and balanced professional life. The propositions also provide a clear theoretical basis for future empirical testing of the proposed model across different higher education contexts.

7. DISCUSSION

The theoretical model developed in this study provides an integrated explanation of how ICT-enabled transformation, institutional support and teachers' Quality of Work Life (QWL) may collectively contribute to sustainable digital transformation in higher education. The central argument emerging from the model is that digital transformation should not be understood as a technology-driven process alone. Its sustainability is determined by how well technological changes are matched with institutional capabilities and professional requirements of teachers. The significance of this point of view is that higher education institutions often assess the progress of digitalisation in terms of infrastructure, platforms and the level of technology adoption, whereas less attention is paid to the experiences of people who use these systems in their everyday lives.

The first important issue concerns the dual nature of ICT in academic work. Digital technologies can provide teachers with greater flexibility, faster access to information, improved communication and opportunities to adopt innovative teaching practices. Learning management systems, online assessment tools, virtual communication platforms and digital research resources can simplify several academic activities when they are properly designed and integrated. From this perspective, ICT functions as a valuable job resource. However, the proposed model also recognises that the same technologies may become job demands. Multiple digital platforms, frequent software changes, repeated reporting requirements and expectations of continuous online availability may increase the amount and intensity of academic work. The relationship between ICT and teachers' QWL is therefore unlikely to be uniformly positive or negative.

This interpretation is consistent with the Job Demands–Resources perspective. The effects of technology are also partially dependent on whether educators have adequate resources to handle the requirements that come along with digital work. Even a technologically advanced institution could develop an unfavourable working environment when teachers have to deal with complex systems without proper training, technical support or workload reorganization. Conversely, even substantial technological change may be experienced positively when teachers receive appropriate resources and have sufficient control over how technology is incorporated into their professional practice. Digital

transformation must thus not be measured on the level of technology adoption but on the balance that is established between the digital needs and the available resources.

The second significant argument that emerges out of the model is the role of institutional support. Technology investment and the reality of digitalisation experienced by teachers are mediated by institutional support. Providing hardware, software and connectivity represents only one part of this responsibility. Professional development, responsive technical support, supportive leadership, realistic workload assignment and meaningful opportunities to make decisions regarding technologies that influence their work are also necessary attributes of sustainable transformation. These conditions influence whether teachers perceive digital transformation as an institutional resource or an externally imposed responsibility.

Special attention should be paid to participation in decision-making. Teachers have a practical understanding of classroom needs, assessment procedures, interaction with students and daily academic workflows. They can thus enhance the appropriateness of technologies and their adoption by being involved in choosing and assessing digital systems. An entirely top-down solution can ignore the real-world challenges that can be observed in the implementation process. Participatory digital governance, in its turn, enables technological decisions to be informed by professional knowledge of teachers and can enhance their sense of autonomy and institutional belonging.

The model further suggests that teachers' QWL should be regarded as more than a human-resource outcome. It can be understood as a significant condition for the continuity of digital transformation. When teachers enjoy manageable workloads, sensible work-life boundaries, professional autonomy, development opportunities, and positive institutional relationships, they have a better chance to manage technological change. In contrast, continuing digital pressure combined with weak organisational support may contribute to fatigue, dissatisfaction, and reluctance towards further technological initiatives. A digital approach that does not take into consideration these experiences can attain a first implementation without securing long-term sustainability.

This relationship also demonstrates the importance of the socio-technical perspective adopted in the study. Technology and human work cannot be considered as independent components of an institution. A digital platform can be efficient in terms of technology but ineffective in terms of organisations when it is not aligned with actual academic practices. Likewise, one administrative activity can be reduced, and a multitude of new demands can arise in other areas as a result of technology. The digital transformation needs to be sustainable in a way that emphasizes the entire process of work and not the technological functions in isolation. The digitalisation process can lead to institutional improvement only when the quality of the interaction between the technical system and the social system is determined.

The suggested mediating role of QWL introduces another aspect to this discussion. ICT investment and institutional support do not necessarily result in sustainable transformation when they create workable professional conditions for teachers. QWL offers a means by which long-term outcomes can be affected by technological and organisational practices. For example, institutional investment in reliable digital infrastructure may reduce technological interruptions; professional development may increase teachers' confidence; and workload policies may prevent digital activities from extending unnecessarily into personal time. Together, these conditions may improve teachers' experiences and encourage continued engagement with digital practices. In this regard, QWL helps in transferring institutional resources to sustainable technological participation.

The moderating role assigned to institutional support is equally significant. The effect of ICT may vary according to the level of support surrounding its use. In high-support situations, the requirement of technological change can be manageable, as teachers can access support, training and organisational flexibility. Where support is weak, even relatively simple digital requirements may become stressful because teachers must resolve difficulties individually. This is useful in explaining why the same technologies can have diverse effects across higher education institutions.

Lastly, the model is more widely applicable to the governance of higher education and sustainable institutional development. Digital transformation is a decision-making process that deals with resource distribution, staff training, infrastructure, workload, access and organisational priorities. Such decisions are especially significant in institutions with unequal regional and financial conditions. A sustainable strategy must not therefore assume that technology solutions can be applied across institutions in a

similar manner. Digital strategies need to reflect institutional capacity, local circumstances and the needs of academic communities.

Overall, the proposed model reframes digital transformation as a process requiring the simultaneous development of technology, institutional capacity and human sustainability. ICT provides the technological foundation, institutional support creates the conditions for effective implementation, and teachers' QWL reflects whether transformation remains professionally sustainable. The long-term success of digitalisation in higher education consequently depends not on how much technology an institution adopts, but on how effectively technological development is integrated with supportive governance and the quality of teachers' working lives.

8. IMPLICATIONS

The theoretical model suggested has significant research, institutional management and higher education policy implications. The study proposes that the sustainability of digital transformation is determined by the relationship between technological development and the conditions within which teachers perform their professional duties, linking ICT-enabled digital transformation, institutional support and Quality of Work Life (QWL) of teachers. The consequences thus go further than technology adoption and stress the necessity of a more human-centred approach to institutional digital development.

8.1 Theoretical Implications

The principal theoretical contribution of the study lies in integrating three perspectives that are often applied separately: Socio-Technical Systems Theory, Job Demands–Resources Theory and Organisational Support Theory. Their integration provides a more detailed explanation of the interaction of technological, organisational and human factors in the process of digital transformation. The Socio-Technical Systems Theory explains the need to align technology with the social setting, and the Job Demands-Resources perspective explains how ICT may be employed as a professional resource or work demand. The Organisational Support Theory further elaborates on how institutional practices may influence teachers' ability to address these demands.

The model further builds upon the existing discourse about QWL of teachers by placing it in the context of a possible mechanism of sustainable digital transformation instead of an employee outcome. According to this perspective, the sustainability of digital initiatives may be partially determined by the ability of technological change to create acceptable and enabling working conditions. The model therefore provides a theoretical basis for future studies examining the mediating role of QWL and the moderating influence of institutional support.

8.2 Institutional and Managerial Implications

In higher education institutions, the model says that digital infrastructure investment must be matched by people investment. The implementation of advanced technological systems without adequate training, technical assistance, and workload consideration can limit their efficiency. Institutional leaders should therefore assess not only whether technologies are available but also whether teachers can use them efficiently without unnecessary pressure.

Professional development should be continuous and directly connected with the actual academic needs of teachers. Technical support must also be easily accessible such that teachers do not have to waste a lot of professional time solving system-related challenges. Digital workload should be periodically reviewed by institutions, especially in cases where teachers are supposed to be present on multiple platforms or remain accessible beyond normal working hours.

Another practical implication is teacher involvement in online decision-making. Academic staff consultation before the introduction of significant technological systems can assist institutions in identifying potential challenges and choosing solutions that are applicable to the teaching and administrative reality. This participation can also enhance professional autonomy and promote a higher acceptance of institutional change.

8.3 Policy and Governance Implications

The implications of the proposed model for higher education governance and public policy are also available. Digital transformation cannot be assessed through only a few indicators like infrastructure expenditure, connectivity, or the volume of new digital services introduced. Staff development, working conditions, digital workload, and employee well-being should also be discussed within the policy frameworks as evidence of sustainable transformation.

This issue is particularly relevant where higher education institutions operate under different local and regional conditions. Unequal experiences of digitalisation can be a result of differences in infrastructure, funding, institutional capacity and access to technical expertise. National and regional policies should therefore provide sufficient flexibility for institutions to develop digital strategies suited to their specific contexts rather than relying entirely on uniform implementation practices.

From a governance perspective, sustainable digital transformation requires transparent decision-making, responsible distribution of technological resources and meaningful participation by academic stakeholders. An increased level of coordination between higher education institutions, public authorities and regional development agencies can also assist in reducing digital inequalities and enhancing institutional capacity. Digital development has the potential, therefore, to support not just educational modernisation but other broader objectives of inclusive and sustainable regional development.

Generally, the implications of the proposed model include transitioning towards institutionally supported and human-centred transformation rather than technology-led digitalisation. Higher education institutions are more likely to sustain digital change when technological advancement is accompanied by supportive governance, appropriate organisational resources and serious attention to teachers' Quality of Work Life

9. FUTURE RESEARCH AGENDA

The theoretical model developed in this study provides several directions for future research on sustainable digital transformation in higher education. Since the proposed relationships are conceptually derived, an immediate priority is to examine them through empirical studies. Future researchers may develop suitable measurement instruments for ICT-enabled digital transformation, institutional support, teachers' Quality of Work Life (QWL), and sustainable digital transformation and test the proposed relationships using larger samples of higher education teachers. Structural Equation Modelling (SEM) or Partial Least Squares Structural Equation Modelling (PLS-SEM) may be particularly useful for examining the direct, mediating and moderating relationships proposed in the model.

The research should also focus on future studies that will investigate whether these relationships differ in institutional settings. A comparative study of public and private universities, autonomous and affiliated colleges, urban and rural colleges, and institutions of different levels of digital maturity may provide a clearer understanding of the contextual variations. The cross-country research can also determine the impact that institutional governance and national policies, as well as socioeconomic factors, have on the experiences of teachers in digital transformation.

Longitudinal research would be valuable because digital transformation is an ongoing process rather than a single institutional event. Following teachers over an extended period could reveal how their QWL changes as they gain experience with new technologies and as institutional support systems develop. Interviews and focus groups, as qualitative studies, may be used to complement quantitative results to capture the teachers' everyday workload with digital workload, professional autonomy, institutional support, and work-life boundaries.

The emerging technologies, especially generative artificial intelligence, learning analytics and automated assessment systems, should also be considered in future research. These technologies may create new professional opportunities while raising concerns regarding workload, academic autonomy, ethics, privacy and digital competence. Their influence on teachers' QWL therefore requires careful investigation.

Finally, future studies could extend the model by incorporating factors such as digital leadership, organisational culture, teacher resilience, digital competence and institutional readiness. Such research would help refine the proposed model and provide stronger evidence regarding the conditions under which digital transformation can remain technologically effective, institutionally responsible and supportive of teachers' professional well-being.

10. CONCLUSION

Digital transformation has become an essential part of contemporary higher education, but its long-term value cannot be determined simply by the number of technologies adopted or the amount invested in digital infrastructure. The central argument of this paper is that sustainable digital transformation

depends on how effectively technological development is aligned with institutional support and the working experiences of teachers. Teachers are not just consumers of digital systems; they are central participants who translate institutional digital strategies within institutions into daily practices of teaching, assessment, communication, research and academic administration. Their experiences thus directly relate to the sustainability of digital transformation in the long term.

The theoretical model developed in this study brings together ICT-enabled digital transformation, institutional support, teachers' Quality of Work Life (QWL), and sustainable digital transformation within an integrated framework. Drawing on Socio-Technical Systems Theory, Job Demands–Resources Theory and Organisational Support Theory, the model demonstrates that ICT may function both as a professional resource and as an additional job demand. Digital technologies are capable of enhancing flexibility, resource access, communication and professional efficiency, but can also add workload, technological complexity and expectations of continuous availability. The difference between these outcomes is shaped substantially by the organisational environment in which technology is introduced.

Institutional support therefore occupies an important position in the model. Reliable infrastructure, responsive technical assistance, relevant professional development, supportive leadership, reasonable workload arrangements and teacher participation in decision-making can enable digital technologies to contribute positively to academic work. In this context, QWL becomes more than an employee-related outcome. It represents an important human mechanism through which technological and institutional conditions can contribute to the continuity and effectiveness of digital transformation.

The paper thus contends that there is a need to shift towards a more human-focused and institutionally backed paradigm of digital transformation rather than a more technology-focused one. Sustainable digitalisation requires institutions to consider technological capability, organisational capacity and teachers' professional well-being as interrelated rather than separate concerns. This method is especially applicable to higher education governance because institutions operate within diverse financial, technological, and regional situations and therefore need context-sensitive approaches.

The proposed model is theoretical and still needs to be empirically validated, but it offers a framework for examining how digital transformation can be viewed from a broader perspective. Ultimately, the sustainability of digital change in higher education will not be determined by the ability of institutions to implement emerging technologies, but also by the ability to establish working conditions under which teachers are properly supported, professionally involved, and can engage in the ongoing process of digital transformation.

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ETHICAL DECLARATIONS

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