

Competency Profile for Sustainable Human Resource Management in Healthcare Regulation

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Abstract

This research analyzes human resource management from an organizational sustainability perspective, drawing on responsible business practices and recognizing competitiveness as a key factor for achieving strategic planning with quality and profitability. The objective was to develop an institutional competency profile aligned with the principles of organizational development and sustainability. A descriptive, exploratory, mixed-methods study was conducted using documentary analysis, the nominal group technique, and the Ranking Matrix to develop the competency profile, prioritize and rank competencies, and assess expert judgments. The study proposes implementing a competency-based profile to support sustainable human resource management within Cuba's National Regulatory Authorities (NRAs), specifically the Center for

State Control of Medicines, Medical Equipment and Devices (CECMED). Human resource management plays a fundamental role in fostering knowledge, innovation, and organizational sustainability in a post-COVID-19 environment, where communicative competencies, digital skills, and strategies focused on employee well-being prove essential for responding to emerging demands and improving institutional quality. The research identifies competency gaps, strengthens organizational capabilities, and supports efficient and sustainable regulatory management in the healthcare sector through a sustainability-oriented approach.

Keywords: Human Resource Management; Knowledge Management; Corporate Culture; Sustainable Development; Resource Use Efficiency; Public Service.

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Author Contributions:

Ibel Ortiz-Salatti: Conceptualization, Data Curation, Investigation, Methodology, Writing (Original Draft, Writing) Review and Editing, Visualization, Supervision.

Leinen de la C. Cartaya-Benítez: Conceptualization, Data Curation, Methodology, Writing Review and Editing.

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Introduction

“Current managerial practices require adaptation, planning, and resource control to strengthen competitiveness, while aligning employees with organizational philosophy and values to foster work efficiency” (Lauterbach, 2024). Organizational human development focuses on technical training, managerial competencies, and the values that underpin the organizational unit.

Competency-based management, aligned with organizational process management, focuses on strategies that strengthen the capabilities of employees and management teams, thereby promoting profitability and productivity. Competency profiles describe the knowledge and skills required for a position and their connection to strategic goals. These profiles should not remain static; instead, organizations must review and update them periodically.

Competencies enable individuals to fulfill their work-related or professional responsibilities and consequently achieve satisfactory performance evaluations. An individual's knowledge,

experience, and skills prove essential for performing tasks effectively. These attributes play a decisive role in recruitment, differentiate candidates, and ultimately constitute a person's competitive advantage.

Navarrete-Pilacúan et al. (2024) identify different types of competencies, including technical, methodological, social, and participatory competencies. Competencies may also fall into cardinal or specific categories. Among the competencies expected of employees, the authors highlight continuous learning, work quality, capability, collaboration, communication, knowledge, technical credibility, strategic development, management, innovation, integrity, service orientation, and tolerance to pressure.

Competency-based management replaces traditional processes by focusing on competency development aligned with strategic objectives. This approach enables organizations to identify capabilities through measurable profiles for each position, making competencies a determining factor in recruitment. Lora et al. (2020) states that “competencies comprise the knowledge, experience, and skills required to perform tasks effectively, enabling employees to carry out their duties more effectively.”

According to Dávalos-García et al. (2023), human resource management value the knowledge which an indispensable recourse to administrative and strategic management. The concept of human capital refers to the totality of skills and knowledge that enables individuals to obtain greater benefits. Veloso et al. (2024) argues that human talent management generates benefits for “employees, companies, and the global economy” by improving the work environment, ensuring well-being and safety, training and motivating personnel, and providing fair benefits and salaries.

The 2030 Policy on the Health Workforce: Strengthening Human Resources for Health (PAHO-WHO, 2023), developed to promote resilient health systems, recognizes several challenges in health workforce management, including intercultural, gender, age-related, and income equity among personnel, as well as training aligned with identified needs.

Sustainability has increasingly become a central consideration in efforts to achieve institutional development. The United Nations 2030 Agenda includes Sustainable Development Goal (SDG) 3, “Good Health and Well-Being,” which seeks to “ensure healthy lives and promote well-being for all at all ages.” Target C calls for increased investment in health financing, as well as the recruitment, development, training, and retention of health personnel in developing countries, particularly in least developed countries and small island developing states (Pag. 3).

In Cuba, the Center for State Control of Medicines, Medical Equipment and Devices (CECMED) serves as the National Regulatory Authority (NRA) for these products. Sánchez-González (2019) reports that CECMED has played a prominent role in carrying out its functions and responding to the health-related needs of Cuban society. According to Velázquez-Soto et al. (2025), CECMED ranks among the eight National Regulatory Authorities of Reference (NRARs), given its strategic role in regulating biopharmaceutical innovation in Cuba and throughout Latin America and the Caribbean, building on a longstanding tradition of Good Regulatory Practices. The Pan American Health Organization (PAHO) and the World Health

Organization (WHO) assess NRAs through the WHO Global Benchmarking Tool for Evaluation of National Regulatory Systems of Medical Products (2020).

CECMED has promoted competency-based management to support talent retention and sustain high levels of productivity (Ortíz-Salatti et al., 2025). Its strategic development requires establishing a competency profile that supports sustainable human resource management. In response to the indicators and sub-indicators related to human resource management established in the assessment tool, the need arose to develop an institutional competency profile aligned with the principles of organizational development and sustainability, which constitutes the objective of this research. What answers the research question: ¿what competencies should integrate the institutional profile of CECMED to soften a human resource management alienate with the develop principles and organizational sustainable?

Materials and Methods

A descriptive, exploratory, mixed-methods study was conducted. The Documentary Analysis method was employed to review articles published in scientific journals indexed in the Scopus database, accessed through the Latindex directory, from January to December 2025. The sample selection criteria included recency (publications from the previous five years), accessibility (open access to the full text), and relevance to the research topic.

The search yielded 7,520 results, from which studies that failed to meet the selection criteria were excluded. A total of 350 original and review articles, published in Spanish, English, and Portuguese, were analyzed. More than 60 articles addressed the research topic, spanning 26 journals, 19 of which were indexed in Scopus. Official sources from the Ministry of Public Health (MINSAP), the Pan American Health Organization (PAHO), and the World Health Organization (WHO) were also consulted to complement the scientific evidence.

The Nominal Group Technique was applied with representatives from different areas within CECMED's organizational structure, comprising a total of 10 experts, they are selecting for them years to laboral experience. Participation remained voluntary and free from coercion, and all participants received full information about the study objectives. Confidentiality and anonymity were ensured throughout all stages of data collection, processing, and publication. The collected data were used exclusively for academic purposes and to improve institutional management.

The experts jointly developed a preliminary selection of competencies based on the information gathered from documentary sources. These competencies were presented in a Word Cloud generated using <https://www.nubedepalabras.es/>. To determine which competencies exerted the greatest impact, two Prioritization or Ranking Matrices were developed: one for the scientific literature and another for regulatory documents. The matrices used a 0–2 scoring scale, where 0 indicated No impact, 1 Partial impact, and 2 High impact. Each competency received a score ranging from 0 to 2. The competencies that obtained the highest scores constituted the institutional competency profile.

Results and Discussion

The Nominal Group discussed the identification and prioritization of essential competencies across different areas of work, as well as staff updating, sustainability, and continuing professional development. During the discussion, several questions emerged, as shown in Figure 1.

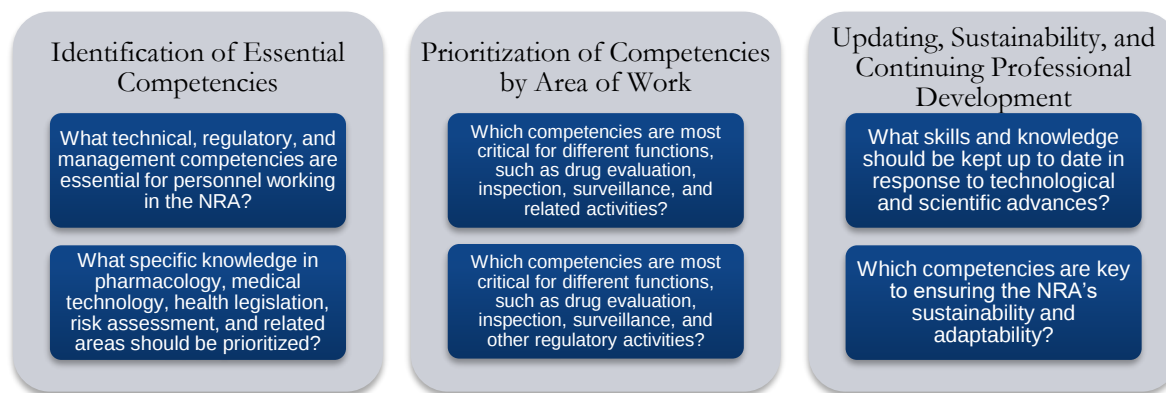


Figure 1. Discussions and questions addressed by the Nominal Group. Source: Authors' own elaboration.

The literature was subsequently reviewed to identify answers to these questions, yielding a set of competencies, as shown in the following Word Cloud (Figure 2):

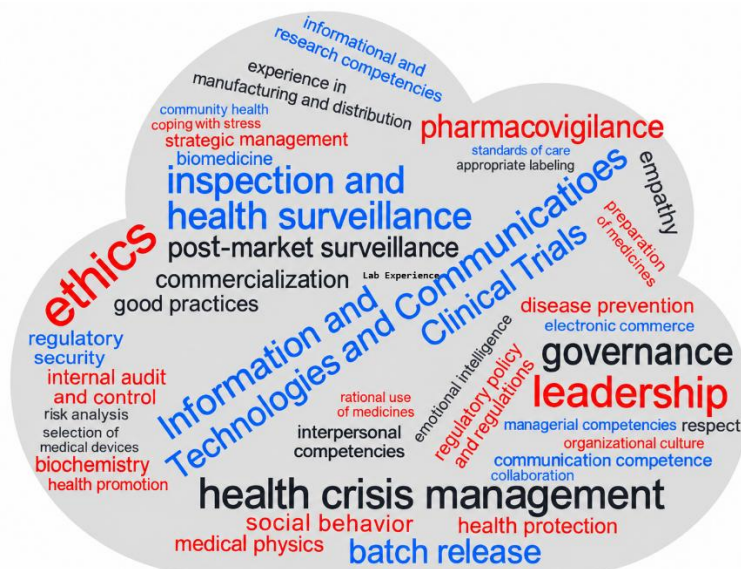


Figure 2. Word Cloud of Competencies in Health Regulation. Source: Author's own elaboration based on <https://www.nubedepalabras.es/>.

In this graphical representation, the size of each word reflects its frequency or relevance within the literature. The visualization highlights patterns and trends by identifying the terms that occur most frequently. The identified competencies were subsequently coded for inclusion in the Ranking Matrix.

The competencies represented include (A) proficiency in *Information and Communication Technologies (ICTs)*, (B) *ethics*, (C) *leadership*, (D) *culture*, (E) *emotional intelligence*, (F) *empathy*, (G) *respect*, (H) *assertive social behavior*, (I) *stress coping*, (J) *self-efficacy*, (K) *low anxiety*, (L) *risk analysis*, (M) *surveillance*, (N) *health promotion*, (Ñ) *health protection*, (O) *disease prevention and community health*, and (P) *health governance and health-crisis management*.

In addition, the literature identifies the need for (Q) *managerial competencies*, (R) *intrapersonal competencies*, (S) *communication competence*, (T) *information, research competencies and collaboration*, (U) *laboratory expertise*, (V) *policy and regulatory standards*, (W) *health inspection and enforcement*, (X) *biomedicine and biochemistry*, (Y) *production and distribution experience*, and (Z) *healthcare delivery*.

To determine which competencies, bear the strongest relationship to health regulation, the results were weighted according to their relative impact, as shown in Table 1.

Table 1. Ranking Matrix 1 (Scientific Literature).

		Competences																										
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Ñ	O	P	Q	R	S	T	U	V	W	X	Y	Z
0																												
1																												
2																												

Legend: ● No impact ● Partial impact ● High impact

Source: Author’s own elaboration.

The expert panel selected 17 competencies with the greatest impact on institutional processes from the 27 competencies initially identified in the documentary sources, then these competencies were ingroup for its interrelation and to develop its better redaction.

The competencies identified in the regulatory documents issued by the Ministry of Public Health (MINSAP), the Pan American Health Organization (PAHO), and the World Health Organization (WHO) included: (A) standards of care, (B) strategic management, (C) e-commerce, (D) auditing and internal control, (E) medicinal product preparation, (F) batch release, (G) post-marketing surveillance, (H) rational use of medicines, (I) medical device selection, (J) clinical trials, (K) medical physics, (L) safety, (M) assertive decision-making, (N) appropriate packaging, and (Ñ) good regulatory practices.

The results were likewise weighted, as illustrated in Table 2.

Table 2. Ranking Matrix 2 (Regulatory Documents).

	Competences														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Ñ
0															
1															
2															

Legend: ● No impact ● Partial impact ● High impact

Source: Author's own elaboration.

On this occasion, 10 of the 15 competencies demonstrated a high impact. The study incorporated these competencies into the formulation of the competency profile, together with those identified in the scientific literature.

The analysis enabled the systematization of a proposed competency-based profile for CECMED aimed at sustainable human resource management. The profile encompasses five areas of action and 25 competencies, as presented below (Table 3).

Table 3. CECMED Competency-Based Profile.

Domains					
Competencies	Strategic	Surveillance and Regulatory	Specific	Community and Health	Managerial
	1. Adopt an innovation-based approach to strategic planning and management.	6. Manage quality and risk management, conduct audits and internal control, evaluation and improvement.	11. Perform activities in pharmacovigilance, post-marketing surveillance and good regulatory practices.	16. Uphold health ethics, bioethics and social and environmental responsibility.	21. Demonstrate leadership, governance and assertiveness in adopting or making decisions.
	2. Manage financial, commercial and human resources.	7. Demonstrate knowledge of enforcement, supervision, monitoring, inspection and verification.	12. Demonstrate skills in chemical and instrumental laboratory analysis, preclinical (veterinary) studies and clinical trials.	17. Show a vocation for service, empathy, self-control, emotional intelligence and commitment.	22. Ensure the safety, health and professional development of personnel and the technical and material provisioning of the institution.
	3. Demonstrate knowledge of information technology, communication, teaching, research and information technologies.	8. General knowledge of registration, certification, surveillance and health-related licensing.	13. Expertise in medical devices, medical physics, biomaterials, pharmaceutical technology and diagnostic products.	18. Remain open to collaboration and teamwork to achieve a good work environment and respect organizational culture.	23. Ability to develop interpersonal and interinstitutional relationships, both nationally and internationally.
	4. Possess an adaptive and flexible general culture.	9. Experience in production, distribution, import, export and operations.	14. Knowledge of biochemistry, microbiology and blood-derived products.	19. Expertise based on evidence and public policies.	24. Mastery of the legal framework and regulatory provisions.
	5. Conduct market research, assess competitiveness and apply e-commerce tools and marketing techniques.	10. Knowledge of registration, batch release, technical standards and regulatory provisions.	15. Training in biomedicine, biotherapeutics (biosimilars), biological products, biomaterials, vaccines and natural medicine.	20. Knowledge of the social environment, suppliers and clients.	25. Provide attention to organizational leaders, process managers, young professionals and talented individuals within the organization.

Source: Author's own elaboration.

National Regulatory Authorities (NRAs) constitute institutions that, within their respective areas of competence, establish legal and technical provisions as well as procedural requirements and, in turn, enforce compliance with the legislation in force governing specific areas of goods and service production. Their mandate seeks to ensure that such activities operate safely, protect human health, the environment, and people's well-being, and guarantee fair trade.

General competencies for regulatory professionals encompass an understanding of public health principles, analytical and communication skills, information management capabilities, and the ability to intervene effectively and manage crises. These competencies remain necessary even when regulatory authorities use or recognize regulatory decisions issued by other jurisdictions.

According to Vuong (2025), human resource management plays a decisive role in measuring knowledge, as knowledge resides in people, who possess unique potential. The links between knowledge management processes and their components (subprocesses, indicators, and the aspects measured by these indicators) occupy a central position within strategic management systems, revealing their relationship with human capital.

Saicharoen et al. (2025) argue that competency-based management has changed expectations regarding professionals by emphasizing the need for individuals with a strategic vision and advanced skills. Organizations must also provide these professionals with the knowledge and competencies required to excel, highlighting the critical interaction between human capital and supply chain success.

According to Eraso-Espinosa and Salazar-Muñoz (2022), COVID-19 heightened the competitiveness of human talent management in some settings as organizations responded to changes arising from health measures and economic recovery. Organizations should focus on continuous improvement and research to optimize processes while monitoring their quality. Personal competencies, perceptions, and motivations significantly influence productivity, thereby strengthening work teams and their capacity to adapt across diverse organizational contexts.

Tello and Tello-Trillo (2024) state that total quality management proves necessary for achieving effective teamwork and strong senior management leadership. Aguilera-Sánchez et al. (2021) assert that risks associated with human resource management form part of quality management and affect organizational sustainability. Organizations must therefore reduce the probability and impact of adverse events while taking current sustainability regulations into account.

Batista-Licca et al. (2023) state that the proposed competency profiles surpass traditional profiles because they draw on actual functions rather than solely on purely cognitive descriptions. Their content depends on each organization's functions, strategy, and culture and should consequently align with its objectives.

An innovation profile constitutes one type of competency profile. Barletta et al. (2024) examine statistical indicators and innovation policies in Argentina, which tend toward a learning model

grounded in science, technology, and innovation. This multidimensional, path-dependent phenomenon emerges through the accumulation of knowledge, routines, organizational practices, and collaborative learning processes.

Amaral et al. (2025) argue that corporate social responsibility (CSR) encourages organizations to launch community projects involving volunteers from both institutions and local communities. A close relationship exists between CSR and total quality management, particularly within health regulatory agencies, where a total quality approach through a quality management system proves necessary and beneficial for loyalty and reputation (Ibarra-Cisneros et al., 2022).

According to Rukmayuninda-Ririh et al. (2025), resource and infrastructure management, together with human resource development, determines specific challenges related to individual skills and competencies within public research institutions. The authors likewise note that CECMED qualifies as a Science, Technology, and Innovation Entity (ECTI). Management support plays a significant role in employee satisfaction and motivation, thereby underpinning long-term commitment and innovative performance.

In the authors' view, regulatory authorities require sufficient qualified and trained personnel, appropriate resources, and adequate information systems to address increases in their responsibilities and functions. A basic assessment of regulatory competencies and the authority's capacity provides insight into gaps within regulatory systems and related functions.

This competency profile will facilitate efficient human resource management, particularly throughout selection, training, and evaluation processes. It also provides the basis for developing profiles by functional area and position, which constitute evidence to be submitted for the center's assessment by the World Health Organization (WHO) through the Global Benchmarking Tool (GBT). This approach ensures that the NRA maintains qualified, experienced, and specialized personnel capable of fully performing its regulatory functions.

This study has the limitation of selection to a very little experts sample (n=10), it's an institutional study with absence of external validation and remarked subjectivity of ranking. Not including findings on position profiles, which future research should address. These profiles may encompass pharmacists, physicians, biologists, chemists, veterinarians, biomedical scientists, biochemists, microbiologists, physicists, engineers, information technology specialists, researchers, economists, teaching staff, administrative personnel, and service staff.

Conclusions

Elaborated a competency profile for the CECMED with 5 ambits and 25 competences that integrates strategic, digital, and ethical skills while aligning with organizational goals. Within this framework, leadership, social responsibility, and health surveillance play essential roles in enhancing institutional quality. Diverse competencies and skills strengthen human capital and promote continuous improvement, total quality, and sustainability. Moreover, achieving job

satisfaction and adapting to evolving demands requires innovative strategies centered on flexibility, recognition, and personal development.

Human resource management constitutes a core process for enhancing organizational knowledge and competitiveness, requiring continuous innovation. This Future research should examine each of the competency profiles that comprise a health regulatory agency.

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