

# Resource-Based View (RBV) review, conceptual model and application methodology for the Integrated Public Transport System (IPTS) of Bogotá-Colombia

## Revisión del Enfoque Basado en los Recursos (RBV), modelo conceptual y metodología de aplicación para el Sistema Integrado de Transporte Público (SITP) de Bogotá-Colombia

Diego R. CABRERA-MOYA [1](#); Giovanni E. REYES [2](#)

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### ABSTRACT:

The main purpose of this paper is, based on a theoretical review, to propose a conceptual framework and the respective application methodology of the Resource Based View (RBV), applicable to the Integrated Public Transport System (SITP for its acronym in Spanish) of Bogotá-Colombia, so that it can be taken as a starting point in future research which aim to: (i) analyze and evaluate their use empirically, (ii) determine the effects of their implementation in this type of systems; and (iii) the impacts that integrated transport systems have had in the business and economic context.

**Keywords:** Bogotá, Integrated Public Transportation System (SITP), Organizations' performance, Resource-based view (RBV)

### RESUMEN:

El propósito central de este escrito es proponer un modelo conceptual y la metodología de aplicación respectiva del Enfoque Basado en los Recursos (RBV), aplicable al Sistema Integrado de Transporte Público (SITP) de Bogotá-Colombia, de manera que pueda tomarse como punto de partida en futuras investigaciones que pretendan: (i) analizar y evaluar empíricamente su utilización, (ii) determinar los efectos de su implementación en este tipo de sistemas; y (iii) las incidencias que los sistemas integrados de transporte han podido tener en el contexto empresarial y económico.

**Palabras clave:** Bogotá, Sistema Integrado de Transporte Público (SITP), Desempeño de las organizaciones, Perspectiva basada en recursos (RBV).

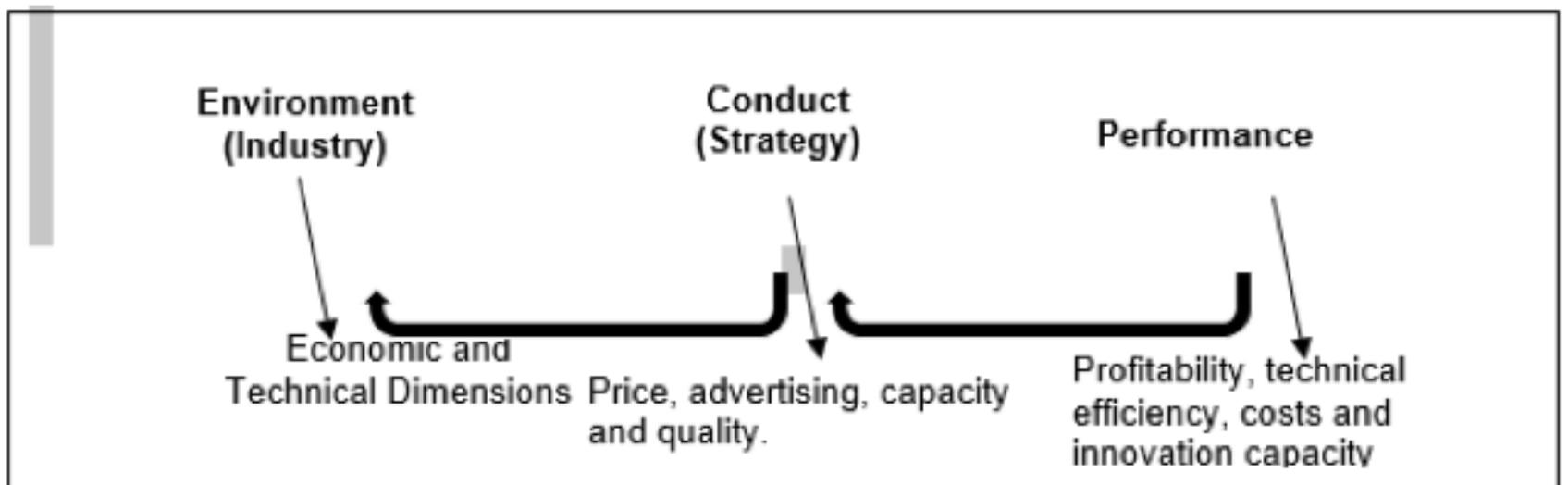
# 1. Introduction

The problem faced by organizations today is no longer just the need to obtain competitive advantages but the need to obtain sustainable competitive advantages (Cabrera, 2017). Along with the Dynamic Capabilities (DC) of innovation, the Resource-based View (RBV) has acquired great relevance and diffusion in recent decades in the field of strategic management and in theories that seek to achieve superior and sustainable performance for organizations.

One of the greatest exponents today is Jay Barney of the Department of Management of Texas A & M University, who with his impulse and optics has made this theory considered today one of the most robust and most accepted perspectives in the field of strategic management. The framework of this theory has its beginnings in the decades of the 50's and 60's and was boosted during the decade of the 80's like an evolution of the ideas enunciated 3 decades before in the (1984), Dewickx and Cool (1989), Peteraf (1993), Collis (1994); Teece et al. (1997), Peteraf (1993) and Barney himself (1986, 1991), among others.

This evolution was highlighted by Porter (1981) as "the new promise of the Industrial Organization", where he emphasizes that the new paradigm gives an important place to the effect of the strategic decisions of the companies in the structure of the industry and that unlike the previous. It was evident that there is feedback from the environment situation on the behavior of organizations (strategies) and vice versa. This evolution is shown simply by Porter in the so-called paradigm SCP (Structure-Conduct-Performance).

**Figure 1**  
Paradigm structure-conduct-performance (SCP)



Source: Based on Porter (1981)

Authors such as Barney (2005), Barney, Ketchen and Wright (2011) argue that one of the interesting proposals of this paradigm is to focus on the management skills of the organization, its organizational processes and routines and information and knowledge. Those aspects can be used by companies as an aid to the choice and implementation of strategies that improve their performance.

On the other hand, authors like Barney, Wright and Ketchen (2001), Wade and Hulland (2004) and Brahma and Chakraborty (2011) add additional aspects to this paradigm and affirm that it has surpassed what was stated by Porter. They claim that the RBV "breaks the influence of the SCP and that it constitutes itself as a reference model of theories of competitive advantage".

A sign of the origin of these postulates can be found in the studies that Edith Penrose published in different works during the decade of the 50's and that are reviewed by Lockett (2005), who affirms that these works anticipate the bases of the modern approach of the strategic administration, including those of the RBV. The above highlights the promising proposals of the researcher if one takes into account that the RBV paradigm began its boom in the early 1980s and that as mentioned above, from then on, it began to become an important paradigm in strategic models.

## **2. The process of preparing management decisions under the resource-based view (RBV) paradigm**

Different currents could be identified in terms of decision-making processes within the framework of RBV paradigm. However, in an attempt to characterize these processes and after reviewing different proposals available in the literature one can find an interesting construction in this respect made by Kunc and Morecroft (2010) Barney (2001), Hitt et al. (2000), Huselid (1995), Priem and Butler (2001) and Tallman (1991) for the construction of managerial decisions under the conditions of this paradigm.

This proposal of Kunc and Morecroft assumes a vision of the behavior in the decision making and distinguishes two different ways in the processes of elaboration of strategies.

First, a process related to the creative conceptualization of the configuration of new resources oriented towards the construction of competitive advantages (conceptualization of resources) can be identified.

Second, the detailed development of the necessary resources to implement the strategy (resource development). We present here some considerations about the challenges that a manager must face when carrying out the strategic measures; then we present some topics on the paths defined by these authors.

### **2.1. Strategies: their implementation**

Implementing strategies in organizations taking into account available resources can become one of the most challenging aspects for an administrator or manager. The provision of a wide and / or heterogeneous range of resources applicable to each process can become a difficult feature to manage for a company (Alvarez and Busenitz, 2001).

For this reason Barney (1991) suggests a strong design of strategies based on managerial analysis to avoid that the obtained results are a product of chance, because although it is possible that in some cases this will benefit the expected objectives, in others it can result in totally negative situations for the company.

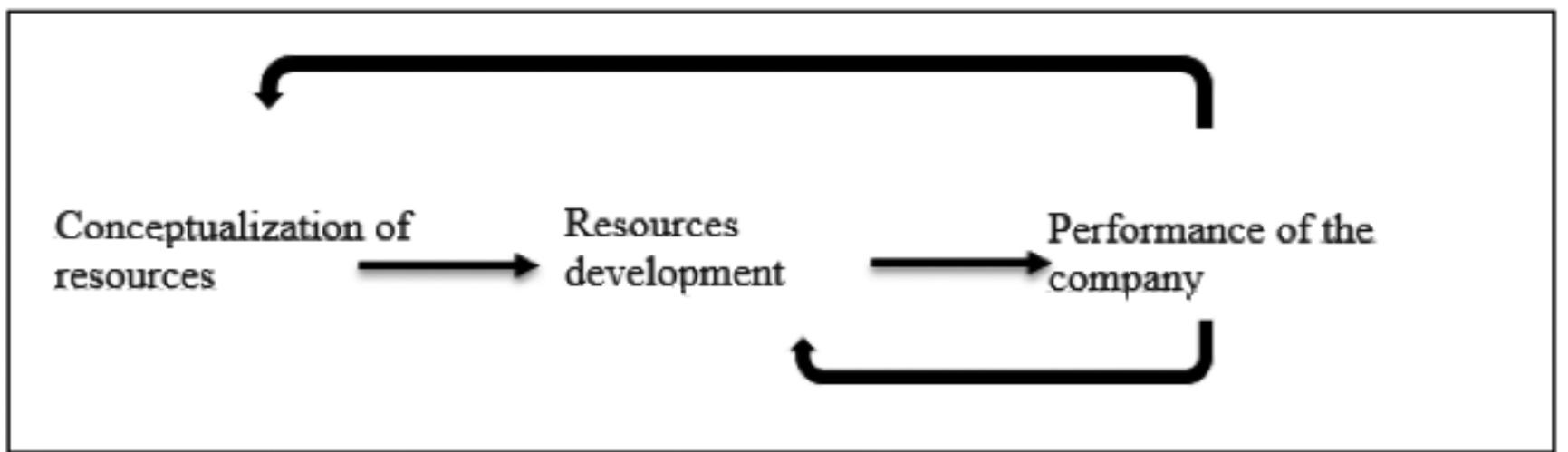
The degree of difficulty of each design must be taken into account because, not only must an adequate correspondence between the design and the availability and heterogeneous condition of the resources be taken into account, it must also include the expected results and the most important, its impact on the performance of the company (Karim, 2012).

In the same respect Kunc and Morecroft point out that an over-optimistic expectation can lead to the directives to invest too much in the acquisition of those resources hoping for a positive return and to make mistakes, to generate great losses in the process. In contrast, a pessimistic expectation may lead to undervalue the potential return on investment and for this reason, affect the process or miss the opportunity to achieve suitable objectives.

For this reason they propose the two stages that were announced previously: first, the process of conceptualizing the adequate and necessary resources for the implementation and secondly the management, development and use of those resources. This logic follows the same model of the SCP paradigm shown in Figure 1. The new proposal is expressed in Figure 2.

**Figure 2**

Strategic decision-making processes under Kunc-Morecroft's model



Source: Kunc and Morecroft (2010)

## 2.2. Creative conceptualization of new resources

The concept of resource contextualization used in this context refers to the different processes that a manager must coordinate and execute in advance to obtain the resources to be used in each strategy.

Here management people must face conditions that have to do with availability, opportunity, quantity, specific characteristics and contribution to the economic profitability of any particular process. This is required to successfully advance the process of including and properly inserting each of the necessary items in the operationalization of the strategy to "push in the activities and their underlying resources within their business units" (Karim, 2012, p.333).

These processes can be very effective if a manager has the ability to advance their choice adequately and advantageously, given the heterogeneity of resources in terms of characteristics, utility and costs. The right choice can lead the company to gain competitive advantages from the planning process and even to profitability from competitors by gaining access at lower cost (Amit and Schoemaker, 1993; Makadok, 2001)

These scholars discuss in different works about the planning of resources and everything that includes, beginning with the planning and achievement results until they get a proper insertion in the processes of the organization. An adequate process of conceptualization affects the profitability of achieving convenient results.

Another strategy for the proper conceptualization of resources is based on the ability of managers to read the market, select information relevant to their company and use it in the best way. This is what Bettis and Prahalad (1995) call "information filter" or "funnel". When a manager is able to identify the key resources for the company from those available at a given time, usually he/she can transform production process adding value in a way that assets can contribute to maximization of wealth.

In their analysis of this general idea, these authors propose it as a filter to initiate the strategic analysis and to maximize the models and practices that are developed within the organization. This logic path should be privileged when choosing strategies to take advantage of resources.

The time of conceptualizing the business mentally -given the complex and dynamic interaction of heterogeneous resources in the operation of the company- might become a more complex aspect if it is a process of planning or structuring in the future, where resources have not yet been acquired (Porter 1980, Wenderfelt 1984, Barney 1991, Reed and DeFillippi 1990, Lippman and Rumelt 1992, Penrose and Pitelis 2009; Porter, 2008).

However, to the extent that organizations have become more complex as a natural consequence of the emergence of new conditions in the markets, new firms involved in them, the different capacities of their managers and the decisions that in turn companies under their direction, reality has been in charge of giving priority to actions taken by managers who have additional management competencies.

Taking into account this complex structure of resources, companies and competitors with dissimilar characteristics between them need to develop specific management systems that are not only an exact reflection of the reality, but anticipates the possible interrelations between competitive actors and the evolution of them.

For this reason the abstraction and knowledge administration that a manager possesses and the capacity of application to the system of planning, conceptualization, management and insertion of the resources become an essential characteristic for strategists (Walsh 1995, Anand, Manz and Glick, 1998, Narasimha, 2000, Tikkanen, Lamberg, Parvinen and Kallunki, 2005).

### **2.3. Development of the necessary resources for the implementation of strategies**

The possibility that managers take advantage of their capabilities to manage the choice and achievement of resources during the design of the strategy and prior to its implementation is crucial. But in a complementary way it becomes necessary a useful management tool finding out best alternatives during the implementation of strategies. Complementing the above, the one presented in this section becomes an ex post process and is what will be called hereafter the "resources development" as shown in Figure 2.

At this stage, conditions have to do with the origin and the way in which the company obtains and manages those resources. At any given time, a manager must make decisions about their acquisition and availability in the processes. Considering that globally for trade in goods and trade in services account for a significant percentage of world gross domestic product (GDP) this presents a great challenge but at the same time a great opportunity by offering a very large spectrum of factor and service providers for the organization.

In addition, although the evolution in the services market is not as high as might be expected, the management of intangibles within which human talent and knowledge are found, also becomes a very important aspect, in the management (Sánchez and Mahoney, 1996, Alavi and Leadner, 2001, Gold, Malhotra and Segars, 2001). Direct procurement is not the only source of resources for its development, with other options such as inventory management, cross-docking and resource-picking suggested in the previous stage (Blaikie, Brown, Stocking, Dixon and Sillitoe, 1997; DeSimone, Werner and Harris, 2002).

In the stage corresponding to the resource conceptualization process, it was possible to obtain profitability in advance by managing the access to the resources in the conditions that are needed and at a lower cost than that of the competitors; in this new phase the profitability and its use can materialize once this has been acquired.

This is possible once the managers have been able to establish the quantity and availability (access) of the resources both inside and outside the organization and have established the contribution to the improvement of the performance and the profitability of each one of them (Kunc and Morecroft, 2010, p.1167).

### **2.4. Model of strategy development under the RBV paradigm**

At a time when the processes of conceptualization and development of resources have been designed and are being administered by the organizational strategist, an important element is included in the cycle and therefore in the model. It is about the actual interaction of the organization and its processes with the environment and receiving feedback from it.

It is at this moment that the role of the administrator and his management in the use of the competitive advantages achieved in the two previous stages can be translated into conditions of sustainability of the company's performance.

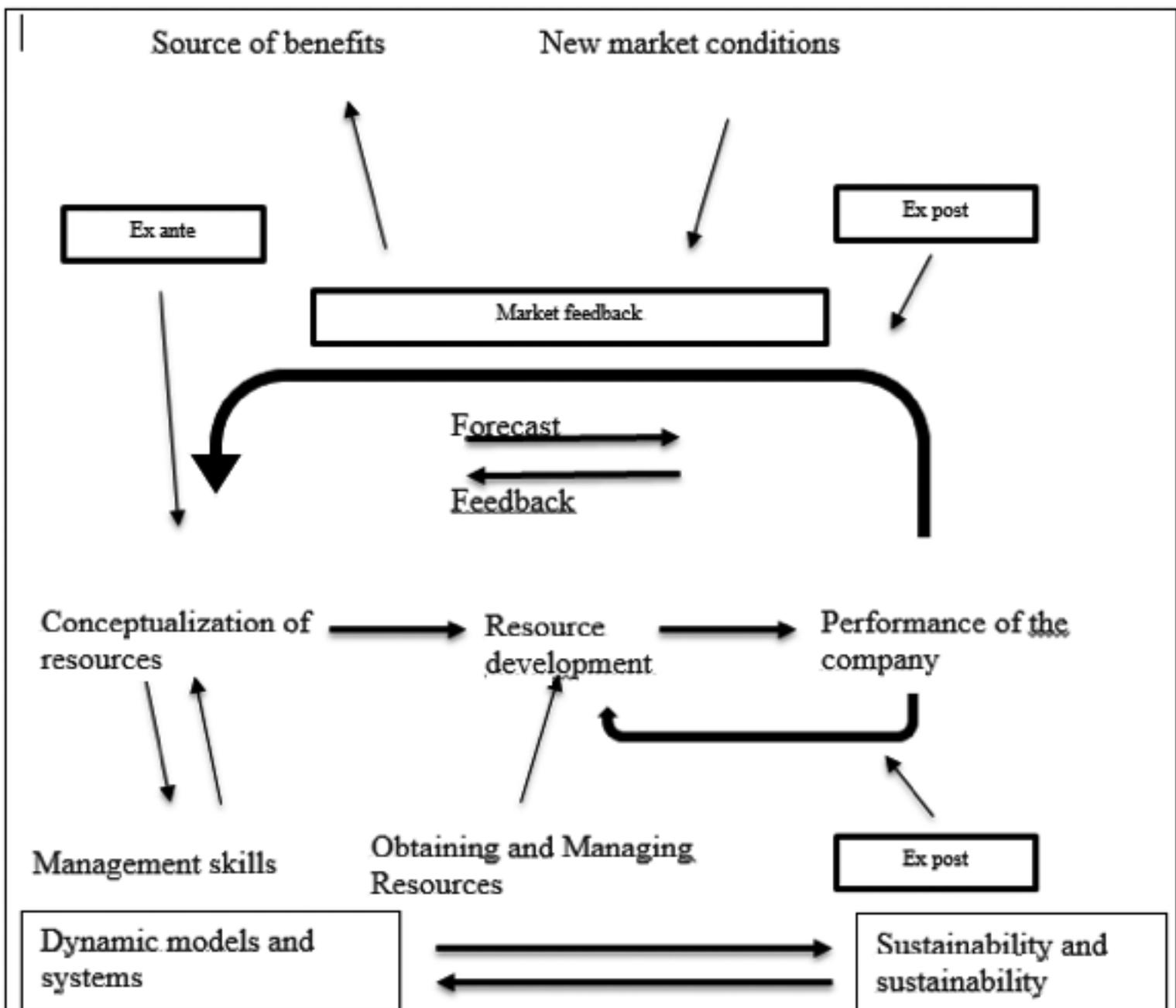
In this regard, several have been the solutions proposed by academics, including a concept that has begun to have a boom in the first decade of the twenty-first century and that in the near future could have a level of development and important theoretical support to make it a new paradigm: it is the relation between the management models and dynamic systems.

King (2007) for example proposes a model of analysis of the ambiguity of market situations specifying the influences of these in the organization. Powell, Lovallo and Caringal (2006) develop the relationship between management perception and firm performance. Ma (1999) emphasizes the decisive role of the manager in understanding the relationship between the competitive advantages derived from this model and its responsibility in the durability and success of the companies.

In this way, a large number of theorists and researchers have devoted important segments of their studies and research to the reflection and empirical evidence of this important causal relationship (see Flint and Van Fleet, 2005; , Morecroft and Rockart, 2008, Kunc and Morecroft, 2010, Gary and Wood, 2011, Gary, Wood and Pillinger, 2012, Gröser and Schaffernicht, 2012).

At this particular point, this paper intends to propose some aspects of a comparative of the possible application of the resource - based view (RBV) to the Integrated Public Transportation System (SITP) Bogotá. The outline of this proposal can be found in Figure 3.

**Figure 3**  
Strategic development model under the RBV theoretical perspective



Source: The authors based on Flint and Van Fleet (2005), Morecroft and Rockart (2008), Kunc and Morecroft (2010), Gary and Wood (2011).

### 3. The performance of a company: the environment and the organizational factors as sources of competitive advantage

As Rouse and Daellenbach (1999; Zegarra 2016) point out, the sources of sustainable competitive advantage are found in the effects of each process of the organization and

therefore must be sought both in the organization and in the interaction of the environment. The traditional literature has sufficient methodological proposals that unequivocally identify these internal and external factors and propose comprehensive designs for exploration (Daellenbah, 1999). This proposal will take into account the structure and stages proposed by these authors to advance an analysis of organizational performance from the perspective of RBV claims.

Latin American studies concerning business performance using the RBV, which compare the performance and results are limited. In this regard, it is important to keep in mind contributions made by Zegarra (2016) that proposes a model combining qualitative and quantitative methods.

On the other hand, Grant (1991) proposed a theoretical complement of the framework on empirical investigations or verifications in order to show the relationship between the components of the organization and its performance, the variables of the organization environment and financial performance indicators.

For this consideration, Grant starts by configuring three main blocks to characterize the resources: physical, human and business. Additionally Hill and Jones (2007) distinguish four categories that must be integrated and managed simultaneously to obtain a superior performance strategy: efficiency, quality, innovation and responsiveness to customers' requirements.

Weber (2008) points out that RBV can be expressed through hypotheses that aim to measure the degree of use of key aspects of market competition such as value generated in processes, singularity or differentiation in the market and the capacities of the components of the organization that contribute to the competitive advantage of the company that in turn contributes to the optimization of performance.

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## **4. Methodological issues: a conceptual model**

The proposal and contribution of this paper aims to develop a conceptual model base for empirical research that can be applied in business sectors and industries especially Latin American, to measure and compare their organizational performance. Particularly this model has been developed thinking of being applied to the Integrated Public Transport System of Bogota (SITP) Colombia.

Given its orientation and the flexibility of the structure proposed, it can be replicated in such systems regarding public transportation in any city of the world, which would allow the development of complementary comparative studies that contribute to the conceptual and empirical reinforcement of this theory.

This is why the methodological proposal that will be explained here uses components, hypotheses and key performance indicators of the public transport industry. It can be used as a guide for the development of studies in other sectors.

According to the literature review at the beginning of this article, the model will use two types of study depending on the stage in which it is being developed and the performance indicator(s) being evaluated: (i) a quantitative one to check or to refute the hypotheses and correlation between them, and (ii) a qualitative one to compare the components of the SITPs main feature analysis of the key performance indicators and factors that influence demand.

This study will be carried out using the six steps defined by Rouse and Daellenbach (1999) for the analysis of business performance under the base theory of this study, which will be hypothesized to be tested or refuted through the qualitative study. The model included here will take into account the classification and characteristics of the resource typology defined by Grant (1991) for the RBV claims that defines them as physical, human and business. In an earlier study developed by Cabrera (2011), 56 variables belonging to the SITP of Bogotá were initially identified.

**Table 1**

Principal variables of the integrated public transportation system of Bogotá (SITP)

1. Permanence and participation of the owners	28. Operating infrastructure
2. Technical Analysis	29. Hierarchy of routes
3. Administrative management of SITP	30. Legal management
4. Rate integration	31. End route terminals
5. Core cost	32. Header Terminals
6. Collection	33. Automotive Park of the SITP
7. Zonal Operators	34. Road system of operation of the route
8. Vehicles	35. Type of operation
9. Feeding routes	36. Stops
10. Additional Routes	37. Bus traffic area
11. Auxiliary routes	38. Parking area
12. Special Routes	39. Maintenance area
13. Quality of service	40. Service area
14. Maintenance	41. Hierarchy of corridors
15. Trunk operator	42. Architecture of SITP
16. Environmental impact	43. Zones
17. Environmental management plan	44. Legal Representative
18. Impact studies and environmental management	45. Financial capacity
19. Minimum experience in transportation	46. Promise of a future society
20. Participation of companies	47. Heritage
21. Financial aspects	48. Working Capital
22. Aspects of the environment	49. Vehicle type
23. Operational integration	50. Pollution
24. SIRCI Collection System	51. Trunk operating area
25. Location of stations	52. Characterization
26. Types of stations	53. Quality of life
27. Passengers	54. Technology
	55. Road network
	56. Normativity or regulations

**Source:** Cabrera et. al. (2011)

After a review of the literature on the subject where academic sources, technical studies and legal framework documents were differentiated, the 16 variables with the most frequency of occurrence were selected from the analyzed texts. These variables were hierarchized and assigned a "short name" for use in the reference study (Cabrera et al., 2011). This classification can be observed in Tables 1 and 2.

The designed model is in agreement with the ideas proposed by Hill and Jones (2007), which emphasize the fact that the implementation of strategies, in turn, involves the use of an organizational design that allows the use of available resources taking into account the organizational structure, control systems and organizational culture in search of a successful business model.

**Table 2**

Selected variables for the proposed methodology

VARIABLE	FREQUENCY	SHORT NAME
Rate integration	12	IT
Environmental impact	11	IA
Normativity	11	NM
Financial capacity	10	CF
Hierarchy of routes	9	RJ
Automotive Park of the SITP	9	PA
Administrative management of SITP	8	GA
Quality of service	8	CS
Operating infrastructure	8	IO
Quality of life	8	CV
Road mesh	8	MV
Legal management	7	GJ
Characterization	7	CH
Trunk operator	6	OT
SIRCI Collection System	6	SC
Zonal Operators	6	OZ

Source: This study based on Cabrera (2011)

This structure enables superior performance in the so-called "building blocks or constellations of competitive advantage elements" which are defined by the efficiency of the processes, the quality of the product or service, the organizational responsiveness in terms of customer satisfaction and the levels of innovation involved in the system. In this sense, a model of evaluation of competitive advantage involves at this stage the key performance indicators (KPI) for its assessment.

Newbert (2008) distinguishes the perception of the customer or user against the value of the product or service and the singularity or differentiation of this as a result of the proper organizational design and precursors of the competitive advantage and therefore of the superior performance of a company. It is in this section of the conceptual model and in the stage based on it that the hypothesis tests are advanced for verification or refutation. In Figure 4, the proposed conceptual model for the application of the RBV theory to the SITPs of Bogotá is presented.

## 5. Results from the proposed application

As explained above, it is proposed to follow six stages for business performance analysis under the base theory of this study:

- i. Identification and measurement of the strategic variables of each system,** establishing the similarities and differences between each of them. The variables presented in the following tables are initially proposed and were chosen with respect to the conceptual model in the previous point.
- ii. Formulation of hypotheses.** This stage will assume in principle that those systems with superiority in efficiency, quality, customer responsiveness and innovation will have a superior performance. In this proposal, the blocks are constituted in the independent variables and

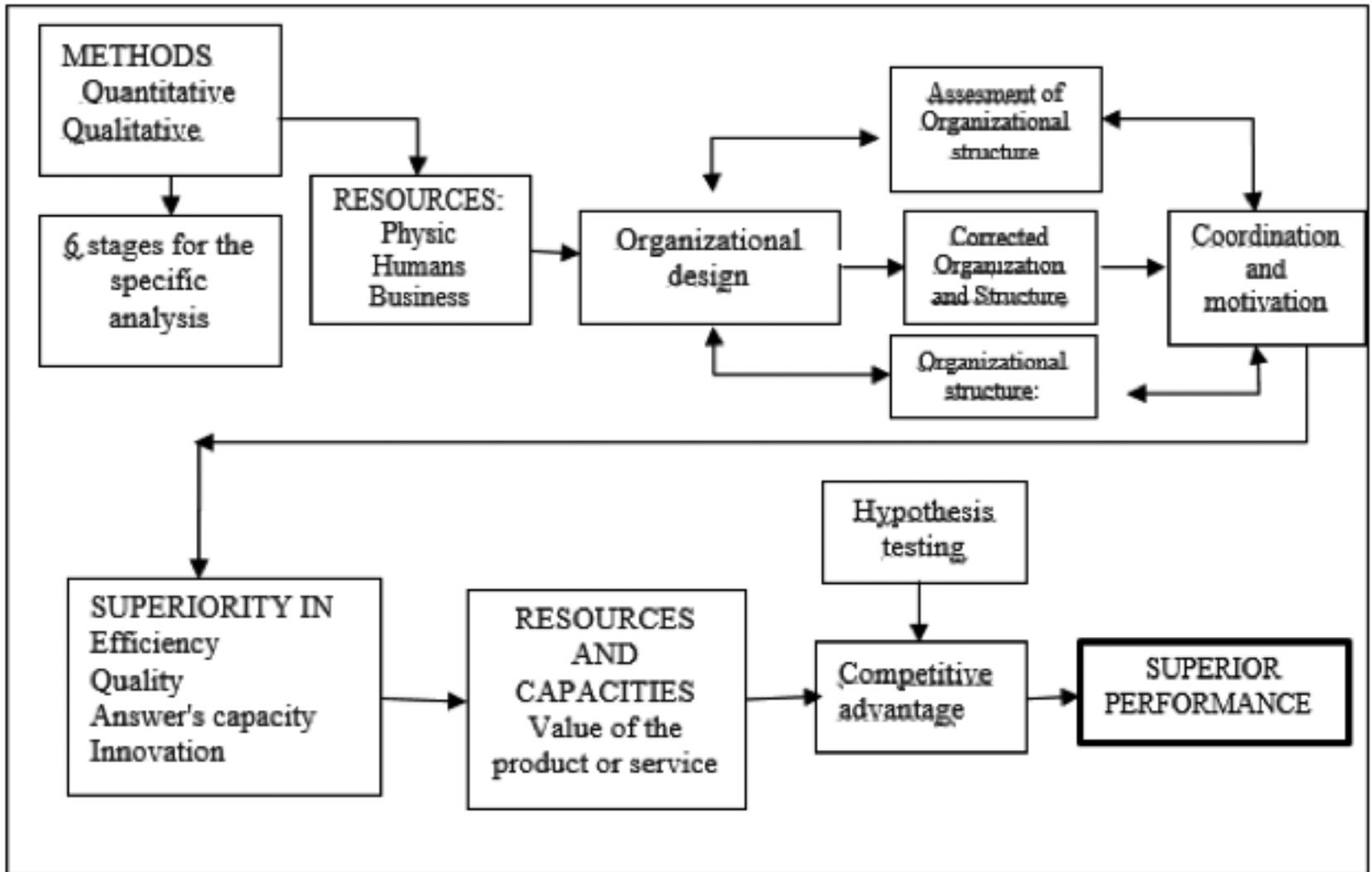
the performance variables become the dependent ones.

We suggest the use of multiple regression models to prove or refute and to find the intensity of the relationships as follows:

- H1: The greater the efficiency in passenger transport, the greater its performance.
- H2: The higher the quality of service delivery, the greater its performance.
- H3: The greater the responsiveness to the needs of the user, the greater their performance.
- H4: The greater the innovation in service delivery, the greater its performance.

**Figure 4**

Conceptual model proposed for research under the RBV paradigm



Source: This study based on Flint and Van Fleet, 2005; ,Morecroft and Rockart, 2008, Kunc and Morecroft, 2010, Gary and Wood, 2011.

**iii. Development of indicators.** Taking advantage of the chosen variables and the correlations obtained in the qualitative analysis, key indicators are developed so it will allow the quantification of the dependent and independent variables so that their comparison and analysis will in turn permit to refute or to verify the hypotheses.

An initial proposal is to develop and evaluate Performance Indicators (KPI) for each of the short-term exploration activities and long-term exploration. They would be associated in the first case with efficiency, control of operations , security and reduction of variance in the processes of the system and in the second case, to the search for new and innovative ways of operating, the discovery, the innovation associated with each process.

**Table 3**

Categories of quantitative evaluation and research areas based on KPI

CATEGORIES	AREAS
QUALITY OF SERVICE	Safety and wellness
	Service performance
CUSTOMER SATISFACTION	Comfort, cleanliness and quality perception
	Information to passengers
ENVIRONMENT	Access to vehicles and stations
	Environmental aspects
EFFICIENCY / PRODUCTIVITY	Economic and operational aspects
	Price, cost, return, level of satisfaction, etc.
	Maintenance

Source: The authors based on Dirgahayani (2013), Raj et al. (2013) and Santana (2009)

To achieve these aims, we propose the use of some of the categories identified by Dirgahayani (2013), Raj, Sekhar & Velmurugan (2013) and Santana (2009) to evaluate hypotheses using KPIs. Some examples of these categories of quantitative and qualitative type are:

- Model for quantitative studies: dependent variables: efficiency, quality services, custom satisfaction and innovation.
- Categories of quantitative assessment and research areas using KPI, see Table 3.

Velásquez (2009) also suggests the analysis of certain economic and cost aspects to analyze the factors that influence the demand for this system in Bogotá, through its variables and the hypothesis testing. These elements are:

### **Financial and economic aspects**

- rate per trip;
- year on year increase in tariff;
- costs of other transportation means;
- rates of other transportation models;
- gross domestic product per capita in the city;
- infrastructure costs.

### **Technical aspects**

- Demand of the service;
- number of kilometers of exclusive lane;
- number of stations in service;
- number of buses in operation

### **Demographic/social**

- User –gender.

**iv. Identify the aspects with the highest and lowest performance.** Based on the results and values of the defined indicators, find out those aspects that have the highest and lowest performance are categorized.

**v. Identify the characteristics, availability and use of resources that distinguish companies and/or processes with superior performance.** When evaluating the correlation between variables, the results of the KPIs and the processes with the highest and lowest performance, it will be possible to highlight the resources that contribute to these results. It is recommended to identify those factors that contribute to the value of the product and its uniqueness or differentiation in the market.

**vi. Identification of strategies that make use of resources that distinguish companies with superior performance.** Once resources with greatest contribution to the

high performance of the transport system have been identified, it is recommended to formulate specific strategies to utilize them with positive multiplier effect.

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## 6. Conclusions and final considerations

The methodology proposed in this article allows the application of the postulates of the Resource-based view (RBV) to different organizations and in this way, when using the methodology proposed in different researches, will allow increasing the empirical verification of its results.

The RBV model is applicable to any type of business sector or organization regardless of its constitution, orientation, components or scope. In this way, and from this proposal, it is evident that more experiences are needed to study particular public transportation systems in Latin America.

Although there are different scholars with an extensive intellectual and empirical production on the theory analyzed from different points of view, there is still a great potential to develop it. Each of the proposed stages and their results allows identifying important aspects in the search for higher levels of enterprises' performance.

The model here discussed is applicable to the SITPs of different cities of Latin America and the world, which is described by the examples and content proposals belonging to the analysis of Transmilenio in Bogotá; specifically regarding one of the components of the SITP of Bogotá, the capital city of Colombia.

The model and its application to SITPs in Bogota will eventually allow the identification of key resources in the performance of systems and strategies that have been implemented. In this way, further research may advance proposals for implementing more effective strategic management systems.

The possibility of advancing comparative studies between organizations with different levels of performance will allow the identification of the resources and strategies that most contribute to achieve appropriate results for both, companies and communities.

The execution of research using qualitative and quantitative methods of analysis allows results to be obtained with high academic rigor, which makes it possible to define generic and/or particular strategies for improving the performance of companies and economic sectors in general.

As expected, a crucial limitation regarding these studies might be related to the possibility to obtain reliable information for its use. To the extent that empirical research is conducted to evaluate the role of RBV model in obtaining competitive advantages and superior performance in organizations, the model can be optimized and find new and better proposals for study and applications.

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1. Ph.D (c) in Management Sciences, Universidad del Rosario at Bogotá, Colombia. Associate professor, Universidad Jorge Tadeo Lozano at Bogotá, Colombia. [diegor.cabreram@utadeo.edu.co](mailto:diegor.cabreram@utadeo.edu.co)

2. Ph.D in Economics of Development/International Relations, University of Pittsburgh/Harvard. Full tenure professor, Universidad del Rosario at Bogotá, Colombia

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