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Sustainable Orientation of Management Capability and Innovative Performance: The Mediating Effect of Knowledge Management

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Abstract: The literature suggests that innovation allows organizations to reach a desirable level of sustainability. There is evidence to support the role of knowledge management (KM) as well as management capability (MC) in producing a sustainable approach at organizations. Furthermore, organizations commonly achieve sustainable practices through corporate social responsibility (CSR). In particular, the health sector is increasingly implementing CSR strategies, although with a narrow understanding of the factors to success. Hence, trends lead to asymmetric growth between organizations. This study aims to examine the mediating role of KM in the relationship between MC and innovative performance (IP) in 331 Health Provider Institutions (HPIs). The research reflective model was assessed through Partial Least Squares Structural Equation Modeling (PLS-SEM). According to the results, MC has a positive effect on IP, MC has a positive effect on KM, and KM has a positive effect on IP. Likewise, KM significantly mediates the relationship between MC and IP. Our findings support the importance of KM in addressing MCs in HPIs as it enables innovative practices to address CSR goals to achieve a sustainable impact. Moreover, this study contributes by expanding KM to contexts that are not usually studied, such as health in a South American country.

Keywords: management capability; innovative performance; knowledge management; sustainable orientation; PLS-SEM

1. Introduction

During the last decade, it has been shown that environmental, social and economic agendas must be merged into a single agenda of inclusive and sustainable growth [1]. Furthermore, there is a scientific consensus on the importance of sustainability on a micro and macro level [2], which requires organizations to align their strategy to a sustainable approach. Therefore, it is supposed that organizations consider sustainability as a conviction rather than as a requirement, meaning that they desire to apply a sustainable approach in all areas of the business. Sustainability constitutes a complex multidimensional system that integrates economic, social/cultural and ecological/environmental aspects [3]. The complexity of sustainability suggests that organizations need to be prepared to face the new challenges it brings, by equipping themselves with powerful traits such as an innovative approach. In fact, innovation is directly linked to sustainability [4].

Similar findings on sustainability claim relationships between it and both management capability (MC) and knowledge management (KM). Dynamic capabilities strongly influence organizational performance. In fact, specific dynamic capabilities, such as sense and response capability and execution capability, are precursors to strategic corporate social responsibility (CSR) for companies [5]. KM can enable sustainable performance. This can be achieved, for instance, by an interchange of knowledge between organizations to foster social change [6], or by developing Circular Economy business models [7]. Moreover, KM encourages open innovation and consequently supports the development of environmental innovations [8]. However, there is not a clear understanding of how these variables that support sustainability in an organization interact and lead to innovative performance (IP).

On the other hand, several prior researchers [9–11] have found a direct and positive impact of corporate social responsibility (CSR) practices on organizations' adoption of sustainable performance, green practices and green performance. Furthermore, researchers have also identified the role of innovation concerning CSR and organizational performance [12–15]. Authors like Mousavi [16] suggest that innovation is the solution to reach good levels of sustainable performance in organizations. For example, product innovation based on a sustainable approach features a reduced environmental impact and allows the company to differentiate itself from competitors in the market [17]. In other words, IP also influences CSR while guaranteeing sustainable performance. In fact, the terms are sometimes used interchangeably in the context of organizational activities.

The health sector is a particularly knowledge-intensive service due to the degree of formalization and specialization. This means that professionals are supposed to manage a large body of complex knowledge to improve medical care. For this reason, knowledge management is considered one of the most critical tools in the health sector as it facilities the efficient use of resources, cost reduction, better patient care and prevention education for patients and families [18,19]. Moreover, an effective and sustainable health system implemented through information management will result in better knowledge management [20] and enable better performance in the provision of health services [21]. Indeed, in the quest for a complete management strategy, the inclusion of CSR practices is increasing in the health sector [22,23]. However, it is missing a complete picture that would allow organizations in this sector to successfully fulfill their CSR requirements. In the end, sustainable and innovative health system generation aims to provide quality medical care that covers the largest number of people possible at a low cost.

Based on the above, this study aims to examine the mediating role of knowledge management in the relationship between management capability and innovative performance. This objective leads to the following research question: What is the direct effect of management capability on innovative performance and its indirect effect, mediated by knowledge management, in Colombian Health Provider Institutions (HPIs)?

The study is divided into five sections: this first section introduces the research topic and elaborates on the research problem. Section 2 reviews the relevant literature on the three research variables (management capability, innovative performance and knowledge management). Then, Section 3 describes the methodology. Section 4 presents the results in relation to four hypotheses. Finally, Section 5 presents the conclusions as well as limitations and recommendations.

2. Literature Review

This section seeks to present a theoretical framework based on the literature reviewed. It shows the theory underlying our research constructs. We present this background according to the variables we are aiming to analyze later on.

2.1. Management Capability (MC)

Management capability is a set of skills that enable organizations, through their board of directors, to interpret the environment adequately while adapting to or even influencing it, creating a two-way relationship [24,25]. Furthermore, these organizational capabilities influence the implementation of a long-term vision and the execution of actions to develop innovation capabilities that will foster organizational growth [26–28]. Mainly, this capability refers to an organization's ability to deploy its available resources in order to achieve the desired results. According to resource- and capability-based theory [29,30], it catalyzes organizational resources.

Management capabilities constitute a set of processes to achieve a specific organizational result, thus the indicators reflect aspects of management capabilities [31]. They are essential for organizations to innovate outside determined frames, to draw an innovation path towards sustainability and to invest in an organizational ecosystem [32]. Organizations employ these management capabilities to interact within and outside the organizational context to establish relationships or alliances with other organizations, research centers, higher education institutions and financial institutions, among others. This highlights the important role of management capabilities in dealing with different strategic partners to lead to innovative processes [31]. Therefore, the following hypothesis is proposed:

Hypothesis 1 (H1). *There is a positive relationship between management capability (MC) and innovative performance (IP).*

An important factor in innovation is knowledge, therefore an organization needs to know how to access and process knowledge [33]. The interaction between tacit and explicit internal knowledge creates organizational knowledge. This knowledge is specific to a given context [34], meaning that knowledge management implementation must care about the particular context where it is applied. Aspects such as organizational structure or culture influence how people carry out sustainable knowledge-sharing activities. On that basis, the following hypothesis is proposed:

Hypothesis 2 (H2). *There is a positive relationship between management capability (MC) and knowledge management (KM).*

2.2. Innovative Performance (IP)

Innovative performance is not defined as an independent construct, but as a set of indicators of innovation capabilities. In general, several innovation measurement approaches are based on a common criterion. This criterion focuses on the development of new products, processes or business models as a real consequence of the success of organizational processes and efforts aligned to innovation [35]. Thus, innovation capabilities represent an important part of the generation of new or improved outcomes that determine the innovative performance [36]. In this way, innovative performance indicators reflect innovation capabilities.

Innovation is crucial to the success of organizations. Innovation transforms science and technology, guides economic growth and development, and provides solutions to eliminate social conflicts and economic crises. In general, it provides benefits to society, the environment and the economy. Likewise, innovation constitutes an essential aspect for managers to achieve a competitive advantage in the health sector because it is a way to promote good practices in sustainability [37].

Innovation can be a tool to address the problems related to sustainability and, in turn, reach new customer and market segments. Organizations that apply a sustainable approach to their innovation processes create value for the development of new products in the market and encourage cooperation among stakeholders [38]. Sustainable innovation is innovation towards more sustainable technologies and processes that are systematic, dynamic, nonlinear and involve a high degree of uncertainty [39]. Therefore, sustainable innovation requires coordination and cooperation.

Decision-making in organizations from different sectors requires special attention to problems of innovation for a sustainable environment. Organizations with sustainable innovation capabilities recognize sustainability as a resource for competitive advantage by featuring their products and services with sustainable attributes [40].

Innovation oriented towards sustainability seeks to contribute to sustainable development regardless of the organization's performance [41]. Sustainable innovation requires that organizations change their competitiveness strategy to one that is more sustainable [42]. To innovate towards sustainability, organizations need to incorporate ecological and social concerns into the corporative agenda. These changes make it more difficult for organizations to adopt and maintain innovation strategies that will end by influencing different organizational aspects, such as product designs, marketing practices, technological mastery, etc. [43].

For this study, there is no hypothesis regarding innovative performance as it is considered an endogenous variable. However, the relevant literature was reviewed to understand how management capability and knowledge management influence it.

2.3. Knowledge Management (KM)

Today's world is home to an information society that is entirely interconnected. Organizations recognize the importance of adequate information and knowledge management, as well as their role in the formulation and implementation of the organizational strategy, and their impact on innovation and subsequently on organizational outcomes [44–46].

There are several approaches to outline a definition of knowledge management. Based on them, knowledge management can be defined as a set of actions oriented to organize and structure organizational processes, mechanisms and infrastructures aiming to create, store and reuse the knowledge that enables the management of innovation [47–58]. This definition considers the vision of organizational knowledge creation and the vision of organizational learning [59–63]. From this, it is understood that the actions described are the product or reflection of an underlying variable, defined as knowledge management.

Knowledge management provides various benefits to organizations, including: (1) preventing the possible loss of information; (2) providing a competitive advantage; (3) the company acquiring greater recognition; (4) continuous learning; (5) increasing the quality of professional services; and (6) helping to meet the needs of costumers [64]. Among the factors that allow or facilitate knowledge management are the organizational culture, the organizational structure, the design of a knowledge management strategy, management support, training and effective leadership. On the other hand, the barriers regarding knowledge management correspond to organizational or individual components [65,66].

Knowledge management is the way for an organization to have a sustainable competitive advantage, besides achieving satisfactory returns. Its implementation requires that employees create, use, manage and share knowledge and information of an organization. This can be explicit (reports, guides) or implicit (transmission of experience among employees) [18]. The literature indicates that proper management of processes within the organization contributes and facilitates sustainable innovation. Knowledge management is supposed to lead to greater innovation capability [67]. The above leads to the following hypotheses:

Hypothesis 3 (H3). *There is a positive relationship between knowledge management (KM) and innovative performance (IP).*

Hypothesis 4 (H4). *Knowledge management (KM) mediates the relationship between management capability (MC) and innovative performance (IP) (indirect effect).*

Figure 1 shows the study model and the four hypotheses graphically.

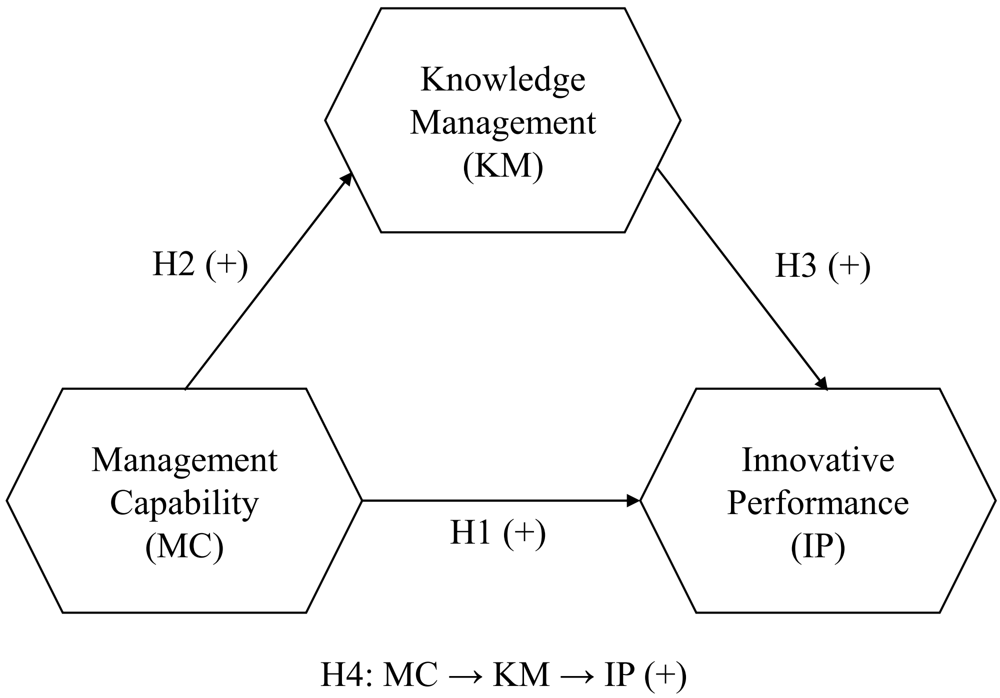

Figure 1. Research model and hypotheses. MC = Management capability; KM = Knowledge management; IP = Innovative performance.

3. Materials and Methods

3.1. Design

To answer the research question, we employed an empirical research. The strategy was associative, exploring the functional relationships among the three variables under consideration. The study was explanatory, meaning we set out to test a theoretical model of the relationships among variables (mediation model). Finally, latent variables design (LVD) or structural equation modeling (SEM) was followed, in which two parts of the model are distinguished, an inner model (relationships between latent variables) and outer model (relationships between indicators and defined latent variables). The statistical approach to estimate the parameters of the SEM model was based on variances, also known as partial least squares (PLS-SEM) [68,69].

3.2. Participants

The sample was composed of workers in hospitals in Colombia, also known as Health Provider Institutions (HPIs). These institutions provide health services to people registered in the General System of Social Security in Health (GSSSH). Quality and efficiency are the basic principles in the provision of HPIs' services. Moreover, they have administrative, technical and financial autonomy. Legally, they all are considered companies as they pursue for-profit goals, although there are some exceptions.

Sampling was non-probabilistic of the intentional type [70]. An a priori statistical power analysis calculated the optimal sample size for the study. Statistical power is the probability of a statistical test (e.g., Welch's *t*-test, Spearman's rho, etc.) finding an effect when it actually exists—that is, rejecting a null hypothesis when it is false [71]. It is also known as the probability of avoiding Type II error. The analysis was executed in G * Power 3.1.9.4 software (Dusseldorf, Germany) [72]. The following input parameters were established for this analysis: a level of significance equal to 0.05 (one tail), expected statistical power of 0.80 (minimum recommended for behavioral and health sciences) [73], expected effect size (f^2) equal to 0.02 as it is the smallest effect size of interest (SESOI) [74], and one predictor. The minimum recommended sample size was 311 (Figure 2). On the other hand, the rule of thumb of 10 cases per predictor, 10 times the largest number of structural paths directed at a particular construct in the inner model, suggests a minimum sample size of 20 cases [75].

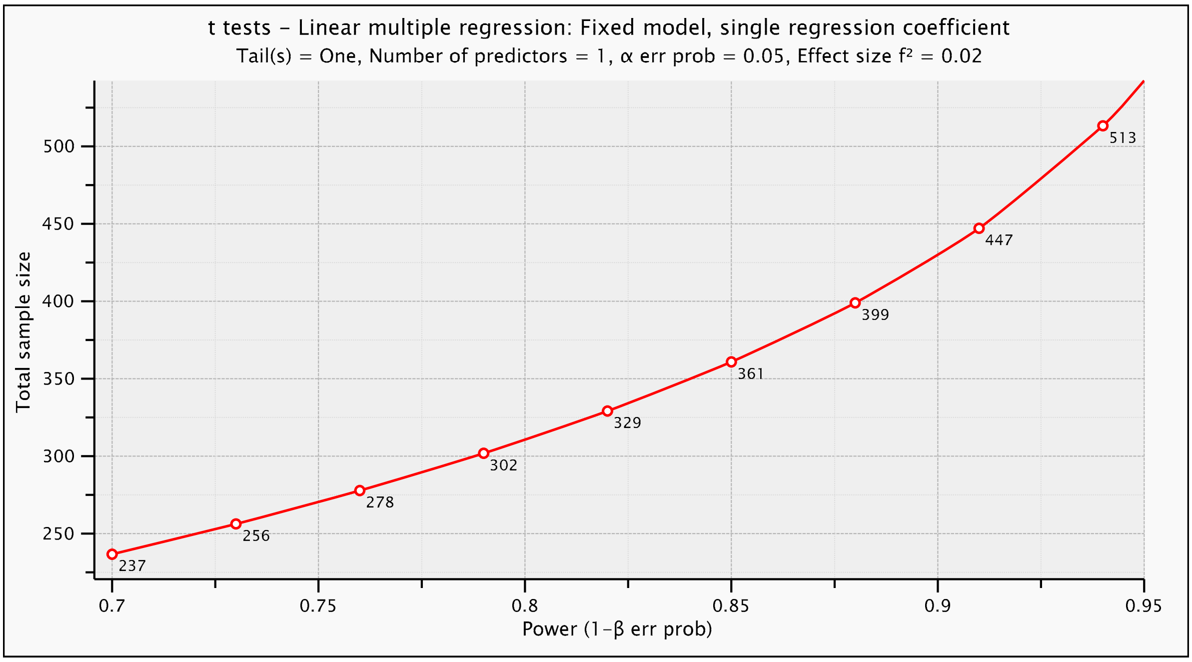

Figure 2. Minimum recommended sample size based on a priori power analyses.

The sample size was composed of 331 workers. The participants were aged between 20 and 66 years old (*M* = 36.82, *DE* = 9.47). Forty-eight percent of the participants belonged to private HPIs and 52% to public HPIs. Regarding the employment relationship with the HPIs, 18% were auxiliaries, 26% were managers or administrative staff, 24% were nurses and 31% were doctors. In terms of education, 2% hold a doctoral degree, 30% hold a specialization, 6% hold a Master's degree, 40% completed an undergraduate degree, 19% are technicians, and 3% do not have an academic degree. Finally, 69% were women (Table 1).

Table 1. Sociodemographic characteristics of participants.

Characteristic	*n*	%
Gender		
Female	218	68.65
Male	100	31.45
Employment		
Auxiliaries	59	18.27
Manager or administrative staff	85	26.32
Nurses	78	24.15
Doctors	101	31.27
Type		
Private	159	48.04
Public	172	51.96
Academic degree		
Doctoral	4	1.24
Master's	19	5.90
Specialization	98	30.43
Undergraduate	130	40.37
Technician	63	19.57
No academic degree	8	2.48

3.3. Instrument

The measuring instruments were three scales applied in healthcare organizations with adequate evidence of validity and reliability [76,77]. These scales measure the following predictors of health innovation capacity: knowledge management (12 items), management capability (seven items) and innovative performance (three items). The scales have 5-point items ranging from 1 (no activity has been carried out to improve the characteristic of interest) to 5 (positive results have been obtained for the aspect investigated). The instrument development study had a sample size of 107 participants belonging to Colombian HPIs between 2016 and 2017, where a systematic review of the literature was used for the selection of variables on the predictors of innovation capacity in healthcare organizations [78], which were grouped into five categories (organizational culture, management capability, knowledge management, human resource management and variables associated with the organization). A Confirmatory Factor Analysis (CFA) corroborated the theoretical model, providing evidence based on internal structure [77]; also, the alpha coefficients were greater than 0.700 and the corrected item-test correlations were above 0.400—all statistically significant, indicating an adequate level of reliability by internal consistency [76].

3.4. Procedure

Information on the HPIs was obtained from the network of high-complexity hospitals in Colombia between 2016 and 2018. A web application supported data collection. Participation was done voluntarily and on the basis of informed consent. The average response time was 10 min. The information, collected automatically, generated a database for subsequent analysis.

The study complied with the ethical standards of the Declaration of Helsinki of 1975 (ethical principles for medical research involving human subjects). Likewise, the informed consent of the participants was mandatory to consider the responses, and the confidentiality safeguard was respected.

3.5. Data Analysis

Following the research design, Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analysis the outlined reflective model. PLS-SEM belongs to the SEM family, with a focus on the analysis of variance [79]. An advantage of this analysis regards the absence of assumptions about the distribution of the data. Due to their algorithms, PLS-SEM can also estimate models with small samples and still produce results with high levels of statistical power [80,81]. SmartPLS 3.2.8 software (Bönningstedt, Germany) [82] was used to perform the analyses. Following the methodology, two models are assessed: outer and inner models. The outer model is assessed through convergent validity (Average Variance Extracted, AVE), divergent validity (Fornell and Larcker criteria, the Heterotrait–Monotrait Ratio (HTMT) and reliability for internal consistency (outer loadings, Cronbach's alpha, rho_A and Composite Reliability, CR) were evaluated. The inner model was evaluated through the size and statistical significance of the path coefficients, explained variance (R^2), effect size (f^2) and predictive relevance (Q^2).

4. Results

4.1. Assessment of Reflective Outer Model

The individual reliability of the items is assessed through outer loadings, considering appropriate values to those exceeding 0.708 [79]. Through iterative debugging processes, the KM_7 item of knowledge management was removed from the model, as it had an outer loading equal to 0.687. In the final model (Table 2 and Figure 3), all items have loads above 0.708, ranging from 0.731 (KM_9) to 0.923 (IP_2).

Table 2. Assessment of convergent validity and internal consistency reliability.

Construct/Indicators	Outer Loadings	Weights	Alpha	rho_A	CR	AVE
Management capability (MC)			0.927	0.927	0.941	0.695
MC_1	0.836	0.170				
MC_2	0.857	0.171				
MC_3	0.826	0.169				
MC_4	0.799	0.166				
MC_5	0.853	0.181				
MC_6	0.850	0.178				
MC_7	0.813	0.165				
Knowledge management (KM)			0.933	0.935	0.943	0.600
KM_1	0.811	0.117				
KM_2	0.829	0.121				
KM_3	0.796	0.115				
KM_4	0.746	0.121				
KM_5	0.795	0.139				
KM_6	0.770	0.127				
KM_8	0.766	0.114				
KM_9	0.731	0.106				
KM_10	0.775	0.115				
KM_11	0.751	0.107				
KM_12	0.741	0.110				
Innovative performance (IP)			0.902	0.904	0.939	0.836
IP_1	0.914	0.366				
IP_2	0.923	0.382				
IP_3	0.907	0.345				

Note: CR = Composite Reliability; AVE = Average Variance Extracted.

The reliability due to internal consistency of the constructs was evaluated using the Cronbach's alpha [83], coefficient rho_A [84] and Composite Reliability (CR) [85]. Coefficients greater than 0.800 were considered good [76] as it is the recommended threshold for studies in confirmatory stages. In this study, the three constructs of interest show a high level of internal consistency, exceeding in all cases a value of 0.900 (Table 2).

Convergent validity was assessed by the Average Variance Extracted (AVE), equivalent to the commonality of a construct. AVE values higher than 0.500 are good [86] as they explain more than half of the variability of the items they reflect. The three constructs presented values equal to or greater than 0.600, meaning the convergent validity is supported (Table 2).

Discriminant validity refers to the degree to which a construct differentiates from others. In other words, it enables us to ensure that constructs measure only what they were developed to measure. Discriminant validity was analyzed by two methods. One, the Fornell and Larcker criterion [87], requires that the square root of the AVE of each construct be higher than the correlation with any other construct. This condition is met for innovative performance (Table 3).

Table 3. Assessment of discriminant validity using Fornell and Larcker criterion.

Construct	Management Capability	Knowledge Management	Innovative Performance
Management capability	0.834		
Knowledge management	0.867	0.774	
Innovative performance	0.836	0.797	0.914

Note: On diagonal, square root of Average Variance Extracted (AVE); Intercorrelations between constructs are presented below the diagonal.

The second method was the Heterotrait–Monotrait Ratio (HTMT) [88], which is the average of the heterotrait–heteromethod correlations of a multitrait–multimethod (MTMM) matrix. The statistical discriminant validity test (HTMTinference) employed the confidence intervals for the

HTMT calculated by bootstrapping. When the confidence interval does not contain the unit, it means a good discriminant validity. In this study, HTMTinference does not indicate discriminant validity problems for three constructs (Table 4).

Table 4. Assessment of discriminant validity using the Heterotrait–Monotrait Ratio (HTMT).

Construct	Management Capability	Knowledge Management	Innovative Performance
Management capability		0.913 [0.888; 0.935]	0.930 [0.910; 0.946]
Knowledge management			0.862 [0.830; 0.889]
Innovative performance			

Note: Heterotrait–Monotrait Ratio (HTMT) are presented above the diagonal; numbers in brackets represent the 90% bias-corrected and accelerated confidence intervals derived from bootstrapping with 10,000 samples.

4.2. Assessment of Inner Model

4.2.1. Significance and Relevance of Path Coefficients

The results of the bootstrapping procedure with 10,000 samples and using the no sign changes reveal that all inner model relationships are statistically significant. Table 5 shows the significant impact of management capability on innovative performance, direct effect (0.585, $p < 0.001$) and knowledge management (0.867, $p < 0.001$). On the other hand, knowledge management has a lower effect on innovative performance (0.290, $p < 0.001$). Regarding effect sizes (f^2), H1 has a moderate effect ($f^2 > 0.150$), H2 has a strong effect ($f^2 > 0.350$) and H3 has a weak effect ($f^2 > 0.020$) [89]. Indirect effect (H4) was also statistically significant (0.251, $p < 0.001$) with a weak effect size ($f^2 > 0.020$). This results indicates that the model is complementary (partial mediation) [79,90].

Table 5. Inner model results and predictive performance summary.

Hypothesis	Path Coefficient	*t*-Statistic	*p*-Value	95% BCCI	f^2	R^2	Q^2
H1 (MC → IP)	0.585	9.145	0.000	[0.455; 0.711]	0.303	0.720	0.684
H2 (MC → KM)	0.867	59.179	0.000	[0.833; 0.890]	3.041	0.753	0.735
H3 (KM → IP)	0.290	4.343	0.000	[0.150; 0.416]	0.074		
H4 (MC → KM → IP)	0.251	4.329	0.000	[0.131; 0.358]			

Note: 95% BCCI = 95% bias-corrected confidence intervals.

4.2.2. In-Sample Model Fit

To assess the fit of the model to the data, the degree of variance explained (R^2) of the endogenous construct was calculated. Management capacity presented an R^2 greater than 0.300 [91] concerning the two exogenous variables (knowledge management and innovative performance), which is an adequate value (Table 5 and Figure 3). Therefore, the new model tested in this data sample is considered relevant as it holds sufficient predictive capacity.

4.2.3. Out-of-Sample Predictive Power

We used PLSpredict with 10 folds and one repetition to mimic how the PLS model will eventually be used to predict a new observation. Subsequently, we calculated Q^2 to evaluate the predictive capability of the research model. Regarding Q^2 interpretation, positive values mean that the prediction error of the PLS model is smaller than the prediction error using the mean values. Q^2 values above 0.500 are considered adequate [92]. The Q^2 results are satisfactory for this criterion, meaning that the endogenous variable management capability is supported (Table 5).

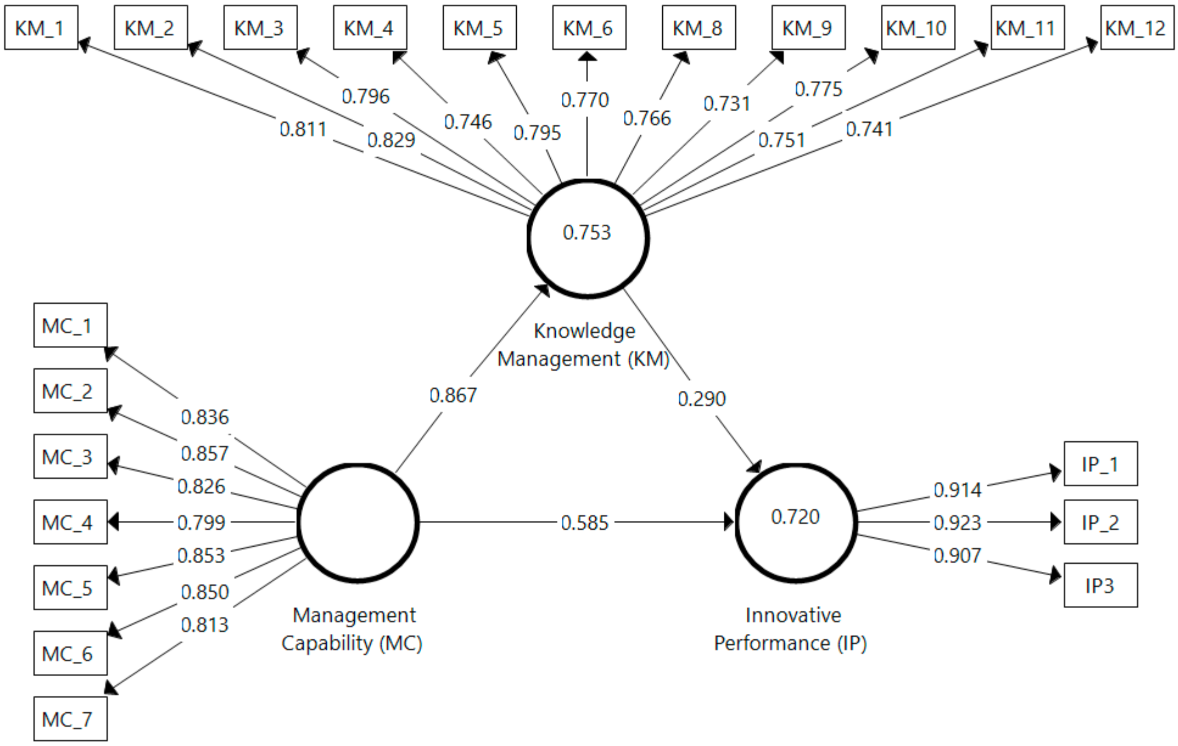

Figure 3. Assessment results of path coefficients and variance explained (R^2).

5. Discussion

This study confirms the positive influence of MC on KM and IP ($p < 0.001$ in both variables), supporting Hypotheses 1 and 2. It was also found that KM positively influences IP ($p < 0.001$), supporting Hypothesis 3. Furthermore, the study found a mediating effect of KM in the relationship between MC and IP ($p < 0.001$), supporting Hypothesis 4. Our findings corroborate the technical postulates of the study and lead to new contributions on this topic.

This result indicates that the model is a complementary partial mediation, where KM explains or probably confounds the relationship between MC and IP [93]. This indicates that a portion of the effect of MC on IP is mediated through KM, yet MC still explains a portion of IP that is independent of KM. This partly contradicts Hypothesis 4. While support is provided for the hypothetical mediation relationship, complementary mediation suggests that the model may have omitted another mediator with an indirect path but the same direction as the direct effect [79].

Sustainability is a complex concept and requires different elements for good implementation into an organization's practices. Prior research found that MC, KM and IP are directly related to sustainability. In fact, prior research devoted to understanding some of these individual variables in the health sector went further in the sense of evaluating the moderating effects of some factor such as (1) competitive environment; (2) learning climate; (3) flexible structure; (4) organizational culture; (5) exploration capability and (6) exploitation capability [94]. However, there was no study that integrated these variables into a single model to assess the contribution of each one to the whole picture. This study provides empirical evidence of these relationships.

Sustainable innovation drives knowledge growth and its dissemination within an organization and between organizations [6], and has an impact on the CSR. Thus, the application of a sustainable innovation approach helps reduce some market inefficiencies [95]. For this reason, and according to this study's results, implementing a better knowledge management system in the health sector will contribute to developing innovative outcomes by considering the academic perspective [96].

Knowledge management paves the way for innovative performance through knowledge acquisition and the ability to respond to knowledge. In turn, these practices, together with the dissemination of knowledge, are positively and significantly related to the innovative performance of organizations [97]. Additionally, knowledge management practices, namely creation, integration and application, directly impact innovative performance. Thus, knowledge creation has a determinant effect on the speed, quality and quantity of innovation [98]. As knowledge management implementation based on innovation results in positive outcomes for organizations, several implementation models have been proposed [99]. The relationship between knowledge management and innovative performance is aligned with that in other studies and we consider the knowledge management components that enable this relationship.

HPIs represent the center of the relationships among stakeholders, institutions and processes in knowledge generation in the health sector. An HPI represents a complex system that performs as a knowledge organization [100]. Therefore, HPIs require more than a healthcare perspective, as they are also systems that integrate scientific work (knowledge generation) and professional practice (training and service provision). HPI managers are strongly encouraged to embrace this new vision for HPIs, noted for the benefits it grants to society, as they gather together teaching, research, innovation and patient care. In general, these are very powerful organizations with a wide scope that facilitate knowledge generation by developing research, innovation and sustainability. In fact, HPI managers must be aware of the decisive role they play in the production of new technologies and processes within a sustainability framework.

However, the intention of health organizations to implement CSR was found to be asymmetrical in that they have no baseline with which to accurately assess the new CSR-related processes that are being implemented [22,23]. This is crucial given the direct association it has with sustainable performance [4]. According to the results of this study, pursuing innovation while attending to MC and KM is important for maintaining a sustainable approach. However, this should not be too difficult if HPIs commit to good general practices, as this sector by definition requires outstanding knowledge management.

According to our findings, knowledge management processes affect innovation, improving overall organizational performance, which agrees with the conclusions of Durmuş-Özdemir and Abdukhoshimov [101]. Sharing information and innovating go hand in hand and help organizations to keep up with the market [102]. In a knowledge-based society, information is the key element and everyone will be judged by how they manage it. This means that managing and exchanging internal information or working with other institutions have positive effects on innovative performance. In other words, this effect considers the exchange of knowledge as an antecedent of product innovation [103]. Furthermore, this relationship is strongly mediated by the degree of product innovation, and outlines a route towards sustainability.

This study provides some key ideas on how management capability and knowledge management can facilitate better, more innovative performance in the health sector, by presenting a competitive advantage. However, it is recommended that further research be conducted along these lines. Thus, similar studies must be carried out in other service sectors, within private (e.g., retail, transport or communication) or public (urban planning, environmental protection or security) organizations. An interesting goal is to explore how other service organizations align their current business model with a sustainable approach. Moreover, this study only worked with the management capability from a one-dimensional perspective, given the operationalization of the construct. It is suggested that one could address new research questions to broaden the understanding of management capability. For instance, what management capability processes enable the implementation and maintenance (or, conversely, inhibit) innovations in health service organizations, considering specific contexts?

One of the limitations of the study regards the use of self-reported scales, which creates problems related to response styles (e.g., acquiescence or social desirability) [104]. To address this limitation, participation was anonymous, the evaluation was done in a standardized manner, strange response patterns were identified, and atypical or extreme values in the database were removed. Another limitation is the cross-sectional nature of our research design, which excludes the time dimension. However, the data served to validate our hypothetical relationships, and the scales used were chosen to ensure greater precision in the measurement of the constructs and a broader collection of data for the investigation of management capability, knowledge management and innovative performance. Therefore, we recommend that future research use more advanced data collection methods to deepen the knowledge of the causal relationships identified in this study.

6. Conclusions

The objective of the study was to examine the role of knowledge management as a mediator in the relationship between management capability and innovative performance in Colombian Health Provider Institutions (HPIs). The four hypotheses presented through the theoretical review of this study were contrasted and confirmed. The PLS-SEM and PLSpredict methods were used in order to achieve the study's objective. According to the results, management capability has a positive effect on performance innovation. Also, management capability has a positive effect on knowledge management, and knowledge management has a positive effect on performance innovation. Likewise, we found a significant indirect effect as knowledge management mediates the relationship between management capability and performance innovation.

The main implications of the study comment on both theory and practice. From a theoretical point of view, the proposed model provides evidence of the relationships among the three constructs in the health sector, taking into consideration the importance of each one for a sustainable performance. This relationship has not previously been studied in Latin America, specifically in Colombia. Research in this country focuses mainly on the primary sector and not on the tertiary or provision sector of services. On a practical level, these results encourage politicians, directors and administrative staff in the health sector to stress the attention given to knowledge management processes within organizations, as well as improve their management capability, through program training, the evaluation of internal processes, audits or other mechanisms. This is particularly important for those organizations aiming to implement socially responsible processes (in line with CSR).

Bearing in mind that all members of society are called to contribute to Sustainable Development Goals (SDGs), health organizations play an especially important and natural role here, due to their purpose of prolonging life. However, our findings suggest they are able to achieve more in this regard and should direct their efforts to particular sustainable goals such as ending poverty worldwide; guaranteeing a healthy life and promoting well-being for all at all ages; and finally, promoting innovation through industrialization and infrastructure. In this way, besides the sustainable impact the health sector will have, it will also itself benefit from the improvement of its knowledge capabilities and will consequently be more likely to achieve innovative outcomes.

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Appendix A.

Measurement items:

1. Management capability (MC)

- Achieve a consensus on the importance of innovation to the success of the HPI. (MC_1)
- Allocate resources dedicated to innovation in the areas responsible for achieving that objective. (MC_2)

- HPI has leaders who are responsible for innovation management. (MC_3)
- Innovation processes reduce costs in HPI. (MC_4)
- Strengthen the willingness to change in the collaborators, in such a way that allows the HPI to adapt to the different variations that surround it. (MC_5)
- Align daily tasks with HPI plans. (MC_6)
- Ensure resources (monetary, personal or time) to undertake innovation processes. (MC_7)

2. Knowledge management (KM)

- Review the daily activities of the HPI in order to improve the service. (KM_1)
- Record experiences gained within the organization so they can be shared with members of the HPI. (KM_2)
- Share knowledge through the different units or areas of the HPI. (KM_3)
- Work continuously in recognition of user needs. (KM_4)
- Evaluate new technological advances in order to incorporate them into the daily work of the HPI. (KM_5)
- Promote the use of Information and Communications Technology (ICT) in order to generate greater benefits for users. (KM_6)
- Generate learning opportunities for employees (through the completion of tasks, problem-solving, search for alternatives, proof of different options, errors, observation or feedback from other people, a conversation between colleagues). (KM_7)
- Analyze information related to changes in the environment (trends in patient care, new technologies, new surgical procedures, changes in regulation, etc.) to determine what the HPI will do. (KM_8)
- Ensure that the information collected serves as input in the daily management of the HPI. (KM_9)
- Consolidate information systems to organize knowledge. (KM_10)
- Make your employees more informed about their work. (KM_11)
- Allow open communication between all members of the organization. (KM_12)

3. Innovative performance (IP)

- Introduction of new services to its users. (IP_1)
- Constantly develop innovative projects. (IP_2)
- Generate new processes in the HPI (new ways of performing daily work, new surgical procedures, new systems). (IP_3)

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