ENTERPRISE LOGISTICS, INDICATORS AND PHYSICAL DISTRIBUTION MANAGER

José Hernández R.*, María García G.** and Gilberto Hernández G.***

* Gestión de la tecnología, Universidad Metropolitana, Caracas, Estado Miranda, 1073, Venezuela, Email: jhernandez@unimet.edu.ve
** Gerencia General, Minimax Consultores C. A., Caracas, Estado Miranda, 78239, Venezuela, Email: Mariminimagarcia@yahoo.com
*** Gerencia de Investigación, Minimax Consultores C. A., Caracas, Estado Miranda, 78239, Venezuela, Email: Minimaxconsultores@yahoo.com

Abstract   Four models were created to study enterprise logistics. From the first one of them, the Logistic Model Based on Positions (LoMoBaP), one of its forty-four charges, the Physical Distribution Manager will be taken, and indicators will be generated to measure its performance, following, the third one of the models, the Logistic Model Based on Indicators of Positions (LoMoBaIPo). The objective of this work is to show how indicators of management can be used in enterprise logistics, following the LoMoBaIPo to apply to the Physical Distribution Manager of the LoMoBaP. To obtain this objective it will be followed the Integrated-Adaptable Methodology for the development of Deci-sion Support System [IAMDSS], which for their flexibility is very useful in other works of investiga-tion, that not necessarily generate a Decision Support System (DSS). As result a set of tables are ob-tained, that allows to evaluate the Physical distribution Manager across indicators.

Paper type: Research paper

1. INTRODUCTION

This investigation offers as principal contribution to illustrate how the Logistic Model Based on Indicators of Positions (LoMoBaIPo [MoLoBaICa, in Spanish]) works. This illustration will be done through the Manager of Physical Distribution of the Logistic Model Based on Positions (LoMoBaP [MoLoBaC, in Spanish]).

MoLoBaC and MoLoBaICa, are the first and the third of four qualitative-quantitative models, created in the academy to facilitate the teaching of enterprise logistics. The second and fourth models are: The Supply, Production, Distribution and Inverse Logistic model (LSPDI [LAPDI, in Spanish]) and The Strategic, Tactical, Operational with Inverse Logistic Model (STOILMo [MoLETOI, in Spanish]).

In this article these two last models will only be mentioned, dedicating greater efforts to the MoLoBaC and to the MoLoBaICa.

1.1. Objective

As said before, the objective of this work will be: to show how indicators of management can be used in enterprise logistics, following the MoLoBaICa to apply to the Physical Distribution Manager of the MoLoBaC.

This general objective consists in four specific objectives: To present and to comment how this four models are used: LAPDI, MoLoBaC, MoLoBaICa and MoLETOI; Explaining the main characteristics of the MoLoBaC and analyzing one of its positions, to the Physical Distribution Manager; Explaining the methodology of the MoLoBaICa to build indicators that evaluate each one of the positions of the MoLoBaC; To show the functioning of the MoLoBaICa, through the Physical distribution Manager.

1.2. Methodology

To achieve the general objective and its specific objectives, it will be used the Integrated-Adaptable Methodology for the development of Decision Support System (IAMDSS [MIASAD, in Spanish]). This methodology although it was created to develop Decision Support Systems (DSS) (García, Hernández & Hernández, 2011), given its flexibility it has shown to be of great utility for the development of scientific works of any nature, especially when is a matter of works developed by groups of investigators. Particularly for this article, the same as in similar cases (García, Hernández & Hernández, 2012); (Hernández, García & Hernández, 2012) a series of orderly steps will be followed:

a) Defining the problem, that as presented in the objectives is to show the use of indicators of management in enterprise logistics, using the MoLoBaICa through the Manager of Physical distribution of the MoLoBaC,

b) Obtaining data, in this case about MoLoBaC, MoLoBaICa and the Physical distribution Manager,

c) Establishing alternatives, which will be the different paths that can be used to define groups of indicators that allows to evaluate the Physical distribution Manager, to following the methodology indicated by MoLoBaICa,

d) Evaluate alternatives, according to the feasibility to have an adequate measure of the performance of the Physical distribution Manager,

e) Selecting the alternative, according to the previous evaluation and considering the secondary objectives, whether they are tacit or explicit,

f) Implementing the best alternative, guaranteeing all the mechanisms that allow putting into practice the determined indicators and

g) Establishing controls, establishing mechanisms, probably other indicators, which allow determining if the selective alternative remains valid over time.

About the limitations and reach of this investigation, no field work will be made referring to a particular enterprise; instead in order to guarantee a broader approach for the obtained results, the example will be made using a hypothetical Physical distribution Manager.

2. THE PHYSICAL DISTRIBUTION MANAGES OF THE MOLOBAC

2.1. Logistics: Definitions and models

Before presenting the Physical Distribution Manager of the Logistic Model Based on Positions (LoMoBaP [MoLoBaC]), there will be made some comments about the four models created to teach enterprise logistics. For this it will be used as a base the content exposed in Hernández et al. (2012), in which they take as a starting point the supply chain and logistics definitions.

Supply chain is all the logistic aspects that must be synchronized among the producers of raw material, finished products and both wholesale and retail distributors, so the costumer is attended adequately satisfying its real needs; the logistic aspects in which Supply Chain Management (SCM) is usually centered are: Warehouse, inventories, localization and transportation, but in order to achieve a good SCM it is required a high integration of the information systems.

On the other hand in the enterprise logistics is emphasized that it is centered in searching and achieving the best present and future satisfaction of the final costumer and includes the socio-environmental and ethic-legal aspects, the planning, execution and control of all related activities with the procurement, flow, warehousing and maintenance of materials, products and even services; from the raw material source, including costumer through inverse logistics, to the sale point of the fi-

nished product whether local or international, massive or enterprise, in the most effective and efficient manner, maximizing performance and the expected quality, while minimizing waste, time and cost using modern information technologies (Hernández et al., 2012).

Although this two concepts appear abundantly on the literature (Ballou, 2004); (Christopher, 2002); (Cscmp, 2012); (Demeter, Gelei & Jenei, 2006); (Hugos, 2003); (Lin, Chiang, Liou & Wu, 2009); (Stadtler & Kilger, 2005), the previous definitions were used for its better adaptation to objective this article and being a source for the development of the studied models.

The four models are (Hernández et al., 2012): The Supply, Production, Distribution and Inverse Logistic model (LSPDI [LAPDI]), which studies logistics through flow management in the main stages of logistics which are supply, production, distribution and it has also been included inverse logistic, as well as general aspects of the organization and of information. Among the main flows studied by this model are the material flows, direct and inverse; the information flows, including here the control flows; the monetary flows; energy flows and any other in the organization that could affect logistics, considering even the personnel and knowledge flows.

The Strategic, Tactical, Operational with Inverse Logistic Model (STOILMo [MoLETOI]), which analyzes logistics following the administration fundamental pyramid, highlighting four stages: Strategic, Strategic-Tactic, Tactic-Operative and Operative, each one of the divided in four phases, therefore the model is developed while performing an ascendant run through these sixteen phases, starting in the basic strategic aspects and concluding in the operative aspects that define the organizations daily work.

The Logistic Model Based in Positions (LoMoBaP [MoLoBaC]), which studies logistics through the activities performed those who have positions relative to logistics and its related areas, as previously indicated this means the whole organization. MoLoBaC is represented through a flow chart, where there are highlighted forty four positions, which are grouped in twelve areas and these areas in six stages.

The stages of MoLoBaC and its respective areas are:

- Supply, is conformed by a single area: Procurement, which is integrated by three positions.
- Production, conformed by two areas: Maintenance, integrated by four positions and the Inventories area, which contemplates three positions.
- Distribution, its four areas are: Order Processing, which is a mixed area since it is formed by positions of different stages, three that belong to the phase of Production and two, that belong to the phase of Distribution; the Physical Distribution area, where can be found the positions of: Dispatch Manager (27), Distribution Channels Manager (28) and Physical distribution Manager (29). The numbers in parenthesis are used by MoLoBaC to identify each of the positions; the area of Transportation that is also a mixed area, were appears a position of the General to the Enterprise stage

and four charges, own of the Distribution stage and the four area of the stage, Costumer Service, it is integrated by three positions. Of this stage it will take the Physical distribution Manager (29) as key element of this work, of there that is developed by more details in the next subchapter.

General to the Enterprise, here three areas are distinguished: Intrinsic to Logistics, with three positions; Supported by Logistics, covering also three positions; Supporting Logistics, with six positions, one of them it is the only position of the model that itself is not identified like the manager.

General Information, this last stage is constituted by a single area, Information, which is a mixed area with five positions, four own of information and one general.

On the MoLoBaC there gets over the Logistic Model Based on Indicators of Positions (LoMoBaIPo [MoLoBaICa]), which measures the performance of each of the positions of MoLoBaC through indicators. This model is a fundamental part of this article, of there that it will be dedicated a complete section further on.

These models were created in the classroom and had been adapted through new experiences in time and mainly academic literature about logistics and supply chain (Ballou, 2004); (Bowersox, Closs & Cooper, 2007); (Christopher, 2002); (Cscmp, 2012); (Dornier, Ernst, Fender & Kouvelis, 1998).

2.2. The Physical distribution Manager

The Physical distribution Manager, together with its two subordinated positions, takes responsibility guaranteeing that the products get to the final customer following the suitable channels. When it is spoken of physical distribution, especially in the decade of the sixties and starts of the seventies, just as indicated by Rushton, Oxley & Croucher (2000), there are recognized a series of physical activities: transportation, packing, management of materials and storage, that they could be grouped for to be handled in a way more efficient. Nevertheless for this work and according to the MoLoBaC, the physical distribution will be more close to the concept of plaza, of the four P of the marketing, established by McCarthy (Grönroos, 1994); (Waterschoot & Bulte, 1992). That is to say, this physical distribution begins on having finished the process of production and culminates when the goods are in the transport. Under this premise, taking the goods of the center of production up to the final client does across the Transport Management. Nevertheless, the channels of commercialization if are an aspect handled inside this area of Physical distribution.

They framed in this context, can think that to the environment of performance of the Physical distribution Manager, it is very limited. Nevertheless, considering the remaining positions of the MoLoBaC and through a light bibliographical review (Baker, 2004); (Dotoli, Fanti, Meloni & Zhou, 2005); (Humphreys, Lai & Sculli, 2001); (Otto & Kotzab, 2003); (Rushton, Oxley & Croucher, 2000); (Vorst, Beulens, Wit & Beek, 1998); (Yang & Burns, 2003), they can be inferred a large quantity of functions that this manager should perform:

- 01. Analyzing and to define the number and location of centers of physical distribution, dispatch and Cross-docking. For it can receive assistance of the Location Manager.
- 02. Establishing the norms, regulations and mechanisms of operation of the process of physical distribution of the organization.
- 03. Coordinating all the relating to the channels of distribution and the dispatch.
- 04. Implementing the centers of Cross-docking that is necessary.
- 05. Supervising permanently, the centers of distribution and the centers of Cross-docking, to measure its performance.
- 06. Measuring the centers of distribution and the centers of Cross-docking.
- 07. Creating or to eliminate centers of distribution and centers of Cross-docking, according to the needs.
- 08. Revising, together to the Channels Manager, the performance of the distribution channels and helping to implement the adjustments that are necessary.
- 09. Establishing the direct and inverse flows of materials, that they facilitate the physical distribution of the final products.
- 10. Guaranteeing an effective and efficient physical distribution, those help to satisfy the vision, mission and rectors principles of the organization.
- 11. Management and to help in the creation of new knowledge, useful to the organization, derivate of the experiences generated by the physical distribution.
- 12. Maintaining a constant exchange of information with the managers of the organization and with the responsible for each one of the distribution channels, to guarantee a speedy and harmonious distribution of the products.
- 13. Measuring and to control the times of the physical distribution, including since the order is prepared until it is got for the final client or center of distribution as the case.
- 14. To create and to implement all the mechanisms that allow they to measure their performance and that of their secondary ones and collaborators.
- 15. Coordinating the reception of the supplies that arrive at the organization, to avoid conflicts with the dispatch. In this coordination there intervene the Procurement Manager and his subordinates and the Store and Dispatch managers.
- 16. To collaborate in choosing the fleet that will perform the transport of the goods, in coordination with their subordinates and the Transport Manager and their subordinates.
- 17. Helping, to the managers of Layout, Store, Picking and Dispatch with the layout of the stores, especially that of products finished.

- 18. Guaranteeing that has the best machinery and personal, so that the distribution process is realized by the biggest standards of quality.
- 19. To offer, to his secondary personnel, suitable training so that they have a better performance in his functions. Here it will receive the support of the Human resources Manager.
- 20. To coordinate and to help in the planning of the maintenance of all the machines and necessary equipments to perform the physical distribution. For it will include the support of the Maintenance Manager and its subordinate, therefore the Equipment and spare parts Manager.
- 21. To act as a responsible center for costs, so that the process of physical distribution, be carried out to the smaller possible cost without affecting the quality and efficiency of it, with the support of the Cost and Finance managers.
- 22. Being up to date with the new technologies that can help a better performance. It is able in this case to ask the support of the Research and development Manager and its subordinate, especially the managers of New technologies and of Systems of information and networks.
- 23. Participating, through the physical distribution in any plan of expansion of the organization, collaborating thus with the Expansion Manager.
- 24. Coordinating with the Manager of Inventories and its subordinate and the managers of Store and Picking, all the relating to the inventories of semi-elaborate products and final products, so that the process of physical distribution be not seen affected, by scarcity of some products and parts.
- 25. Demand contribution to the Inventories models Manager and the Forecasts Manager, to create models that permit him to establish estimations certain of the demand of their services.
- 26. Working in permanent coordination with the Marketing and sales Manager, to prepare a better quality of the future physical distribution.
- 27. Generating indicators of management that allows having a constant supervision of their performance and that of their subordinates.
- 28. Offering the necessary conditions, in the distribution, that allows facilitating the process of postponing.
- 29. Taking advantage of the physical distribution, to improve the satisfaction of the final clients.
- 30. To acquire and to implement software that allows having a better performance, in everything what to physical distribution refers. For it must receive the support of the System information and networks and New technologies Managers.
- 31. To take part, along with the Manager of Handling of materials and the Equipment and spare parts Manager, in the acquisition of equipments, which facilitate to bring the final products over to the centers of distribution and points of dispatch.

- 32. To coordinate with the Industrial Design Manager, so that any new designed product, it does not disturb his physical distribution. Equally it must coordinate with this manager, everything relative to the distribution of prototypes and products of test that could need some special condition of handling.
- 33. Attending the Order processing Manager, in all those orders, that they can require special conditions for their physical distribution.
- 34. Maintaining constant communication with the Packing Manager, so that the packing to all their levels, they facilitate the physical distribution.
- 35. Coordinating with the Inverse logistics Manager and its subordinates, so that the process of physical distribution, do not interfere with the reception of products that arrive through the inverse logistics.
- 36. To encourage, together with the Project Manager, the generation of new projects, which help to a better yield of the process of physical distribution.
- 37. To receive the support of the Ethical juridical Consultant and of the Environment Manager, so that the process of physical distribution is realized respecting all the current regulations and in amicable conditions to the environment.
- 38. Watching, together to the Industrial safety and internal relations Manager, so all their subordinates operate under the best conditions of labor safety.
- 39. Establishing, in coordination to the External relations Manager, some excellent relations with the state entities and the community.
- 40. Contributing to maintaining some high levels of performance in the organization.

Although other functions could be mentioned, with the previously they listed, can have a clear idea of the complex thing, that the Physical distribution Manager position can result. A way to have an adequate measurement of the performance is through indicators. Subsequently some additional details will be offered of the Logistic Model Based on Indicators of Positions (LoMoBaIPo [MoLoBaICa]).

3. THE MOLOBAICA AND THE MEASUREMENT OF THE PERFORMANCE THROUGH INDICATORS

3.1. The MoLoBaICa as methodology

In a previous work (Hernández et al., 2012), it was presented the Logistic Model Based on Indicators of Positions (MoLoBaICa), which allows to measure, across management indicators, the performance of each and every one of the positions of the

MoLoBaC, to which it gets over. MoLoBaICa, besides being a qualitative-quantitative model, is in itself a methodology that helps in the construction of indicators, at the same time that facilitates its application in different levels of the organizations. Thus the MoLoBaICa, facilitates to measure the performance, not only of an employee, but following the MoLoBaC, it can measure: an indicator, a function, a position, an area, a stage and the whole organization.

From the academic and structural point of view, the MoLoBaICa, follows a set of three tables, which are recommended to be revised in the preceding work (Hernández et al., 2012). In the first one of them the steps and conditions are established to generate the different indicators that could be necessary. The second one of the tables presents the steps to perform the different evaluations of the functions and positions, across the created indicators. And in the third table they consolidate the performance, that is to say, reflect in percentage the different measurements, so much of functions, positions, areas, stages and the organization as everything.

To illustrate as can be used MoLoBaICa, they will following the features established in Hernández et al., (2012) and it will be used, the Physical distribution Manager, of which they were presented, before, some of their functions.

3.2. Use of the MoLoBaICa through the Physical distribution Manager

In general the MoLoBaICa, recommends the use of to twelve functions to determine the performance of a position (Hernández et al., 2012), for reasons of space, the illustration will be done through a summarized case, using only three functions of the Physical distribution Manager.

Table 1   General aspects of the study

Enterprise: ZYBA	
Person responsible for the study in the enterprise: G. M.	
Position: President	
Responsible Consultant: M. G.	
Responsible of surveys: J. H.	
Starting date: 08/2012	Final date: 10/2012
Base Period: Week X Fortnight Month Other (Indicate)	
Employees to interview	Position
A. B.	Acquisition responsible.
C. D.	Returns responsible.
E. F.	Transportation responsible.
G. H.	Distribution responsible.

The Table 1 is the first step of the study of field and in it is collected general information: the personnel responsible, the dates and other additional data, among which emphasizes the person to interview and on whom the study relapses.

From the Table 1 is passed to collect the information of the employees of interest. A table for each one of these employees is built. For this work, to facilitate the presentation, the study only will be centered in the employee G. H. and its corresponding information reflects itself in the Table 2. There it is emphasized the functions that fulfillment and the time that dedicates to each one of them. These functions and their dedication, they permit to locate the employee in a position of the MoLoBaC.

Table 2   Information of the employee G. H.

Employee: G. H.		
Interviews first date: 15/ 08 2012		Interviews final date: 16/ 08 2012
Position in the enterprise: Distribution responsible.		Total hours for period of time (Ht): 40
Function	Dedicated hours (Hd)	(Hd / Ht) * 100
05. Supervising permanently …	25	25/ 40 = 62.50 %
19. To offer, to his personnel…	4	4/ 40 = 10.00 %
29. Taking advantage of …	12	12/ 40 = 30.00 %
Total	41	102.5 %
Total Hd / Ht: Minor to 1 Equal to 1 Major to 1 X		
Comments: Slightly overcharged employee. All its functions are related to physical distribution.		
Position MoLoBaC: Physical distribution Manager.		

In the Table 3, there is represented the importance that each of the functions has in study and the number of indicators that will be used to measure them. The number of indicators, it does not have to keep direct relation with the importance of the function.

Table 3   Importance of the functions and number of indicators

Employee: G. H.		
Position MoLoBaC: Physical distribution Manager.		
Funtion	Function weight	Indicator Number
05. Supervising permanently …	60%	Two (2)
19. To offer, to his personnel…	16%	One (1)
29. Taking advantage of …	24%	Three (2)

In the Tables 4a, 4b and 4c, the indicators of the functions 05, 19 and 29, that are the functions selected to illustrate the study are respectively expressed. And in the Tables 5a, 5b and 5c the evaluation of these indicators is carried out.

Table 4a   Expression of the indicators of the function 05

Employee: G. H.							
Position MoLoBaC: Physical distribution Manager.							
Funtion: 05. Supervising permanently, the centers of distribution and the centers of …							
Function weight in evaluating the position (1 a 100): 60							
Indicator Name	Indicator Description	Mathematical Expression (Quotient)	Values			Revision conditions:	Indicator value for the function (1 a 100)
			Low	Medium	High		
Efficiency	Percentage deliveries without problems	(Problems monthly)/ 4.5	1.11	1.33	2.00	Seven straight times out of range	100
The indicator Efficiency is read once for month and expresses itself in errors per week.							
Time	Hours by truck in a center of Cross-Docking	(Average by truck)/ (Hours expected)	0.80	1.00	1.15	Five continued occasions above the rank	95
The indicator Time is read and expresses itself for every truck.							

Table 4b   Expression of the indicators of the function 19

Employee: G. H.							
Position MoLoBaC: Physical distribution Manager.							
Funtion: 19. To offer, to his secondary personnel, suitable training so that they …							
Function weight in evaluating the position (1 a 100): 16							
Indicator Name	Indicator Description	Mathematical Expression (Quotient)	Values			Revision conditions:	Indicator value for the function (1 a 100)
			Low	Medium	High		
Courses	Courses per person	(Courses of all the personnel) / (Number of employees)	2.00	3.00	5.00	Five straight times out of range	100
The indicator Courses is read and expresses itself once a year.							

Table 4c   Expression of the indicators of the function 29

Employee: G. H.							
Position MoLoBaC: Physical distribution Manager.							
Funtion: 29. Taking advantage of the physical distribution, to improve the satisfaction of …							
Function weight in evaluating the position (1 a 100): 24							
Indicator Name	Indicator Description	Mathematical Expression (Quotient)	Values			Revision conditions:	Indicator value for the function (1 a 100)
			Low	Medium	High		
Measure of impact	Occasions in which the impact is measured	(Number of measurements) / (Number of clients)	1.00	1.50	2.00	Five straight times out of range	80
The indicator Measured of impact is read and expresses itself once a month.							
Complaint	Complain attributable to the physical distribution	(Complaint) / (Deliver)	0.01	0.03	0.05	Five continued occasions above the rank	100
The indicator Complaint it is read and expresses itself once per week.							

Table 5a   Evaluation of the indicators of the function 05

Employee: G. H.			
Position MoLoBaC: Physical distribution Manager.			
Funtion: 05. Supervising permanently, the centers of distribution and the centers of …			
Indicator: Efficiency			
Numerator value	Denominator value	Idicator value	Value (1 a 100)
5	4.5	1.1111	100.0 (1.33 = 100)
Indicator: Time			
Numerator value	Denominator value	Idicator value	Value (1 a 100)
1.75	1.50	1.1667	90.0 (1.05 = 100)

Table 5b   Evaluation of the indicator of the function 19

Employee: G. H.			
Position MoLoBaC: Physical distribution Manager.			
Funtion: 19. To offer, to his secondary personnel, suitable training so that they …			
Indicator: Courses			
Numerator value	Denominator value	Idicator value	Value (1 a 100)
80	45	1.7778	88.9 (2.00 = 100)

Table 5c Evaluation of the indicators of the function 29

Employee: G. H.			
Position MoLoBaC: Physical distribution Manager.			
Funtion: 29. Taking advantage of the physical distribution, to improve the satisfaction ...			
Indicator: Measure of impact			
Numerator value	Denominator value	Idicator value	Value (1 a 100)
150	145	1.0345	82.8 (1.25 = 100)
Indicator: Complaint			
Numerator value	Denominator value	Idicator value	Value (1 a 100)
12	1260	0.0095	100.0 (0.01 = 100)

Table 6a Evaluation of the function 05

Employee: G. H.			
Position MoLoBaC: Physical distribution Manager.			
Funtion: 05. Supervising...	Function Weight (Pf): 60	Hours dedicated to the function (Hd): 25	
Indicator	Obtained value in the indicator (Vi)	Indicator weight (Pi)	Vi * Pi
Efficiency	100.0	100	10000.00
Time	90.0	95	8550.00
Sum	190.0	195	18550.00
Function Value (Vf)	(Sum Vi * Pi / Sum Pi) * Pf * Hd = (18550.00/ 195) * 60 * 25 = **142692.31**	Pf * Hd = 1500 → **95.13%**	

Table 6b Evaluation of the functions 19 and 29

Employee: G. H.			
Position MoLoBaC: Physical distribution Manager.			
Funtion: 19. To offer ...	Function Weight (Pf): 16	Hours dedicated to the function (Hd): 4	
Indicator	Obtained value in the indicator (Vi)	Indicator weight (Pi)	Vi * Pi
Courses	88.9	100	8890.00
Sum	88.9	100	8890.00
Function Value (Vf)	(Sum Vi * Pi / Sum Pi) * Pf * Hd = (8890.00 / 100) * 40 * 15 = **5689.60**	Pf * Hd = 64 → **88.90%**	
Función: 29. Taking ...	Function Weight (Pf): 24	Hours dedicated to the function (Hd): 12	
Indicator	Obtained value in the indicator (Vi)	Indicator weight (Pi)	Vi * Pi
Measure ...	82.8	80	6624.00
Complaint	100.0	100	10000.00
Sum	182.8	180	16624.00
Function Value (Vf)	(Sum Vi * Pi / Sum Pi) * Pf * Hd = (16624.00/ 180) * 24 * 12 = **26598.40**	Pf * Hd = 288 → **92.36%**	
General Evaluations: Position, Person, Area, Stage, Enterprise as a whole.			
Position Value (Vc)	Sum Vf / Sum Pf * Hd = 174980.31 / 1852 = **94.48%** (All functions for the position)		

In the Tables 6a and 6b, the evaluations are expressed, in the 6a, the function 05 is evaluated and in the 6b, the functions 19 and 29 are evaluated and the final results of all study are presented.

With the latter table one concludes the illustration of the application of the MoLoBaICa across the Physical distribution Manager. Next there appear some conclusions and future lines of investigation.

4. CONCLUSION AND FUTURE RESEARCHES

Of the four models that have been created to facilitate the teaching of the enterprise logistics and the supply chain management, light comments were done of LAPDI and MoLETOI and greater details were given of MoLoBaC and MoLoBaICa. Of the MoLoBaC, its characteristics were commented and they were presented some of the functions of one of their positions the Physical distribution Manager. Of the MoLoBaICa its philosophy was commented and the algorithmic to following to make use of the same one.

Upon presenting MoLoBaICa and the position Physical distribution Manager of the MoLoBaC, it could be illustrated like functions MoLoBaICa, using for it three of the functions presented for this manager. With the illustration of the use of the MoLoBaICa, the general objective of this work is achieved, since it showed itself that indicators of management can be used in the enterprise logistics. These indicators permit to measure: a function, a position, an area, a stage of the MoLoBaC and the whole organization, with the advantage that all it can be done in an independent way.

Being provided with the aptitude of the MoLoBaICa to perform a deep analysis of any organization, for an immediate future, using their philosophy, evaluations should be done, of each one of the positions of the MoLoBaC. Another future investigation is to apply MoLoBaICa to small and medium businesses, to establish a monitoring of its performance, doing periodic evaluations of the indicators that be established.

ACKNOWLEDGEMENTS

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BIOGRAPHICAL NOTES

José Hernández is a Chemical Engineer, María García and Gilberto Hernández has a Bachelor in Chemistry. Two first with mastery in Operations Research and Gilberto Hernández have a master in Technology of foods. They had combined their managerial and educational experience, to increase their investigations, already above two hundred. Principally they have covered: Logistics, Evaluation and Management of Projects, Managerial and Social Decision making, Knowledge Management, Risk Management and Operations research. They have been presented or published in different countries, having publications and offering their reports, chats or conferences in: Poland, Croatia, Switzerland, Greece, Germany, Italy, Czech Republic, Iceland, Lithuania, Spain, France, Portugal, United States, Panama, Paraguay, Uruguay, Brazil, Cuba, Mexico, Argentina and Chile besides attending as guest speaker, in reiterated occasions, in lectures to relevant events in Colombia, Peru, Costa Rica, Brazil and Venezuela.