NEW E-GOVERNMENT STRATEGIES IN PERUVIAN UNIVERSITIES

a María Lila Saucedo Mego, b Rosa Lastenia Sánchez Farroñan, c Elvis Elder Becerra Vásquez, d Victor Hugo Puican Rodríguez

ABSTRACT

Purpose: The purpose of the research was to analyze the management of e-government within universities over time, with a focus on its role in institutional modernization, transformation, and innovation.

Theoretical framework: The research employed a theoretical and documentary methodology to examine e-government initiatives as central components of institutional change within universities.

Design/methodology/approach: The study followed a descriptive research approach, following the guidelines described in the PRISMA statement. A total of 40 documents were collected and comprehensively reviewed and analyzed using a traditional repeated word search method. R-Studio statistical software was used in conjunction with an online tool to identify the main ideas addressed in each paper.

Findings: The findings indicate that the implementation of e-government projects in universities involves challenges beyond technological transition. It was concluded that for institutional change and innovation to occur at the university level, all members of the university community must adopt a culture of quality, efficiency, effectiveness, user orientation, transparency, and accountability.

Research, Practical & Social implications: The research highlights the need for universities to address not only technological aspects, but also cultural and organizational factors when implementing e-government projects. By fostering a culture of quality and accountability, universities can facilitate institutional change and innovation, leading to better governance practices.

Originality/value: This research contributes to the understanding of e-government management in universities by employing a theoretical and documentary methodology. The study emphasizes the importance of considering e-government initiatives as central components of institutional modernization and transformation and provides insights into the challenges and implications associated with such projects.

Keywords: university, technology, management, governance.

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NOVAS ESTRATÉGIAS DE GOVERNO ELETRÔNICO EM UNIVERSIDADES PERUANAS

RESUMO

Objetivo: O objetivo da investigação foi analisar a gestão da administração pública em linha nas universidades ao longo do tempo, com destaque para o seu papel na modernização, transformação e inovação institucionais.

Quadro teórico: A investigação utilizou uma metodologia teórica e documental para examinar as iniciativas de administração em linha como componentes centrais da mudança institucional nas universidades.

Conceção/metodologia/abordagem: O estudo seguiu uma abordagem de investigação descritiva, seguindo as directrizes descritas na declaração PRISMA. Foi recolhido um total de 40 documentos, que foram revistos e analisados exaustivamente através de um método tradicional de pesquisa de palavras repetidas. O software estatístico R-Studio foi utilizado em conjunto com uma ferramenta online para identificar as principais ideias abordadas em cada documento.

Conclusões: Os resultados indicam que a implementação de projectos de governo eletrónico nas universidades envolve desafios que vão para além da transição tecnológica. Concluiu-se que, para que a mudança institucional e a inovação ocorram a nível universitário, todos os membros da comunidade universitária devem adotar uma cultura de qualidade, eficiência, eficácia, orientação para o utilizador, transparência e responsabilidade.

Implicações sociais, práticas e para a investigação: A investigação salienta a necessidade de as universidades abordarem não só os aspectos tecnológicos, mas também os factores culturais e organizacionais ao implementarem projectos de administração pública em linha. Ao promoverem uma cultura de qualidade e responsabilidade, as universidades podem facilitar a mudança e a inovação institucionais, conduzindo a melhores práticas de governação.

Originalidade/valor: Esta investigação contribui para a compreensão da gestão da administração pública em linha nas universidades, através da utilização de uma metodologia teórica e documental. O estudo sublinha a importância de considerar as iniciativas de administração pública eletrónica como componentes centrais da modernização e transformação institucionais e fornece uma visão dos desafios e implicações associados a esses projectos.

Palavras-chave: universidade, tecnologia, gestão, governança.

1 INTRODUCTION

The current global situation is characterized by a rapid process of change affecting almost all areas and structures of society, regardless of socioeconomic status. This transformation is accelerating because of the continuous, innovative and uninterrupted development of information and communication technologies (ICTs), which demand and...
pave the way for a faster response time by the many institutions that sustain society (Bermudez, 2021).

Interculturality allows universities to have the opportunity to identify the diverse customs and cultures of their students, since through this it is possible to develop academic programs that allow them to achieve respect and interaction between mestizos and natives through e-government, but this requires that the authorities play their leadership role efficiently (Izquierdo et al., 2023; Rodríguez et al., 2023).

The above premises are wide-ranging, but this paper will focus on higher education administration, information and communication technologies and e-governance. The aforementioned factors constitute a fundamental axis for the progress of any nation or region towards prosperity (Alcaide et al., 2014; Arias et al., 2022).

It should be noted that, both in a global context and for the purposes of this paper, education is considered a very significant variable, as it is crucial for the overall development of any nation. Then someone might raise an objection and ask what happens to health in such a scenario (Cardona, 2004). The reflection is valid since health is an intangible good to which no price can be put, and it is also an unquestionable pillar of progress and improvement of the quality of life. However, how can health be maintained and preserved without education? Without advances in education, it would be impossible to talk about things like research, innovation, management, generation, and construction of knowledge (Curioso and Espinoza, 2015).

For its part, the introduction and development of information and communication technologies pose a critical challenge for the world of higher education. A challenge that is not only related to the strategic position that the current technological revolution has given to education in general and to the university but is also reinforced by the emergence of novel phenomena in the labor market, such as unexplored occupational content, employment surpluses and the establishment of lifelong learning (Doroncele et al. 2021).

In addition to the above, as part of the advancement of information and communication technologies, new integrating spaces for higher education activities must be developed, communication environments that establish novel modes of interaction within and between academic institutions, as well as with the public. It is fair to ask what role these technological and communication advances should play in a generalized manner in higher education to enable the creation of more efficient, high quality and highly effective academic spaces (Domínguez and Álvarez, 2012).
In the context of e-government, bringing together factors such as higher education administration and political analysis translates into using information and communication technologies to streamline government operations and bring democracy closer to citizens. The success of e-democracy is often defined as the success of e-government in many countries. According to Flores et al. (2020), the objectives of e-democracy as the goal of e-government can be summarized as follows: to provide citizens with access to information and knowledge of processes, services, and policy options to encourage citizen participation.

Virtual universities have been gaining popularity in recent years as a means of responding to the challenges faced by today's university students. These universities use information and communication technologies in "just the right" proportion to give rise to revolutionary new educational practices (Frenk et al., 2011; Flores et al., 2020).

From this point of view, innovation requires a new and more imaginative approach to education that foregrounds the imagination and creative capacity of students. This means fostering change in all aspects of education, including course content and curricula, teaching and learning strategies, pedagogical approaches, research methods and community outreach. According to the 1997 UNESCO proposal, the effectiveness of a university and the reputation it projects to the public depend on several factors, including the quality of its leadership, governance, and administration (Ganga and Muluk, 2017).

Therefore, in the context of increasingly demanding information and communication technologies, higher education institutions must equip themselves with organizational and management structures adapted to online pedagogical practices. This is because attempting to apply the same on-campus management and administration model to online courses is likely to fail soon (Hinojosa et al., 2021).

Thus, an e-governance project may present an interesting possibility as an innovation, transformation, and modernization strategy to oversee the virtualization of higher education that goes beyond mere technological advances, thanks to the incorporation of novel standards of communication, cooperation, and interactive participation among members of the academic community and the community at large (Medina et al., 2013). It also represents an opportunity to improve the internal transparency, performance, and financial reporting of administrations, to better serve the public and strengthen their position as leaders in the provision of services and information (Labraña and Brunner, 2023).
Therefore, the objective of this paper is to address this issue from a theoretical and documentary methodology that includes e-governance initiatives as central components of institutional modernization, transformation, and innovation. From this point of view, we propose a series of fundamental principles for the implementation of these reforms. To this end, the following aspects will be addressed: the impact of ICTs in the university educational environment, e-government, and the modernization of public management.

2 MATERIALS AND METHODS

The study presented was carried out using a methodology based on a systematic review of the literature (Aguilera et al., 2021; Quispe et al., 2021; Villasis et al., 2020). This is a descriptive research that follows the guidelines established within the PRISMA statement (Page et al., 2021), and adopts the suggestions detailed by Bermúdez (2021); and Page et al. (2021): a) formulation of the objective, b) definition of the search equations, c) establishment of the inclusion and exclusion criteria, d) design of the flow chart, e) exhaustive review of the texts, f) analysis of the sources and, g) detailed organization of the results.

2.1 TECHNIQUE FOR OBTAINING INFORMATION

The search for information was limited to the Scopus database, recognized for its great prestige, to obtain relevant and easily accessible information for authors, reviewers and readers. Once the required literature had been compiled, the inclusion and exclusion criteria were established, which are detailed in Table 1, to ensure that only the most relevant studies for the review were included.

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Original or review articles related to the topic of study.</td>
<td>• Articles unrelated to the study, Thesis, editorial, blogs, etc.</td>
</tr>
<tr>
<td>• Studies from 2003-2023</td>
<td>• Outside the established range</td>
</tr>
<tr>
<td>• Published in English or Spanish</td>
<td>• Published in languages other than English or Spanish</td>
</tr>
<tr>
<td>• Open access resources</td>
<td>• Restricted access studies</td>
</tr>
<tr>
<td>• Indexed in Scopus database</td>
<td>• Indexed in databases other than Scopus</td>
</tr>
</tbody>
</table>

Source: own elaboration.

To carry out the search effectively, keywords were carefully selected to help construct the search equations. These equations were formulated by combining Boolean terms such as "AND", #OR" and "NOT" and included descriptors in the international
language, which were adequately translated. In this way, studies were obtained that explored the categories "e-government", "strategies", "universities", "ICT", "digital platforms", using keywords present in the title, summary, and development of the topic. An attempt was made to avoid limiting the search results to obtain a greater amount of relevant information.

2.2 DATA COLLECTION AND ANALYSIS PROCESS

A systematic and selective review of the bibliography was undertaken, following a process that considered the date of publication, author, and title of the work. Figure 1 illustrates how the process of excluding documents was carried out, starting with those that were not related to the research topic, followed by theses, editorial and blogs, then those that were published outside the established range, then those published in languages other than Spanish and English, studies with restricted access and articles indexed in databases other than Scopus. After this process, 40 documents were obtained and thoroughly reviewed and analyzed using a traditional method of repeated word search, through a valuable online tool to identify the main ideas of the topic addressed in each one of them.

Figure 1. Document Exclusion Process (PRISMA)

Source: own elaboration.
In addition, the analysis of the systematization of information was divided into three main areas: thematic area of analysis, country of origin of the resource and frequency of publications, which were analysed using R-Studio statistical software for the descriptive graphic definition of the analysis.

3 RESULTS AND DISCUSSION

Next, the synthesis matrix (Table 2) is presented, a product of the systematic review, elaborated after applying the process of exclusion of the reviewed documents, which allowed for a broader vision and a logical structure of the information, whose purpose was to provide readers with an easy reading and understanding, specifying fundamental aspects that supported the scientific research and propitiated the visualization of the findings that were considered for triangulation, comparison and discussion.

<table>
<thead>
<tr>
<th>N.</th>
<th>Year</th>
<th>Authors</th>
<th>Title of research</th>
<th>Knowledge area</th>
<th>Country of origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2022</td>
<td>Vargas-Salazar et al.</td>
<td>Peruvian university teachers and virtuality in health emergencies</td>
<td>Education</td>
<td>Peru</td>
</tr>
<tr>
<td>2</td>
<td>2022</td>
<td>Frenk et al.</td>
<td>Health professionals for the new century: transforming education to strengthen health systems in an interdependent world.</td>
<td>Health</td>
<td>Peru</td>
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<tr>
<td>3</td>
<td>2004</td>
<td>Cardona</td>
<td>Perception and expectation of Peruvian citizens in relation to e-government</td>
<td>Public management</td>
<td>Spain</td>
</tr>
<tr>
<td>4</td>
<td>2020</td>
<td>Flores et al.</td>
<td>Information Technologies Internet access and the digital divide in Peru</td>
<td>Education</td>
<td>Peru</td>
</tr>
<tr>
<td>5</td>
<td>2020</td>
<td>Franciskovic</td>
<td>ICTs, an opportunity for citizen participation in subnational governments</td>
<td>Public management</td>
<td>Peru</td>
</tr>
<tr>
<td>6</td>
<td>2015</td>
<td>Curious and Portilla</td>
<td>Conceptual framework for the strengthening of health information systems in Peru</td>
<td>Health</td>
<td>Peru</td>
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<tr>
<td>7</td>
<td>2004</td>
<td>Sanchez and Rincon</td>
<td>Digital Municipality and e-Government</td>
<td>Public management</td>
<td>Argentina</td>
</tr>
<tr>
<td>8</td>
<td>2022</td>
<td>Salirrosas et al.</td>
<td>Digital government and modernization in Peruvian public entities</td>
<td>Public management</td>
<td>Peru</td>
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<tr>
<td>No.</td>
<td>Year</td>
<td>Authors</td>
<td>Title and Description</td>
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<tr>
<td>9</td>
<td>2022</td>
<td>Salazar</td>
<td>Digital government and citizen participation: perception of public officials on the role of the Peruvian municipality.</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>2021</td>
<td>Rodriguez et al.</td>
<td>State of web accessibility of e-government portals in Latin America management</td>
<td></td>
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<tr>
<td>11</td>
<td>2022</td>
<td>Salas et al.</td>
<td>Digital collaboration platform applied to university management</td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>2021</td>
<td>Villarreal-Torres et al.</td>
<td>Information Technology Management for Peruvian universities using Cloud Computing</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>2023</td>
<td>Morales et al.</td>
<td>Open government in Peruvian municipalities as an alternative to generate trust among citizens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>2022</td>
<td>Gómez et al.</td>
<td>Resilient academic management: Strategy for university context</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>2021</td>
<td>Diaz et al.</td>
<td>Software for the Design of Didactic Resources during the Covid-19 Pandemic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>2022</td>
<td>Arias et al.</td>
<td>Information and Communication Technologies vs. Upskilling and Reskilling of public employees</td>
<td></td>
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<tr>
<td>17</td>
<td>2022</td>
<td>Trujillo et al.</td>
<td>Digital transformation in Latin America: a systematic review</td>
<td></td>
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<tr>
<td>18</td>
<td>2022</td>
<td>Turpo-Gebera et al.</td>
<td>Media and information literacy and digital culture in Peru technology</td>
<td></td>
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<tr>
<td>19</td>
<td>2008</td>
<td>Crovi-Drueta</td>
<td>Social dimension of ICT access, use and appropriation. technology</td>
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<td>20</td>
<td>2016</td>
<td>Sánchez-Dávila</td>
<td>New ICTs in the Peruvian Andes: theoretical foundations and bibliographic review</td>
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<tr>
<td>21</td>
<td>2015</td>
<td>Garcia et al.</td>
<td>First virtual diploma and master's degree program in biomedical informatics in Peru</td>
<td></td>
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</tr>
<tr>
<td>22</td>
<td>2015</td>
<td>Bouzas-Lorenzo / Mahou-Lago</td>
<td>An evaluation of citizen service web portals in Latin America management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>2022</td>
<td>Pierra et al.</td>
<td>Principles for the development, use and application of ICTs in government management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>2007</td>
<td>Royero</td>
<td>From e-government to e-university: a view from Latin America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Authors</td>
<td>Title</td>
<td>Field</td>
<td>Country</td>
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<tr>
<td>2006</td>
<td>Royero et al.</td>
<td>R&amp;D networks as a strategy for the use of ICTs in Latin American universities</td>
<td>Education</td>
<td>Venezuela</td>
<td></td>
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<tr>
<td>2007</td>
<td>Piñero et al.</td>
<td>Premises for an e-government strategy in university virtualization management</td>
<td>Education</td>
<td>Venezuela</td>
<td></td>
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<tr>
<td>2022</td>
<td>Blas et al.</td>
<td>Modernization of the State in public management: Systematic review.</td>
<td>Public management</td>
<td>Peru</td>
<td></td>
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<tr>
<td>2020</td>
<td>Briceño et al.</td>
<td>Educational management model for virtual learning programs</td>
<td>Education</td>
<td>Chile</td>
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<tr>
<td>2019</td>
<td>Hernandez and Martinez</td>
<td>Challenges of systematized information and communication in the strengthening of public organizations</td>
<td>Public management</td>
<td>Mexico</td>
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<td>2021</td>
<td>Hinojosa et al.</td>
<td>Virtual environments as a tool to support the accounting learning system: A necessary development.</td>
<td>Education</td>
<td>Peru</td>
<td></td>
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<td>2016</td>
<td>Rey-Moreno and Medina-Molina</td>
<td>The omnichannel strategy and the distribution of public services in Spain</td>
<td>Public management</td>
<td>Spain</td>
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<td>2012</td>
<td>Dominguez and Alvarez</td>
<td>Social Networks and University Spaces. Knowledge and Open Innovation in the Ibero-American Knowledge Space.</td>
<td>Digital technology</td>
<td>Spain</td>
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<tr>
<td>2013</td>
<td>Medina et al.</td>
<td>e-Government adoption in voluntary environments</td>
<td>Digital technology</td>
<td>Spain</td>
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<tr>
<td>2014</td>
<td>Alcaide et al.</td>
<td>Scientometric study of research on information transparency, citizen participation and public service delivery through the implementation of e-Government.</td>
<td>Public management</td>
<td>Spain</td>
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<tr>
<td>2017</td>
<td>Torres-Velandia et al.</td>
<td>Infrastructure and technological equipment in CONACYT's consolidated doctorates: a view from public policies and academics.</td>
<td>Technology</td>
<td>Mexico</td>
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<tr>
<td>2023</td>
<td>Labraña and Brunner</td>
<td>The ideology of the new public management from the point of view of Chilean university managers: a multiple case study</td>
<td>Public management</td>
<td>Chile</td>
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<tr>
<td>2023</td>
<td>Castañeda et al.</td>
<td>The digital university: approach to a critical analysis of the digital transformation plans of Spanish public universities.</td>
<td>Digital technology</td>
<td>Spain</td>
<td></td>
</tr>
</tbody>
</table>
It can be evidenced that the studies included in the review point to the analysis of the new e-government strategies, there are also studies that are addressed in Latin America such as Peru, which, mark elementary milestone of complement to the study. Likewise, addressing the knowledge of the development of these tools within the analytical approach part of the different areas of knowledge that describe the continuity of this, focusing great concentration on the framework of education, health, public management, digital technology, and educational technology.

3.1 PUBLICATIONS BY YEAR

Regarding the annual production of the scientific products included for the systematic discourse, it can be seen that the year 2022 had the highest prevalence of scientific production representing 30% (12) of the scientific resources, on the other hand, 12.5% (5) was present in the year 2021, 7.5% (3) was evidenced in the years 2015, 2020 and 2023, 5% (2) in the years 2004, 2007, 2016 and 2017; and finally, 2.5% (1), outlined in the years 2006, 2008, 2011, 2012, 2013 and 2014, these results can be evidenced graphically in Figure 2. In this sense, the analysis algorithm for R-Studio processing was outlined as follows:

```
BD5$Percentage <- paste0(BD5$Percentage * 100,"%")
```

Set the margins so that the country labels are displayed further away from the y-axis.

```
par (mar=c (5, 8, 4, 2, 2) + 0.1, mgp=c (2, 0.7, 0), oma=c (0, 0, 0, 0, 5))
```

Create the horizontal bar chart with horizontal text labels and smaller axis labels
barplot(as.numeric(gsub("%", ",", BD5$Percentage)),

names.arg=BD5$Country,
horiz=TRUE,
main="Percentage by Country",
lab="Percentage",

Set ylab as an empty string

ylab="",

xlim=c(0,100),
las=1,
cex.axis=0.7,
width=0.9)

Adjust the width of the bars

text (x=as.numeric(gsub("%", ",", BD5$Percentage)) + 2,
y=1: length(BD5$Country),
labels=BD5$Percentage,
pos=4)

Figure 2. Publications by year.

3.2 PUBLICATIONS BY SUBJECT OF STUDY

Figure 3 shows the studies organized by area of knowledge. Although the selection of these areas is limited to the public management context, it is important to
show the trend of this type of research. In this sense, the analysis algorithm for R-Studio processing was outlined as follows:

```r
BD5$Percentage <- paste0(BD5$Percentage * 100, "\%")
```

Set the margins so that the country labels are displayed further away from the y-axis.

```r
par(mar=c(5, 8, 4, 2, 2) + 0.1, mgp=c(2, 0.7, 0), oma=c(0, 0, 0, 5))
```

Create the horizontal bar chart with horizontal text labels and smaller axis labels

```r
barplot(as.numeric(gsub("\%", "", BD5$Percentage)),
names.arg=BD5$Country,
horiz=TRUE,
main="Percentage by Country",
xlab="Percentage",
ylab="",
ylim=c(0,100),
las=1,
cex.axis=0.7,
width=0.9)
```

Set ylab as an empty character string

```r
text(x=as.numeric(gsub("\%", "", BD5$Percentage)) + 2,
y=1:length(BD5$Country),
labels=BD5$Percentage,
pos=4)
```
The largest number of scientific resources selected for the review were conglomerated around knowledge of public management, representing 42.5% (17) of the production, followed by a prevalence of 30% (12) in publications in the educational area, 17.5% (7) in digital technology topics, 7.5% (3) in health areas, and finally 2.5% (1) referred to educational technology.

### 3.3 PUBLICATIONS BY COUNTRY

Figure 4 shows the studies organized by country of scientific production. Although the selection of these areas is mostly limited to Peru, it is important to show the trend of this type of research. In this sense, the analysis algorithm for R-Studio processing was outlined as follows:

```r
library(ggplot2)

# Convert the "Percentage" column to numeric format
BD5$Percentage <- paste0(BD5$Percentage * 100, "%")

# Create the line plot with ggplot2 and add labels to each point.
```

Figure 3. Publications by area of knowledge.

![Percentage by area of knowledge](chart)

Source: Prepared by the authors.
The review has given way to an analysis by countries of relevance of scientific production within the systematic informative analysis, it can be seen that Peru represents 48% (19) of the scientific resources taken into account for the analysis, followed by 15% (6) of production in Spain, 12.5% (5) in Venezuela, 7.5% (3) in countries such as Chile and Mexico, 5% (2) in Cuba; and finally, 2.5% (1) in countries such as Ecuador and Argentina.

At this point it is necessary to emphasize that the information presented is fluctuating, i.e., the annual approach to this topic depends on the scientific need to provide foundations related to the subject of study. However, the current trends or within the research period of this systematic review point to the analytical approach of the new e-government strategies from a university nature whose topical parameters frame the impact of ICT in the university educational environment, e-government, and the modernization of public management within the Peruvian framework.
3.3.1 Impact of ICTs in the University Educational Environment

The 1980s saw the emergence of a new wave of information and communication technologies that ushered in a period of rapid social change that continues today. This technological phenomenon gave rise to the formation of a new social structure and, more broadly, to a new type of society that has been labeled the information society or information-based society, which has since evolved into what is now known as the knowledge society, whose mode of development and social structure are based on the new matrix (Vargas et al., 2022; Sánchez and Rincón, 2004).

Technologies for acquiring, producing, storing, processing, transmitting, recording, and displaying data in the form of sound, images and text encoded in acoustic, optical or electromagnetic signals are collectively referred to as "information and communication technologies" (or "ICT" for short). Electronics is a fundamental technology that contributes to the advancement of fields such as telecommunications, computer science, and visual arts (Curioso and Portilla, 2015). ICTs are notable for being interactive, instantaneous, innovative, digital, automatic, interconnected, diverse, and featuring extremely high image and sound quality (Turpo et al., 2022).

Information technology networks serve as a model for the ICT industry. Indeed, stand-alone personal computers offer a wealth of options, but when networked, their capabilities are expanded by several orders of magnitude (Sanchez, 2016). When connected, these systems not only serve to process data stored on physical media (such as hard disks, floppy disks, CD-ROMs, and hard disk drives), but also to access that data, resources and services provided by remote computers, disseminate that data and facilitate communication between users (Crovi, 2008). All this has made the Internet a phenomenon that must now be considered in all areas of human activity (Bouzas and Mahou, 2015).

The widespread use of the Internet is a driving force behind the growing complexity of information society phenomena, including globalization, virtualization, interactivity, and the creation of new community spaces (Ramírez et al., 2011). In turn, Royero (2007) refers to this generalized dissemination of social connections, data, and experience as "The Network Society".

Economic, social, and cultural institutions are undergoing constant change because of the effects of this new paradigm. It is difficult to be effective in any field without considering how it has influenced others (Hernández and Martínez, 2019).
Whether it is the workplace, healthcare, economic or bureaucratic management, industrial or artistic design, interpersonal communication, commerce, information, quality of life or schooling, all these factors have contributed to new ways of organizing work and the emergence of new markets (Rey and Medina, 2016).

From this perspective, it is undeniable that the aforementioned functions form an indispensable chain of reference to guarantee the mission, vision and values of the university, which must be in harmony with the rapid and profound changes taking place in today's world, where telecommunications and information technologies (ICT) provide the guarantee of opportunities to recognize, analyze and address the problems and challenges of preparation in the new digital era (Labraña and Brunner, 2023; Castañeda et al., 2023).

Solutions to these challenges have been incubating over the past decade, and their fruits can now be seen in the drastically altered expression and demographic profiles of today's universities (Doroncele et al., 2021). Some of the most prominent influences on this change appear to be massification, the redefinition of faculty-student relationships, lifelong learning, and distance education (Ganga and Muluk, 2017). The university now has to face new procedures that have been incorporated into the traditional academic rigors, such as online learning (also known as e-learning), collaborative learning, self-education, self-training, virtual classrooms (also known as teleclasses or teleconferences), research networks (also known as e-learning networks), digital libraries (also known as e-library systems), electronic journals (also known as e-journals), and many others (Alcaide et al., 2014; Hinojosa et al., 2021).

In this sequence of thoughts, it is important to note that online education creates a new identity that actively participates in the knowledge society, and that this, in turn, needs a new culture that reaffirms the central place of humanity, and in which the imperatives of technology are in harmony with ethical principles (Briceño et al., 2020; Blas et al., 2022).

According to Blas (2022), one of the traditional functions of universities is research to transform information into knowledge. However, other organizations can perform the same task. However, the application of knowledge requires interdisciplinary cooperation between the natural and social sciences and the humanities, as well as the kind of academic skill that can only be found in a research institution (Pierra et al., 2022).
3.3.2 E-government and Public Management Modernization

As the 1990s progressed, it became evident that ICT-related activities were closely linked to economic growth and social progress, leading governments at different levels to recognize that the widespread adoption of these technologies was a factor in the creation of beneficial externalities for their respective populations (Turpo et al., 2022). This has clearly marked the development and expansion of ICT use in specific sectors of the economy and society (García, 2015).

Government agencies could not be left on the sidelines in any part of this process. In this sense, Hernandez, and Martinez (2019) propose how governments around the world have carried out very different transitions through a variety of actions and initiatives that seek to integrate the widespread use of information and communication technologies in all facets of administration in order to meet the growing expectations of greater openness, accountability and transparency (Royero, 2006; Pierra et al., 2022).

Thus, e-government was born. A broad definition of e-government is "the use of new information and communication technologies to promote more effective and efficient government, making government services more accessible to the public and expanding opportunities for citizens to learn about and participate in government (Blas et al., 2022; Domínguez and Álvarez, 2012).

The Organisation for Economic Co-operation and Development (OECD) proposes an alternative definition of e-government as "the application of Internet-based technologies for business", which emphasizes the use of various tools and applications of new information and communication technologies by the public administration as a means of connecting with other organizations and individuals. E-governance, as defined by Piñero et al. (2007) and Flores et al. (2020), is the strategic and intensive use of information and communication technologies (ICTs), especially the Internet, to deliver public services in a more effective, convenient, consumer-oriented, cost-effective, and efficient manner.

Therefore, the basis of the concept of e-governance is the red structure in which interdependence, nonlinear relationships and cyclical processes underpin the actions of public officials and agencies; for this purpose, telecommunications, and information technologies (ICTs) are an excellent tool because of their logical architecture, functional patterns and the properties of the elements that compose them (Frenk et al., 2022). From this point of view, reforms in key areas such as internal management, public
administration, public services, and public information will be developed through the replacement, support and innovation of systems and procedures managed by the government (Cardona, 2004; Franciskovic, 2020).

E-administration or e-governance, in a nutshell, is the use by public administration agencies of new information and communication technologies, particularly the Internet, to improve the services and information offered to citizens, increase efficiency, and improve the effectiveness of public administration (Salirrosas et al., 2022). It serves a purpose by providing a specific community with access to activities and services that are already part of the scope of a government at the national, regional, or local level (Salazar, 2022).

Therefore, we can say that e-government is not only the technification of existing bureaucracy, but also involves incorporating creativity and innovation into public administration to develop associated procedures for both existing and new services that solve problems and make life easier for citizens (Salas et al., 2022; Morales et al., 2023).

It involves a profound and complex transformation of the processes and structures developed to deliver government services electronically, suggesting that e-government is aimed at improving and modernizing public sector management and accountability. As argued by Villarreal et al. (2021), effective government depends on a wide variety of factors, such as the dedication of civil servants, the nature of political debate, the quality of public services, and the performance of legislative and judicial functions (Diaz et al., 2021). This requires policy makers to be open to a service delivery model that involves many moving parts and complex interactions (Trujillo et al., 2022).

4 CONCLUSIONS

Most e-government experiences in Latin American and Caribbean countries have been hampered by the fact that, beyond the simple incorporation of information and communication technologies (ICTs), their implementation requires the manifestation of profound institutional and cultural changes that demand new values, behaviours, knowledge, and skills.

What this means is that having a coordinated strategy that affects all levels of the educational institution and goes beyond the basic computerization of an academic or administrative agenda should be a top priority. To improve the effectiveness and efficiency of university management through ICTs, it is necessary to re-evaluate the
underlying organizational structures, human relations, and power dynamics within the university itself.

This highlights the importance of including e-Government introduction strategies in broader plans for institutional modernization and transformation. Redesigning processes, defining job roles, implementing training and incentive systems through administrative and electronic academic initiatives require careful overall planning to ensure their effectiveness across organizational cultures, while meeting both external demands and internal requirements for change. The development of e-government initiatives can thus only serve as a springboard for organizational change and development.

The acceptance that ICTs have had in the business world and in society is also something that must be considered; otherwise, universities will continue to be late to the rendezvous of opportunities. In this sense, the premises presented as an e-government strategy can be compared to other factors such as adaptability, information, communication, the role of the teacher, the role of the student, leadership, values, and openness to change.

Without losing sight of the fact that education in the current globalized, globalized, and postmodern context is increasingly precarious, it is essential to implement edtech-driven initiatives that strengthen the social fabric and foster greater social cohesion between different communities. From this perspective, e-government is more important than ever as a platform for the EDUCATION of a citizenry grounded in democratic values and a sense of unity and solidarity.

All of this leads to the conclusion that the university faces more than just technological transition challenges when implementing e-governance projects. Only if all members of the university community adopt a culture of quality, efficiency, effectiveness, user orientation, transparency and accountability will it be possible to bring about the institutional change and innovation needed at the university level.
REFERENCES


the Faculty of Organizational Management, UNIFSL-BAGUA, 8 (5) e01491. https://doi.org/10.26668/businessreview/2023.v8i5.1491


