Cuban Journal of Public and Business Administration
ISSN 2664-0856 RNPS 2458 / Vol. 6 No. 3 / September-December (2022) / e236
Available in: https://apye.esceg.cu/index.php/apye/article/view/236

Original article

METHODOLOGY OF DASHBOARD AND BALANCED SCORECARD IN GOVERNMENT MANAGEMENT ORIENTED TO INNOVATION

METODOLOGÍA DE LOS TABLEROS Y CUADRO DE MANDO INTEGRAL EN LA GESTIÓN DE GOBIERNO ORIENTADA A LA INNOVACIÓN

Omara Aldama López [I] https://orcid.org/0000-0002-6192-5061
Mercedes Delgado Fernández [II] https://orcid.org/0000-0003-2556-1712
Miguel Díaz-Canel Bermúdez [I] https://orcid.org/0000-0002-2651-4953

[I] Presidency of the Republic, Havana, Cuba
[II] Higher School of State and Government Cadres, Havana, Cuba

* Corresponding author: omara@palacio.cu

Classification JEL: C02, H10, H11

DOI: https://doi.org/10.5281/zenodo.7084869

Received: 7/05/2022
Accepted: 31/08/2022

Abstract

The article aims to propose a methodology for obtaining Dashboards and Balanced Scorecards for government management oriented towards innovation, considering the conceptual and legal framework, the objectives and indicators identified. The methodology is supported in three stages and 11 steps. The partial results achieved with the construction of the Dashboards and the indicators identified in the first stage are presented. The generalization capacity of this methodology is demonstrated by its implementation in obtaining the Dashboards corresponding to the organisms of the central administration of the state, organs, national entities and the macro-programs of the National Plan for Economic and Social Development to 2030, to through collaborative work deployed for the generation of knowledge and decision making.

Keywords: balanced scorecard, dashboard, management, government, innovation, computerization, digital transformation

Published by Superior School of State and Government Cadres, Havana, Cuba

Resumen

El artículo tiene como objetivo proponer una metodología para la obtención de los Tableros de Mando y los Cuadros de Mando Integral de la gestión del gobierno orientada a la innovación, teniendo en cuenta el marco conceptual, legal, los objetivos e indicadores identificados. La metodología se soporta en tres etapas y 11 pasos. Se presentan los resultados parciales alcanzados con la construcción de los Tableros de Mando y los indicadores identificados en la primera etapa. La capacidad de generalización de esta metodología está demostrada por su implementación en la obtención de los Tableros de Mando correspondientes a los organismos de la administración central del estado, órganos, entidades nacionales y los macroprogramas del Plan Nacional de Desarrollo Económico y Social al 2030, a través del trabajo colaborativo desplegado para la generación de conocimiento y la toma de decisiones.

Palabras clave: cuadro de mando integral, tablero de mando, gestión, gobierno, innovación, informatización, transformación digital

Introduction

In Cuba, three pillars of government management are defined: computerization, social communication and science and innovation.[1] The Informatization policy, put into effect in 2018, is aimed at the political, economic and social development of the country and in the digital transformation policy is currently being drawn up. In relation to electronic government, its role in the management of public administration is highlighted to increase its effectiveness and efficiency with the use of Information and Communication Technologies.[2] In electronic government, the use of tools for information management contributes to the decision-making of the country's main decision-makers. Among these tools, the Dashboards (DB) and the Balanced Scorecard (BSC) are recommended, which include strategic maps,[3] modeling and dynamic simulation.[4] The use of the BSC is also combined with fuzzy logic and quality function deployment (QFD).[5]

The Balanced Scorecard (BSC) was defined by its creators as a "Management System"[6,7] with the aim of measuring the situation and evolution of a company from a general perspective, providing information about the degree of compliance with the strategic objectives, through the observation and measurement of the data corresponding to the related key indicators. Originally conceived by Kaplan and Norton (1996) to be used in the business environment,[8] as of the 2000s its use has been extended to the public administration sector, such as in the National Green Innovation Systems[9] and nonprofit organizations. profit.[10]

It is necessary to take into account that in the definition of the BSC, it is proposed that it serves as the basis for an integrated and iterative strategic management system, which allows aligning management processes and focusing the organization on the implementation of a long-term strategy.[11] In the management of public institutions, it is necessary to implement network models, legislative modernization and quality management based on results, to improve the ability to solve problems and the participation of citizens in decision-making.[12] This The approach is valid for government institutions in Cuba, which requires establishing and implementing management tools appropriate to the demands of

updating the Cuban economic and social development model,[13] recommending among these the DB and the BSC.[3,14,15]

In the current international scenario, Cuba faces a very complex and challenging environment aggravated by the intensification of the Blockade and the measures imposed by the US governments, for which it is necessary to seek the greatest efficiency and effectiveness in the implementation of the National Plan for Economic and Social Development to 2030 (PNDES 2030).[16] In this context, having agile and timely information with DB and BSC can contribute to decision-making aimed at the strategic development of the country.

The systematic application of the DB and BSC requires the use of different methods and tools of information management systems in close relationship with Information and Communication Technologies, which enriches their possibilities of use and results. This includes the design of DB for public administration in smart cities according to the classification of users by their experiences and skills,[17] the open data approach,[18,19] its functionalities related to historical data, data filtering and integration capabilities, visualization, analysis and configuration or customization according to specific needs.[20] In addition, an increase in the use of DB has been observed in this stage of COVID-19.[21,22]

The article aims to expose the methodology for obtaining the DB and the BSC of government management in Cuba. This research is supported by the Innovation-Oriented Government Management Model (MGGI, by its acronym in Spanish)[14] that is projected and deployed in Cuba, which includes the development of various BSC, with their corresponding Dashboards, adjusted to the national reality. This government management requires adopting a strategic and comprehensive approach aimed at meeting the goals defined in the sustainable development indicators (economic, social and environmental) and in the PNDES 2030.[3,14,16]

Materials and methods

In the characterization of the innovation-oriented government management model (MGGI), it is stated that the government management information systems should include dissimilar indicators aligned with the Sustainable Development Goals (SDGs) and strategic axes of the PNDES 2030, with relevance and comprehensiveness. and the use of the Balanced Scorecard.[3,14,15] On the other hand, it should be noted that the BSCs are not a common practice in the Cuban public administration, for which computer support and information flows are needed to complement their use, issues that are also included in the proposed methodology.

The methodological proposal for obtaining the Dashboards and Balanced Scorecard of the government at the central level comprises three stages and 11 steps, as shown in **Figure 1**.

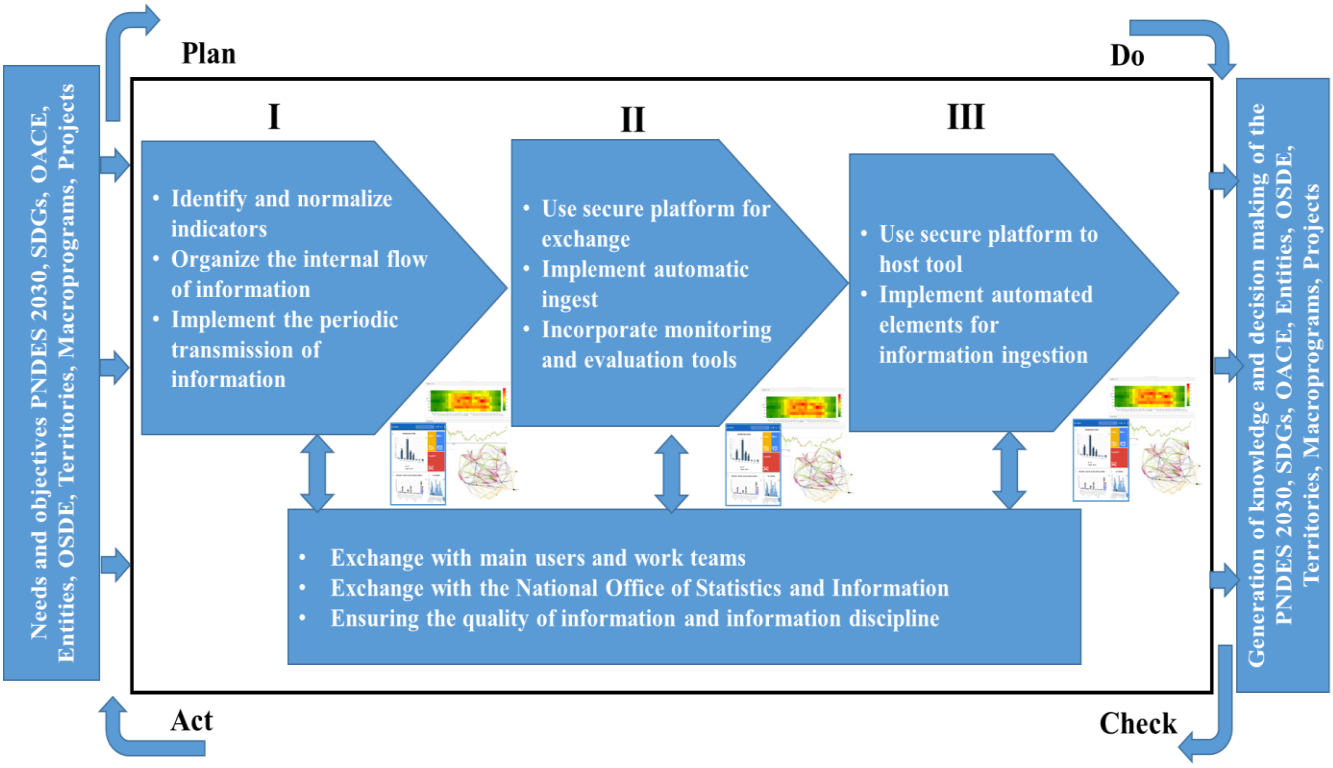

Figure 1. General methodology for obtaining the DB and BSC of government management
Source: self-made

The three stages of the designed methodology are framed from its beginning in 2021 (stage I) to its completion scheduled for 2024, at the conclusion of stage III. The definition of each stage and its completion period are listed below:

Stage I: Definition of information and Dashboards (2021-2022).
Stage II: Balanced Scorecard and use of secure exchange platform (2022-2023).
Stage III: Full automation of ingest (2023-2024).

From the first stage, Dashboards are obtained that allow completing the outputs of the methodology: the generation of knowledge and decision making. The inputs to the methodology refer to the strategic needs to be met related to: the PNDES 2030 expressed in the macro-programs, programs and projects, the SDGs, the Economic and Social Policy Guidelines, Agencies of the Central State Administration (OACE by its acronym in Spanish), the national entities, Superior Organizations of Business Management (OSDE by its acronym in Spanish) and the territories. These needs are expressed in information that must be captured, fundamentally through indicators, which is also part of the methodology. In turn, continuous Plan-Do-Check-Act (P-H-V-A) cycles are deployed, both for obtaining and executing each Dashboard and Balanced Scorecard, as well as in the development, implementation and improvements of the platforms. technologies for the collection, exchange, analysis and processing of information and visualization for decision making.

Results and Discussion

The description of the methodology and its application in some of the steps, fundamentally in stage I, is shown below. The three steps that are common to all three stages are also described.

Stage I. Definition of information and Dashboards.

The participation of most of the directors who make the main decisions at their respective management level is a key factor to obtain the objective set, and that is why the first step must result in the exchange with them, to achieve an understanding of what is wanted, which and that at the same time facilitates the development of the following steps. In addition, this step contributes to the training and creation of skills in the managers and specialists involved. In this stage, the Work Team is formed to guarantee:

- Identify and standardize the indicators.
- Organize the internal flow of information.
- Implement the periodic transmission of the identified information.

The adequate definition of the information is a key success factor to achieve the objectives, therefore the correct selection of the key indicators is essential. The key indicators are an expression that allows precise monitoring of different objectives and goals, as well as evaluating the effectiveness of the defined strategies. The organization and institution must select from its organizational inventory of indicators and propose those it considers relevant to pay taxes to the DB and BSC. The coordination in the execution of the stages and steps is carried out by the Directorate of Info-communications, whose tasks are checked by the President of the Republic.

The indicators that are part of the information flow for the DB and BSC must:

- Belong to the National Inventory of Indicators available to the National Statistics Office (ONEI) and in which the indicators and information that contribute to the Macro-programs, Programs and Projects of the PNDES 2030, the SDGs and Guidelines of the Economic Policy and Social.
- They will have as fundamental origins:
    - The Indicators contemplated in the Strategy of each organization that constitute the fundamental information to monitor and evaluate its operation.
    - or have been selected as key indicators by the heads of the Projects associated with the Programs and Macro-programs of the PNDES 2030.

It will also be possible to have operational indicators, which are those that are not identified within the national inventory, but are strategic for fulfilling the function of the entities and whose periodicity is generally more dynamic. In this sense, the set of operational indicators must be the smallest and strictly necessary.

Decree-Law 6 of April 16, 2020 "On the Government Information System", defines as information of national interest, that which is part of the National Statistical System or institutional Information Systems; Due to its importance and level of aggregation, it is demanded by the highest level of

government management to evaluate public policies and programs.[23] An important part of the necessary information is included in the National Inventory of Indicators (NII), which is the set of indicators, of different types that allow the description, comparison and evaluation of the country's situation in the different areas mentioned above, according to the national priorities for development in the short, medium and long terms.

Each indicator will have a characterization sheet, as shown in Annex 1, made up of the metadata necessary to prepare the DB. The file for each indicator is prepared by the source of information and can be updated according to needs that may be identified by the Team that prepares the BSC or by those who provide it. As an example, **Table 1** shows some of the metadata from the technical sheet of the Infant Mortality Rate indicator (rate per 1,000 live births), defined as the risk of dying of live births before their first birthday. of age in a given territory and period. The identification of the gradients allows evaluating the performance of the indicator over time, hence it is associated with the colors of the traffic light according to the value of the information collected at a given moment.

Table 1. Metadata of the infant mortality rate file

Quotient of the number of deaths under one year between the total number of live births for a given territory and period, multiplied by 1,000 live births	Numerator	Births under one-year x 1,000	
	Numerator font	National Statistical Information System on Deaths. WHO Mortality Forms A (1964-1986), Mortality Databases (from 1987), Birth Registration Statistical Information System. Demographic Yearbook. Health Statistical Yearbook	
	Denominator	live births	
	Numerator font	National Statistical Information System on Deaths. WHO Mortality Forms A (1964-1986), Mortality Databases (from 1987), Birth Registration Statistical Information System. Demographic Yearbook. Health Statistical Yearbook	
	Gradients	Good	minor 4
		Regular	4 to 4.3
		Wrong	Greater than 4.3
El responsable del cálculo y análisis es la Dirección de Registros Médicos y Estadísticas de Salud. El nivel de desagregación de la información es provincial y se envía con una periodicidad diaria y semanal			

Source: self-made

The indicators are the elements that provide the values from which the evaluation of the defined categories is carried out, so they must be specific, relevant and timely. Once the indicators have been selected, each agency, entity, macro-program or objects of evaluation will explain the coincidence of the indicators presented with respect to the institutional strategy and their relationship with the categories that make up the PNDES 2030, the Guidelines and the SDGs. In addition, it will indicate, if any, the presence of operational indicators and their relevance. With the indicators, the flows of periodic information are formed to feed the computer tool.

As progress is made in the definition of the indicators, it is necessary to reconcile with the ONEI to guarantee that they are included in the NII, as well as establishing the periodicity of the reconciliation with the official information issued by this entity, as part of the Government Information System (SIGOB by its acronym in Spanish). The SIGOB is the integrated set of systems that are organized to meet the

information needs related to the objectives and plans of the Government at all levels of society, for the operation of its bodies, as well as for decision-making, monitoring and adjustment of public policies that ensure the economic and social development of the country.[23]

To establish the necessary flow of information that accompanies the BSC, the exchange formats and the frequency of updating will be defined together with the entities. Each source must guarantee compliance with the flow of information according to the periodicity established for each data. The exchange formats must guarantee compatibility with the BSC databases, and these may evolve as progress is made towards the compatibility and integration of the applications used in the entities.

Once the information defined and provided by each entity is available, the dashboards will be created to display it. Each DB will show the information of the indicators in a way that facilitates its understanding and analysis to contribute to the generation of knowledge and decision making, as shown, by way of example, in **Figures 2** and **3**.

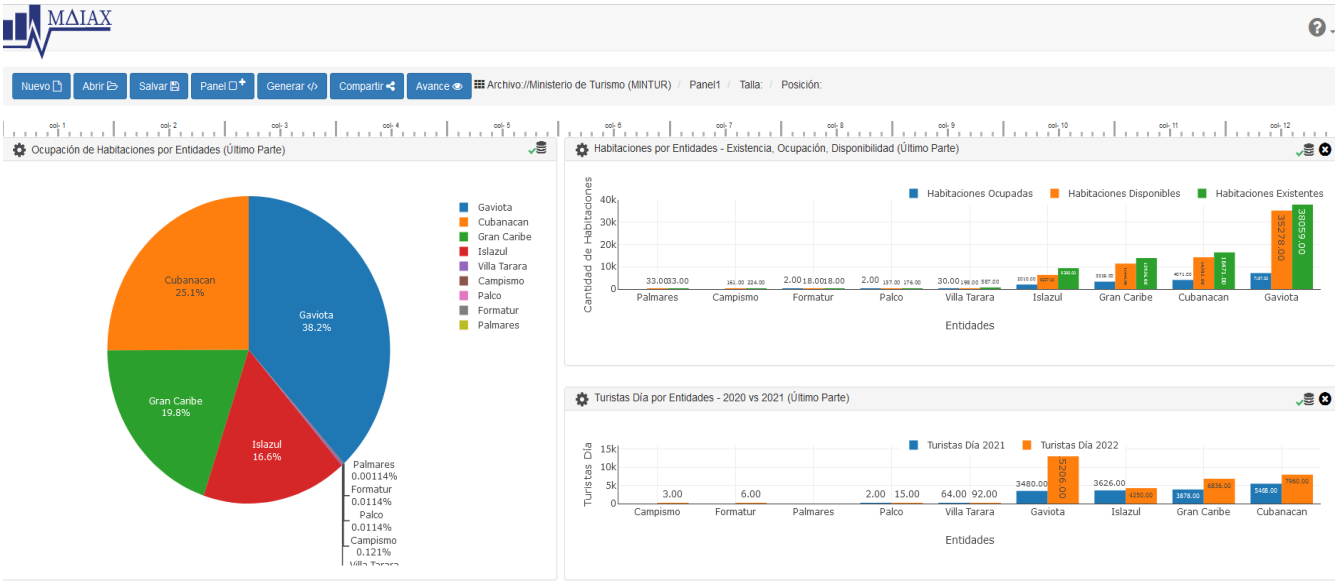

Figure 2. Room occupancy dashboards in the tourism sector
Source: self-made

Figure 2 shows a board that expresses the daily occupancy status of the tourist facilities corresponding to the four Higher Business Management Organizations (OSDE) (Gaviota, Cubanacan, Gran Caribe and Isla Azul), by entities, territories and a comparison of 2021 and 2022. **Figure 3** shows the combined behavior of three variables in each of them, in the upper one the percentage of existing rooms (green), available (blue) and the relationship between occupied and available (orange) by OSDE. The lower part of **Figure 3** shows these same types of graphs in relation to the teaching workforce by province, the approved workforce, coverage and % completion.

Figure 3. Dashboard panels for room occupancy in the tourism sector (top) and teaching workforce (bottom)
Source: self-made

Table 2 shows the information of interest to the government that has been compiled for the construction of the DB during the period from 2021 to March 2022. In addition, it is available for each indicator of the disaggregation level (national, provincial, municipal, entities and sectors) and the frequency (daily, weekly, monthly, quarterly, half-yearly and annually) as appropriate for each case. The Economic and Social Policy Guidelines and the SDGs to which it is taxed have also been identified for some indicators. In **Table 2**, the entities from which the most information is available have been ordered, leading the list from the MINSAP, of which 63 indicators are already available and of which 14 are related to COVID-19, to the entities with the least number of indicators. available. The productive organizations of goods and services include indicators of the linked business organizations, as shown in **Figures 2** and **3**.

Table 2. Information collected to obtain government DB

Entity	Indicators	Exchanges	Team	Files	Macro program	Project	DB
MINSAP, MINAL, MINCIN, MINCOM, MITRANS, MINEM, MEP, MINCEX, MINAG, MINTUR, ONEI, MES, MFP, MTSS, BCC, MICONS, CITMA, MINED, MINDUS, MINJUS, MINCULT, MINREX, INDER, INOTU, ICRT*	588	48	64	282	257	151	15
CRG, TSP, FGR	19	3	3	7	4	4	1
AZCUBA, BIOCUBAFARMA	28	2	4	9	9	9	1
CIEM and PRENSA	12	7	5	19			1
TOTAL=31	647	60	76	317	270	164	18

Source: self-made

* Changes its name to the Institute of Information and Social Communication

The exchange with the main users is a decisive step to guarantee the continuous improvement of the process, since the criteria that are collected will contribute to enriching the information and identifying visualization needs and the generation of new knowledge. In addition to the 60 exchanges carried out to gather the indicators and complete the information, more than 80 meetings have been held by the work team of the Info-communications Directorate through monthly dispatches with the President of the Republic, meetings with the Vice President, the Prime Minister and the Deputy Prime Ministers, participation in meetings to review prioritized programs and macro-programs, government visits to the territories, among other activities. On the other hand, the methodology of the DB and BSC has been socialized in seminars, events, master conferences and courses at the Higher School of State and Government Cadre.

Stage II: Balanced Scorecard and use of secure exchange platform

The assurance of the quality of the indicators constitutes a permanent task in the process of creating the DB and BSC and in updating the information, this being a permanent step to follow in the three stages. As shown in **Figure 1**, the steps to take in this stage III are:

- Use a secure platform for the exchange.
- Implement automatic ingestion.
- Incorporate monitoring and evaluation tools.

In the second stage, the Restricted Government Network will be constituted as the platform to be used for the exchange of information, through the implementation of automatic data ingestion, which will

reduce computer security vulnerabilities, allow the entry of different data sources and it It will help make the process more efficient and faster. Likewise, the implementation of automatic ingestion will contribute to improving information discipline, will reduce vulnerabilities related to information manipulation and will facilitate achieving a completely automated flow of information, which characterizes stage III.

In relation to the incorporation of monitoring and evaluation tools, it must be considered that the government's BSC will be made up of different DB that will correspond to the information that characterizes each category that needs to be visualized and will contain the indicators defined for each case, or the resulting processing of the monitoring and evaluation tools used by the BSC, based on the stored indicators. In the literature, the comparison of the DB with the BSC fundamentally refers to the fact that in the former the information has a more operational character and the BSC is more strategic.[24,25]

But, the BSC is not limited to the visualization in DB of the information resulting from the processing of the primary data, but rather it incorporates the calculation of future scenarios, alerts and forecasts, resulting in a generation of knowledge that contributes to the adjustment of the strategies that are evaluated. The BSC also includes the preparation of strategic maps,[3] the analysis of cause-effect relationships and other relationships between the different indicators obtained in the DB, as well as the assessment of the impacts of the strategies, technologies and innovations adopted. Thus, BSCs have been structured to assess the impacts of Industry 4.0 technologies on sustainability.[26] However, both DB and BSC facilitate the generation of knowledge and the decision-making process[27] in public administration.[3,9,10,12,14,17,18,27,28,29]

The development of composite indicators in the government's BSCs is also planned. In some BSC applications, these have been reported as the index of sustainability and quality of life calculated through 120 indicators that measure: climate change and environment, comprehensive urban development, fiscal and governance,[30] as well as the incorporation of dimensions of sustainability within strategies.[31] Other contributions of the BSC in government management is given by the ability to integrate objectives, using the Delphi Fuzzy Method and structured interpretive modeling[32] and the Multiplication Cross Impact Matrix Applied to a Classification (MICMAC)[3.33] to determine the main factors, key variables and their interrelationships in the dimensions of sustainability.

One of the components of the MGGI is the creation of value, which requires certain conditions and connections of the actors, institutions and sectors for its good performance and the elimination of obstacles that limit the use of its capacities or its growth.[14,15] The BSC must have the quality of capturing, structuring, processing, analyzing, integrating and visualizing the information that allows knowledge to be discovered so that the decisions made by the main executives of the central government contribute to the creation of value oriented towards innovation and sustainability. **Figure 4** shows the BSC scheme, ranging from data entry to visualization of the results of their processing, in which the Plan-Do-Verify-Act cycle of the indicators and information required for the generation of knowledge and decision-making by managers, in which improvement will be implicit as a continuous process oriented towards innovation.

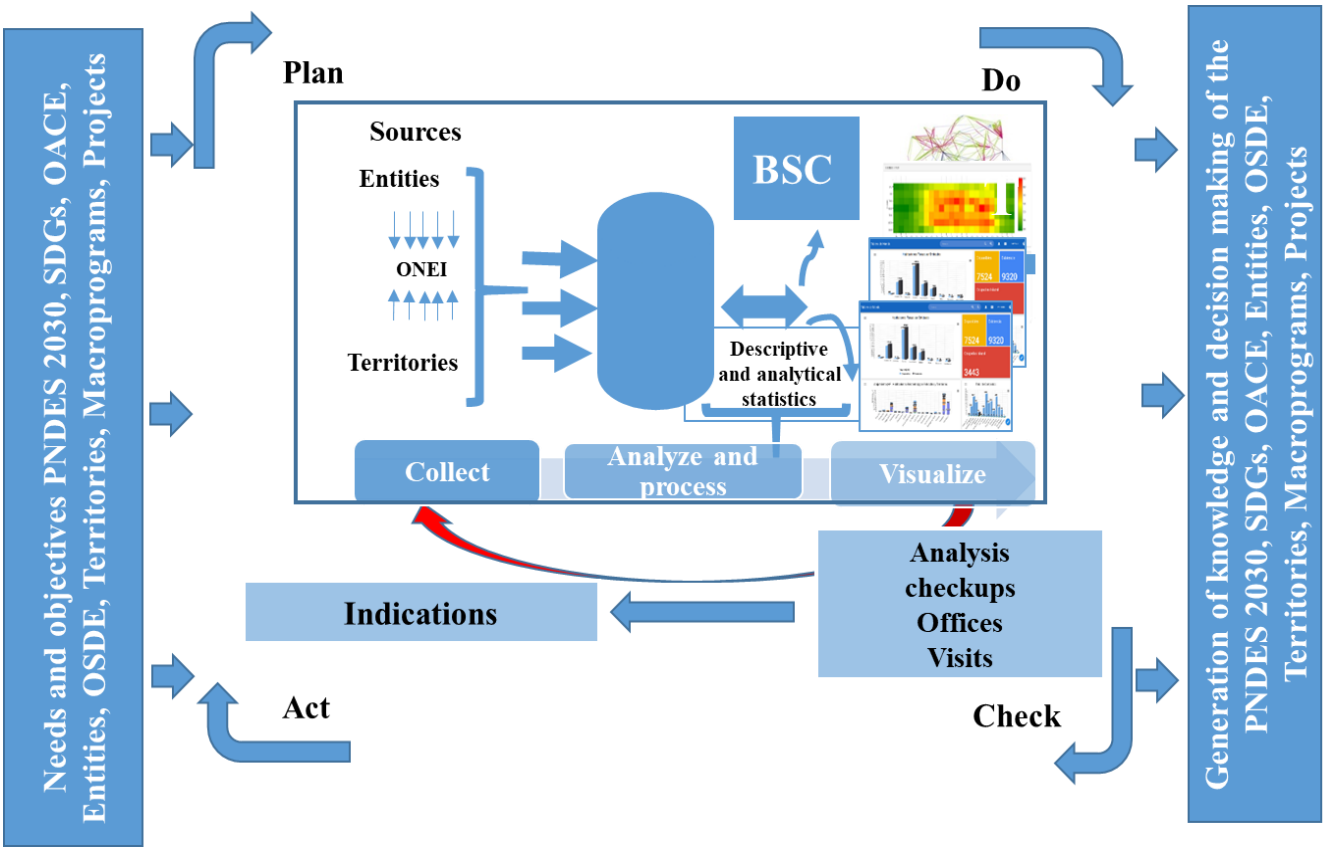

Figure 4. Obtaining the Balanced Scorecard
Source: self-made

The Balanced Scorecard, supported by multiple perspectives and dimensions, establishes a guide for the evaluation of the MGGI, which can be applied to the different types of innovations[34,35,36] and management levels from central to local government[37] with the analysis time required, which allows timely and effective decision making.

Stage III: Full automation of ingest

At this stage, the information traffic will be carried out using the secure exchange platform and eliminating human intervention, thus guaranteeing the integrity of the information and minimizing the intrinsic vulnerabilities of the exchange. The proper fulfillment of this phase will depend on the degree of progress in the interoperability of the systems deployed in each entity involved. A representation of the evolution of the DB platform and the BSC is shown in **Figure 5**.

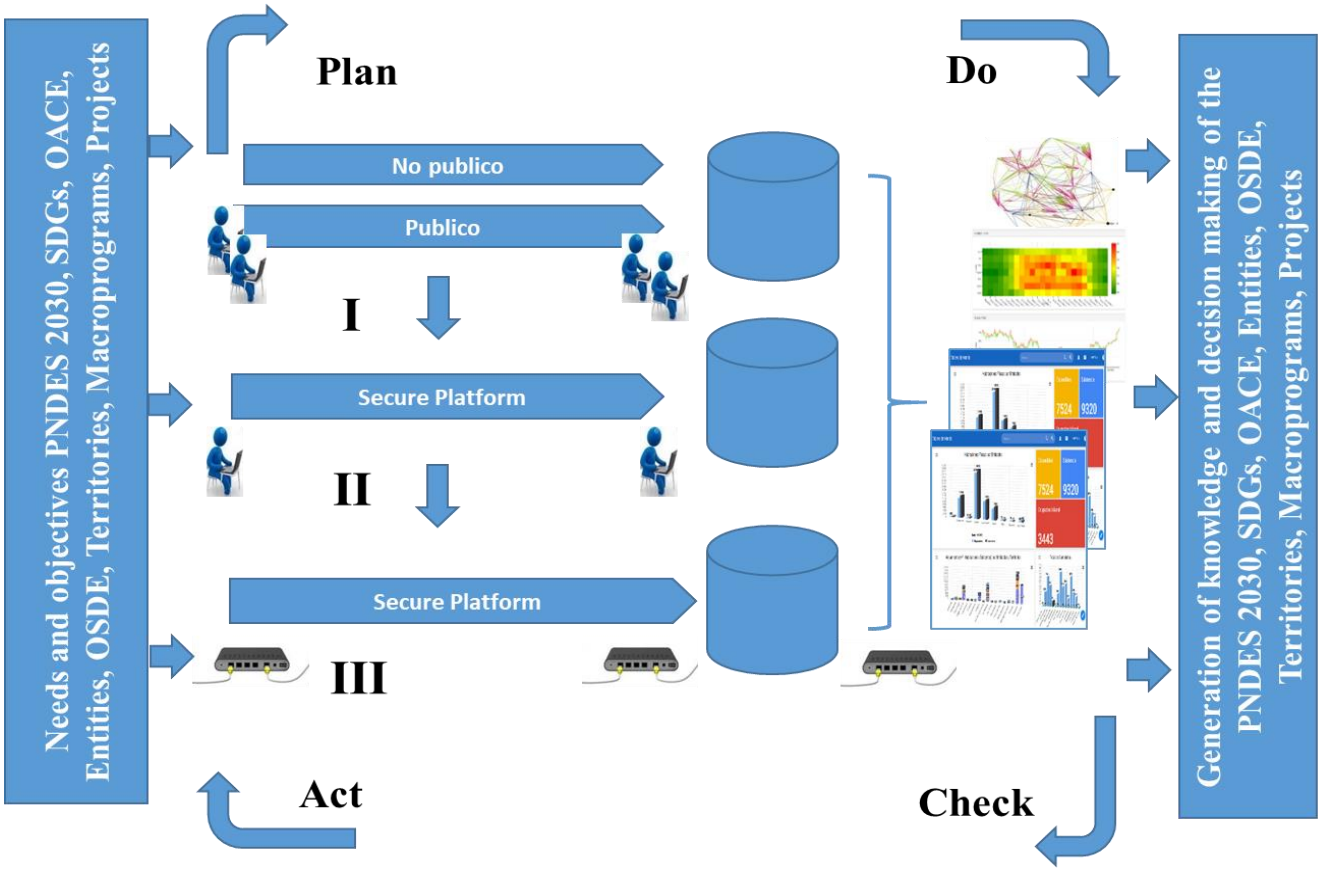

Figure 5. Evolution of connectivity by stages of the DB and BSC platform
Source: self-made

The steps that are executed permanently during the course of stages I, II and III are:

- Exchange with main users and work teams.
- Exchange with ONEI.
- Ensure the quality of information and information discipline.

These actions will allow continuous improvement of the general process to be maintained, while they will provide update criteria in the defined indicators, the inclusion of new indicators, their visualization and generation of knowledge in a systematic way. The contacts between the members of the work teams that guarantee the automation will allow progress to be made in a coordinated and gradual manner, on the path towards obtaining fully automatic ingestion.

For the analysis and processing of the information in the BSCs, the techniques of absolute, relative and average values, comparison methods, grouping, graphs and tables, correlation-regression analysis, factor analysis, cluster analysis and expert evaluation methods,[38] the process of hierarchical analysis[39,40] among other methods. In this stage III, fully automatic ingestion will allow the use of traditional methods and other advanced statistical methods, data modeling, the use of big data and digital platforms in the BSC

to generate and extract knowledge of the complex phenomena that will describe the behavior of the more than thousands of indicators and Dashboards that will be systematically obtained in real time.

Conclusions

The Dashboard and Balanced Scorecard Methodology of the innovation-oriented government management model articulates the strategic objectives with an integrated, participatory and collaborative approach supported by relevant information and knowledge management to contribute to decision-making agile, timely and effective decisions in the short, medium and long term in compliance with the PNDES 2030.

The DB and BSC methodology are based on the P-H-V-A quality cycle, which allows identifying, capturing, analyzing, processing and visualizing indicators and information with the ability to know, manage, evaluate, measure, monitor, control, improve and prevent through the decision-making process of the main decision makers of the management of the central government in Cuba.

The DB and the BSC allow a better understanding and knowledge of the diverse and complex contexts through a multidimensional, synergistic and holistic framework of objectives, indicators and behaviors for the operational and strategic decision-making of the central government oriented towards sustainability, value creation and innovation.

The DB and BSC have similarities and differences complementing and complement each other, thus the DB are more focused on the operational control in real time of personalized indicators and the BSC has a more strategic, prospective and proactive character that groups several indicators and dimensions of sustainability, by capturing the complexity of institutional performance with respect to identifying opportunities, preventing problems, relationships between indicators, as well as finding solutions and adopting a top-down and bottom-up two-way management model upward, intersectoral and transdisciplinary innovation-oriented.

The methodology foresees the adoption and development of a secure government platform and a robust information system with the use of information and communication technologies, support tools and methods of processing and analyzing information from graphics to advanced analytical and predictive methods, as well as the training and continuous learning of the actors.

Bibliographic references

1. Díaz-Canel M. Gestión de Gobierno basada en ciencia e innovación: avances y desafíos. Anales de la Academia de Ciencias de Cuba [Internet]. 2022; 12 (2) [Consulted 2 febrero 2022] Available in: http://revistaccuba.sld.cu/index.php/revacc/article/view/1235
2. Consejo de Estado. Decreto-Ley No. 370 “Sobre la Informatización de la Sociedad en Cuba” Gaceta Oficial No. 45 Ordinaria de 2019, GOC-2019-547-O45, 4 de julio de 2019. Cuba. [Consulted 2 febrero 2022] Available in: https://www.gacetaoficial.gob.cu/es/gaceta-oficial-no-45-ordinaria-de-2019
3. Díaz-Canel M, Delgado M. Mapa estratégico del Cuadro de Mando Integral del modelo de gestión del gobierno orientado a la innovación para la COVID-19. Revista Cubana de Administración Pública

y Empresarial, 2021; 5 (2): e164. [Consulted 2 febrero 2022] Available in: https://doi.org/10.5281/zenodo.5453120
4. Akkermans HA, van Oorschot KE. Relevance assumed: a case study of balanced scorecard development using system dynamics. Journal of the Operational Research Society (2005) 56, 931–941. [Consulted 17 febrero 2022] Available in: https://doi.org/10.1057/palgrave.jors.2601923
5. Dincüer H, Y¬uksel S, Martínez L. Balanced scorecard-based Analysis about European Energy Investment Policies: A hybrid hesitant fuzzy decision-making approach with Quality Function Deployment, Expert Systems with Applications; 2018. [Consulted 17 febrero 2022] Available in: https://doi.org/10.1016/j.eswa.2018.07.072
6. Kaplan RS, Norton DM. Cuadro de Mando Integral (The Balanced Scorecard). 2da Edición. Barcelona: Gestión 2000; 2002, p. 326.
7. Kaplan RS. Conceptual Foundations of the Balanced Scorecard. Working Paper 10-074. 2010; pp. 1-36. [Consulted 11 enero 2021] Available in: https://www.hbs.edu/ris/Publication%20Files/10-074_0bf3c151-f82b-4592-b885-cdde7f5d97a6.pdf.
8. Kaplan RS, Norton DM. Linking the Balanced Scorecard to Strategy. California Management Review. 1996; 39: 53-79. [Consulted 19 febrero 2022] Available in: https://www.hbs.edu/faculty/Pages/item.aspx?num=3294.
9. Yawson RM. The Ecological System of Innovation: A New Architectural Framework for a Functional Evidence-Based Platform for Science and Innovation Policy. The Future of Innovation: Proceedings of the XX ISPIM 2009 Conference, Vienna, Austria, June 21-24; 2009. [Consulted 17 febrero 2022] Available in: https://doi.org/10.31124/advance.7367138.v1
10. Kaplan RS. Strategic Performance Measurement and Management in Nonprofit Organizations. Nonprofit Management & Leadership, 2001; 11 (3): 353-370. [Consulted 15 febrero 2022] Available en: https://www.hbs.edu/faculty/Pages/item.aspx?num=8892
11. Kaplan RS, Norton DM. Usar el Balanced Scorecard como un sistema de gestión estratégica. Harvard Business Review; Julio 2007, pp- 1-11. [Consulted 19 febrero 2022] Available in: http://www.eguillen.com/wp-content/uploads/2012/01/Usar-el-BSC-como-sistema-de-gestion-estrategica-copia.pdf.
12. Claudiu L. The New Public Governance assumed through quality reports in the Public Sector. Annals - Economy Series, Constantin Brancusi University, Faculty of Economics. 2020; 1, 133-138. [Consulted 5 febrero 2022] Available in: https://ideas.repec.org/a/cbu/jrnlec/y2020v1p133-138.html.
13. Partido Comunista de Cuba. Conceptualización del modelo económico y social cubano de desarrollo socialista. Lineamientos de la política económica y social del Partido y la Revolución para el período 2021-2026. VIII Congreso. Partido Comunista de Cuba (PCC). La Habana, Abril; 2021. p. 86. https://www.tsp.gob.cu/sites/default/files/documentos/Conceptualizaci%C3%B3n%20y%20Lineamientos%20actualizados.pdf
14. Díaz-Canel M, Delgado M. Modelo de gestión de gobierno orientado a la innovación. Revista Cubana de Administración Pública y Empresarial. 2020: 4 (3): 300-321. [Consulted 15 febrero 2022] Available in: https://apye.esceg.cu/index.php/apye/article/view/141.
15. Díaz-Canel M, Delgado M. Gestión de gobierno: orientado a la innovación: contexto y caracterización del modelo. Universidad y Sociedad. 2021; 13(1): 6-16. [Consulted 15 febrero 2022] Available in: https://rus.ucf.edu.cu/index.php/rus/article/view/1892/1884
16. Partido Comunista de Cuba. Documentos del 7mo. Congreso del Partido aprobados por el III Pleno del Comité Central del PCC el 18 de mayo de 2017 y respaldados por la Asamblea Nacional del

Poder Popular el 1 de junio. La Habana: Tabloides, septiembre; 2017. pp. 2-32. [Consulted 8 febrero 2022] Available in: http://www.granma.cu/file/pdf/gaceta/tabloide%202%20%C3%BAltimo.pdf.
17. Young GW, Kitchin R, Naji J. Building City Dashboards for Different Types of Users, Journal of Urban Technology; 2020. [Consulted 2 marzo 2022] Available in: https://doi.org/10.1080/10630732.2020.1759994
18. Vila R, Estevez E, Fillottrani P. The design and use of dashboards for driving decision-making in the public sector. In Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance. Galway, (ICEGOV'18), Ireland, 4-6 April, 2018. [Consulted 20 febrero 2022] Available in: https://doi.org.10.1145/3209415.3209467
19. Eberhardt A, Selbach M. 2018. Show me the Data! A Systematic Mapping on Open Government Data Visualization. In dg.o '18: dg.o 2018: Proceedings of the 19th Annual International Conference on Digital Government Research, May 30-June 1, Delft, Netherlands. ACM, New York, NY, USA; 2018, 10 pages. [Consulted 2 marzo 2022] Available in: https://doi.org/10.1145/3209281.3209337
20. Wibiayu A, Siallagan M. The Influence of Business Intelligence Dashboard in Decision-Making Process: A Case Study in Government Agency. Budapest International Research and Critics Institute-Journal (BIRCI-Journal). 2022; 5 (1): 4057-4063. [Consulted 13 abril 2022] Available in: https://www.bircu-journal.com/index.php/birci/issue/view/46.
21. Pietz J, McCoy S, Wilck JH. Chasing John Snow: data analytics in the COVID-19 era, European Journal of Information Systems. 2020; 29 (4): 388-404. [Consulted 15 febrero 2022] Available in: https://doi.org/10.1080/0960085X.2020.1793698
22. Ivanković D, Barbazza E, Bos V, Brito Ó, Gilmore KJ, Jansen T y otros. Features Constituting Actionable COVID-19 Dashboards: Descriptive Assessment and Expert Appraisal of 158 Public Web-Based COVID-19 Dashboards. Journal of Medical Internet Research. [Consulted 15 febrero 2022] Available in: 2021; 23 (2): e25682. https://www.jmir.org/2021/2/e25682
23. Consejo de Estado. Decreto-Ley 6 "Del Sistema de Información del Gobierno", GOC-2020-509-O54 Gaceta oficial No. 54, ordinaria, La Habana: Ministerio de Justicia, 30 de julio; 2020. [Consulted 10 febrero 2022] Available in: https://www.gacetaoficial.gob.cu/sites/default/files/goc-2020-o54.pdf
24. Cokins G. The strategy map and its balanced scorecard, EDPACS, 2020; 61:3, 1-16. [Consulted 15 abril 2022] Available in: https://doi.org/10.1080/07366981.2020.1750799
25. Di Vaio A, Varriale L. Management Innovation for Environmental Sustainability in Seaports: Managerial Accounting Instruments and Training for Competitive Green Ports beyond the Regulations. Sustainability 2018; 10: 783. [Consulted 27 abril 2022] Available in: https://doi.org/10.3390/su10030783
26. Godina R, Ribeiro I, Matos F, Ferreira B, Carvalho H, Peças P. Impact Assessment of Additive Manufacturing on Sustainable Business Models in Industry 4.0 Context. Sustainability. 2020; 12: 7066. [Consulted 12 abril 2022] Available in: https://doi.org/10.3390/su12177066
27. Bostan RI, Nastasia SC, Ciobanu AM. The Impact of Managerial Accounting Tools in Decision-Making. In I. Panagoreţ & G. Gorghiu (vol. ed.), Lumen Proceedings. International Conference Globalization, Innovation and Development. Trends and Prospects (G.I.D.T.P.). Iasi, Romania: Lumen Publishing House 2020; 10: 221-233. [Consulted 15 abril 2022] Available in: https://doi.org/10.18662/lumproc/gidtp2018/25
28. Greatbanks R, Tapp D. The impact of balanced scorecards in a public sector environment. Int J Operat Prod Manag. 2007; 27 (8): 846–873. [Consulted 17 abril 2022] Available in: https://doi.org/10.1108/01443570710763804

29. Ubaid A, Dweiri F, Ojiako U. Organizational excellence methodologies (OEMs): a systematic literature review. Int J Syst Assur Eng Manag. Springer, 15 julio; 2020. [Consulted 17 abril 2022] Available in: https://doi.org/10.1007/s13198-020-01017-3
30. Mc Coy C, Martínez MG, Aguiar O. Cancún, Emergent City: A Proposal to Apply the Balance Scorecard Model as a Method to Evaluate Sustainability and Quality of Life. Journal of Strategic Innovation and Sustainability. 2022; 17 (1): 43-64. [Consulted 17 abril 2022] Available in: https://articlegateway.com/index.php/JSIS/article/view/5107
31. Hristov I, Chirico A. The Role of Sustainability Key Performance Indicators (KPIs) in Implementing Sustainable Strategies. Sustainability. 2019; 11:5742. [Consulted 21 abril 2022] Available in: https://doi.org/10.3390/su11205742
32. Nouri FA, Nikabadi MS. Developing the framework of sustainable service supply chain balanced scorecard (SSSC BSC). International Journal of Productivity and Performance Management. 2019; 68 (1): 148-170. [Consulted 21 abril 2022] Available in: https://doi.org/10.1108/IJPPM-04-2018-0149
33. Anaya M, Delgado M, Garrigó L. Estrategia competitiva para el grupo empresarial de la industria alimentaria de Cuba. Revista Cubana de Administración Pública y Empresarial, 2018: 2(1): 82–97. [Consulted 21 abril 2022] Available in: https://apye.esceg.cu/index.php/apye/article/view/34
34. Delgado M. Innovación Empresarial. En: Delgado M, Coordinador académico. Temas de Gestión Empresarial. Vol. II. La Habana: Editorial Universitaria Félix Varela; 2017. p. 117. [Consulted 10 enero 2022] Available in: http://bibliografia.eduniv.cu:8083/read/13/pdf
35. Delgado M. Proyectos de innovación en Administración Pública y Empresarial en Cuba. Folletos gerenciales. abril-junio 2018; XXII (2): 71-84 [Consulted 5 mayo 2022] Available in: http://200.14.55.208/index.php/folletosgerenciales/article/download/89/104
36. Delgado M. Enfoque y métodos para la innovación en la Administración Pública y Empresarial. Revista Cubana de Administración Pública y Empresarial. 2019; 3(2):141-153 [Consulted 5 enero 2022] Available in: https://apye.esceg.cu/index.php/apye/article/view/ 79/88
37. Ávila JM, Nogueira D, Pentón JR, Jiménez B. Cuadro de Mando Integral como un instrumento para la evaluación y el seguimiento de la estrategia en el sector gobierno: caso de aplicación. Revista Cubana de Administración Pública y Empresarial, 2019; 3(1): 3–20. [Consulted 21 abril 2022] Available in: https://apye.esceg.cu/index.php/apye/article/view/65
38. Krylov S. Strategic customer analysis based on balanced scorecard. Ekonomicko-manazerske spektrum, 2019; 13 (1): 12-25. [Consulted 23 abril 2022] Available in: https://doi.org/10.26552/ems.2019.1.12-25
39. Hosseinzadeh M, Hama HK, Ghafour MY, Masdari M, Ahmed OM, Khezri H. Service Selection Using Multi-criteria Decision Making: A Comprehensive Overview. Journal of Network and Systems Management. Springer; 2020. [Consulted 23 abril 2022] Available in: https://doi.org/10.1007/s10922-020-09553-w
40. Fuertes G, Alfaro M, Vargas M, Gutierrez S, Ternero R, Sabattin J. Conceptual Framework for the Strategic Management: A Literature Review—Descriptive. Journal of Engineering. 2020; 20 pages. [Consulted 23 abril 2022] Available in: https://doi.org/10.1155/2020/6253013

Conflict of interests

The authors declare no conflicts of interest

Authors contribution

- Omara Aldama López: Conceptualization – Ideas, Data Conservation, Formal Analysis, Methodology, Project Management, Resources, Software, Visualization, Writing – Original Draft, Writing – Review and Editing.
- Mercedes Delgado Fernández: Conceptualization – Ideas, Data Conservation, Formal Analysis, Methodology, Project Management, Resources, Software, Visualization, Writing – Original Draft, Writing – Review and Editing.
- Miguel Díaz-Canel Bermúdez: Conceptualization – Ideas, Data Conservation, Formal Analysis, Methodology, Project Management, Resources, Software, Visualization, Writing – Original Draft, Writing – Review and Editing.

Annex 1. Dashboard Indicators Technical Sheet

Indicator Name		**Indicator Code**		
Definition:				
Calculation form Numerator		**Numerator**		
		Numerator font		
		Denominator		
		Numerator font		
		Gradients	**Good**	
			Regular	
			Wrong	
Responsible for calculation and analysis				
Responsible for updating and sending				
Unit of measurement				
Disaggregation levels	**Periodicity**	**Date of sending**	**Method of sending**	**Mail from which the information is sent**
National				
Provincial				
Legal framework				
SDG to which it pays:				
Macro program and project to which it is taxed:				
Guideline to which he pays taxes:				
Observations:	**Date:**		**Produced by:**	