

opción

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Abstract

This article develops a teaching methodology in logistics for students of business administration programs to solve real problems in companies and integrate the knowledge acquired in logistics management courses. The methodology integrates project management tools with the support of MSExcel and promotes the elaboration of managerial reports according to the requirements of working environments. The methodology generates high satisfaction in the students, to the extent that it allows them to know in depth the logistic system of a company, identifies opportunities for improvement and proposes solutions based on technical and economic aspects. Likewise, the methodology allows the students to have contact with the directives of a real company and supports the improvement of logistics processes based on qualitative and quantitative information.

Keywords: business administration, logistics, teaching methodology, higher education.

Educación en logística para estudiantes de gestión empresarial: un enfoque de aprendizaje-aprendizaje y servicio-aprendizaje

Resumen

Se desarrolla una metodología de enseñanza en logística para estudiantes de programas de administración de empresas para resolver problemas reales en empresas e integrar los conocimientos adquiridos en cursos de gestión logística. La metodología integra herramientas de gestión de proyectos con el soporte de MSExcel. Promueve la elaboración de informes gerenciales conforme con los requisitos de los entornos de trabajo. La metodología genera una gran satisfacción en los estudiantes, en la medida en que les permite conocer en profundidad el sistema logístico de una empresa, identifica oportunidades de mejora y propone soluciones basadas en aspectos técnicos y económicos. Asimismo, permite a los estudiantes tener contacto con las directivas de una empresa real y apoya la mejora de los procesos logísticos basados en información cualitativa y cuantitativa.

Palabras clave: administración de empresas, logística, metodología de enseñanza, educación superior.

1. INTRODUCTION

Higher education faces the challenge of training professionals with the skills and competencies demanded by the labor market. The logistics sector is no stranger to this, so the education courses in logistics management should be adjusted to business requirements (Ślusarczyk & Kot, 2011; Smoląg et al., 2015; Tong, 2011). Accordingly, business managers are called to lead logistics processes because management skills are essential for successful logistics management (Thai et al., 2012).

Therefore, students of business management programs should incorporate the knowledge and case studies seen in class in virtual learning environments (modeling and simulation). or real environments (business approach), through the learning-by-doing experience, enabling to evaluate the specific learning and solutions that the students generate (Neumann, 2008). Likewise, higher education is changing to encourage students to be protagonists in the learning process and encouraging teachers to assume an accompanying role (Nussbaum & Diaz, 2013), all of this to increase the absorption of graduates into real companies (Yuni & Siti, 2019).

To achieve this, teachers must have adequate learning mechanisms and teaching methods to stimulate the acquisition and retention of knowledge in students (Lu et al., 2013), such as projects in companies, which strengthen the construction of a solid concept of logistics management through the visualization of how logistics work in a business reality (Yang et al., 2011). This approach narrows the gap between companies and universities because employers and educators often have different approaches to critical skills and topics that need to be prioritized in a business logistics curriculum (Niine & Koppel, 2015), and promotes the development of creative skills in students (Jarrah & Al Majali, 2019).

As such, education in logistics management is called to create courses where students develop logistics solutions for inbound logistics, internal logistics, outbound logistics and reverse logistics (Hummel et al., 2015), to provide a service to the companies under study, offering possible solutions and tools to improve their processes (Goffnett et al., 2013; Lu et al., 2013), and creating strategic alliances and intercorporate logistical systems (Gviliya et al., 2018). Based on the abovementioned, this article aims to develop a teaching methodology in logistics for students of business administration programs to solve real problems in companies and integrate the knowledge acquired in logistics management and other subjects of business administration.

2. METHODOLOGY

The proposed teaching methodology intends that working teams of 4-6 business administration students, can characterize the logistics processes of companies, have the competence to identify the main opportunities for improvement, and can propose projects to improve the productivity and business competitiveness through logistics processes. It is recommended to implement the methodology in the middle of the course to allow students to develop sufficient knowledge related to logistics management.

The main stages of the methodological approach for the improvement of logistics process are 1) Company selection; 2) Logistics assessment; 3) Selection of the process/operation to improve; 4) Improvement project; 5) Final report. All these stages are guided by the professor ensuring an effective learning process.

For the selection of a company, it is recommended to select a company of any size and sector, but the main requirement is that the company must provide complete information about the logistics processes. Initially, students describe the mission, vision, values, customers, the portfolio of products and services of the company.

At the stage of logistics assessment, logistics processes and operations are described in detail, and also improvement opportunities are proposed for each logistic operation. The logistics processes to be assessed are logistics planning, procurement and purchasing, inventory management, warehousing, distribution and transport, and reverse logistics. These logistics processes may vary according to the academic content included in each logistics management course. Figure 1 shows an example of the MSExcel template designed for logistics assessment.

		Assessment	t Description	Improvement Opportunities			Assessment	Description	Improvement Opportunities
	Forecasting	3,5	Para ponositicar la demanda la empresa utiliza un setivare Orimáticas. Está basacib en porodúticos Instrúctios y se les hare a in seguimento danto y estas curdan de igual forma la rotoción.	Para prototica ta denarioa te impresa utitiza un "Para estatar protosticos de envoracia no solo en moiotrarie Notemen "Omitadara" Estamante en productos Instante en destiniente o danto y estas precisios cuandantes con Delario y información de mescadaco, ja cuando de gual transita una dará con		Storage Systems	4,0	Los soberna de amatemento son estetas para Establecer políticas de clasióa unida y protector combinary autor Establecer políticas de clasióa modera de protesos, prodicio temendo y inderás de empagee establecaráa la bran como de almandar protesos, prodicio temendo y inderás de empagee establecaráa de table alman a proteso a las establecas de la política polí	Establect politics de clas&ación y separa cin de productis por estatantian en el amacaratanten os la ampeara, con el fin de estantastar el brana como se almacenan indes las productos y almacentrias estatos de brans y zuxue.
	Capacity Planning	4,8	Los procedimentos se aucistin a la domancia que nace del histórico, el hinalizoite de litençio en litennois de producción es dará, debido a que el Canal Tienda a l'ienda vena darámente y se liens máximo 27 das	Los procedimentos na austima la domunta que los paoda mataz una programaz en de product do mas exacta en nase en baldonce el harzonde de tempo en término y la medua en que se englamente un prosto de derarada, co de producciónes casas, adoba que en clavar intensi peneronargon de enco tates por medio de no una se enclan tes la foca en activamente y se tense nativos. Z dels mentarse activarios en capacitar con escara de almacen a foca en activar de y se tense nativos. Z dels mentarse activarios en actavanter y se tense da materia.	WAREHOUSING	Material Handling	4,5	Se usan equipos de montacargas y modo carguero pera manigar y para Laar el producto leminiado desde la parta hasta la bodega de producto terminado. Para cargar y descargar los camores se usar personas	Se usan requipor de moducargare y modo carguero i implementar tueses expreso de montix arga más definios homaroo asea managar y para losar e produch bierniuado cuede de cogran base de de signa de a parte hantis la bocadar go modo hieranda y Testa Jamme annimento y la detracción de las detarrelas para reduct
LOGISTICS	3PL	4,0	El 80% del transporte es lerrenzado, soro se terre un operador logístico porque este sale muy costoso y es un modelo que se tiere hace más de 10 años y de baso costo.	El 18% del françorde es len encazon, son se terre un hodataberrente la empresa dete terrer un para de contrigencia, ya papasó degácios por que seles terrer or solscol y en jons se paces perdes perdefa en cualquier moneto que se uno contrigencia, por para de carto años y en jons se paces perdenta non unaque para se para terrer do for o por ano contrigencia, por ano contrigencia, por ano contrigencia, por ano contrigencia, por se paces perdenta non unaque moneto que se una se este este terrer años en la dios y que paces trajencia contri años para se para terrer do por ano contributo y por ano contributo per este este perdenta non contributo per se para se para terrer do por se paces perdenta non contributo per se para se para terrer do por se paces perdenta non contributo per se para se para terrer do por se paces perdenta non cualquier moneto que se una se este este terrer per se para se par para se para se par		ICTs	2,5	Se hace el picking manual, el registro e vármitación de productos se seliza con el software que posee la empresa.	
	Training	2,0	a realiza capacitaciones pero muy pocio y o por mejosor, esto ha generado alta el personal procipamente en la pañe ute los llanscotaciones	Para una empresa que requere lartos procesos de producción precisamente proque la batorica do nos productos nado parte de su procesamente en cuento a se intropensade que el personal este preramente casocitado en cuento a se funciones.			3,7		
	ICTs	3,0	Se cuerta con el Softwire mescicanto i dimiticas, pero se piensa adquíni Georéforencias (en por reular, para uticar los carros, mantionesr, es un proyecto en el que se está tratagando, porque fálta por mejorar	Se tarrela con el Software neocorano dentica ao La azon secia do la conçatiña no es coras actenares, ceara por a testa a aquía colorectora das tratos que las portes tarrelas que a cual de de concidad o to por a testa no caractera es a concora esta das concesas en ase aspectanas tarabo para de safema de el que es esta trataçãos, prepará las promejoras - transportas concesas das ase esta trataçãos do portes de la		Transport Systems	3,5	Los medios son carmiceres y estos deben cample con las condiciones de temperatura, no deben texer avertas en su stistema y liteam el logistipo de la empresa.	co mados sen camones y estos abero campir con Plane etas prejectos can la natación de penorale encurir en es condiciones de lenipositica, un obten tener parso los casaros facilitados de las escar al 10% el encien en autoren y liveren el operador al prostructor de aportos objectos por paratra que estaña imposas.
		3,5			DISTRIBUTION	Distribution Logistics	4,5	 No ensite una priorización de la distribución haca los cientes, el sistema que se maneja es: Los canales T.A.T.y demás canales tienen un periodo de podiose que va dissole (ar 7 am hasía las 5 pre para 	
	Raw Material Management	5,0	Se clasifican según la zona de fro, la materia prima Pareto (actúrar, harna y guayato) en bodegas especiales, otra bodega de empaques y el poducto forminado con bodega essecial. Los porductos fraeses		TRANSPORT	Distribution Channels	5,0	La empresa maneja un servicio de distribución 24 hodas y lo hade a través de los canates T.A.T. Minorestas, canal institur ornal, autosencio Y purto de verta directo. Se está traxejando en Destitín de	Debe apartar a des arrolar més la escretega de gestión de estregaciones meteorenes en transas de difis la creso (vietercia, concas) y la forma en que gestionaria a quares partogren en este projecto para que no genere el misito proderial
PROCUREMENT	- Supplier management	5,0	La culificación es desde el ingreso de proxectar en términas financienos, descuentos, precios de exterga y calidad, el producto se emía a calidad y se negocia el precio, si calidad lo aprietra se elge.	La refik active el desce el regreso de porenedar en l'implementar cartatales o clausates de abante miento con todas los tiermos líneareness. Associantes, perces de entrega ja prosectives, conseden esta poste al particie a entra del y catalida esta portocia centra a catalidar y empoya. Insuena con a catalidar y el perco parciado, adomía de otrace		ICTs	3,5	Aunque es un se au compara proprio para el orixetar es un se un programa proprio para el orixetar hayor orixetar mayor orixetar mayor orixetar mayor estas en consistante manor de perimeterrorixetor, este se carga en a la de	
PURCHASING	Purchase Policies	4,0		an of to the			4,1		
	ICTs	3,0	Sstema integrado offinática automática que genera use órošenes de compary tas enka automáticamente al prowector el sistema genera dos copias y va al amacén para la reksión, se hare con el fin de ferer	C 2 2 2		Retums	4,0	El porceso de deroución de producios se da principamiente en particulos juancinques, los cuales nueiven par devolución aproximadamente el 10% de las vertas y esto tienen una logística inversa costosa	Se pueden otherer cursos scole el manejo de los productos s a los cientes, actados por empleados especialta ados de la partía de producción, esto acercará aún más a cliente con la empresa
		4,3			REVERSE	Sustainability	5,0	Frente a la recuperación de producto terminado, pañe de las derotuciones se donan y cóna pañe se vende a micror costo, frente al maticital de empaque se tiene un tidan gremien de recuperación y lo que no se page	Frefe a la recipera di registrazio hermato, parte En tuxo se hace más etclerate a reciperación de las les las genetaciones es conser y canade se exerta a penuticuanis porer contriciones las reciperación de múnicia a denore: intervi costá frefe a múnicia de empaños es terra a las setá sou en el moneto de las etinegas de un meno
	Inventory Accuracy	4,0	Los inestance (MP, PP y PT) son contacts dantamente de tema aleatora. Al final dei mes coben cumplir el 100% de exactitud con refacition al registro en el sistema Las diveix de compatisato y Reveccià	Los mentalos, par P = V = TV con contacios. Es de unitación es terma caractería de la del	LOGISTICS	After Sales Service	4,5	El departamento de servicio al cliente es el que hace la posteerta, pero no funciona natimente bien por el lipo de producio, este es el encargado de nocibil las restamas por devonciones y lievar un seguimento de	Utilizar el objettamento de servicio al citente no solo para recibir opejas y contanzas de las cimenes, acro también para internar acestar a la empresa más con estis, por medio de campañas en gonde seval: o al ciente tante a los cientes
	Stock levels	3,8	Hay excess de Invertianos úncamente en materiales de empaque, donde se presenta una rotación de 40 días de Inventario.			ICTs	3,0	Software propio ofmaticas, para realizar la deronución y recambios	Es un steimen any takoo para performa e central e la constante and performa e central american undrare propo atmatican a terrourcen diros programmes que performa mejor como EEP propue balla a micrambos micrambos demos de american a terrourcen de la como de obciones ambone integrado fotob las deses de americanes
INVENTORY MANAGEMENT	Inventory Classification	3,2	Debido al costro del INVIUA, los productos en proceso deben estar separados e interpendiartes con us cuébado especial en por de cumplir políticuas samilares. Los productos ferminados son custodiados	Dation at centre der WirthA, las productes en las expere el dearrecto de un chartica dei ARC de for ison resurna por porsesso dellere estar segrandares e intependentisse con mile de eretarios varia de versions variano de la marece ao se un catados especial en por de cumpti politicas. Definitivan cuideis son las restatégicos con el fre operetes astretas. Las productes terminados en cuidadoses famor dendense cuides son las más estatégicos con el fre operetes astretas. Las productes terminados en cuidadoses famor admissión en su applicación, arrappato for a partezeramente			4,1		
	Inventory Turnover	4,0	Productis El Cante S.A. cienta con las siguentes las esconenciate explantear las purnetion de cutax cons. 3, 27 das de metation en puesedor de mutetidade e emis protovols termatos 1, 14 da de matetase de puese se apin misjonensale pasa productivo fermanos. 1, 14 da est productas de marca propay y de assistementer y amis artigade emisjone. 2, 15 da de en productas de marca propay y de assistementer y amis artigade.		6				
	ICTs	3,0	Se hace uso (incamente del sistema integrado de ofinitatica, en el cuel se registran las unidados teóricas de los inventarios que se tenen en todega	Es un statuma mive párico de gerador. Se detenda imentr en programas de mejor caldad como por ejempio un sistema ERP, el cual facilita la comunicación y la terma de des loroes unforme a tranés de la integración de todas las áreas de la empresa.	Logistics Assessment	sessment	3,9		
		3,5							
			Fioure	Figure 1 I opistics assessment template	ssment ten	nnlate			

Figure 1. Logistics assessment template

José Alejandro Cano et al. Opción, Año 36, Regular No.92 (2020): 12-26

Likewise, the logistics assessment assigns scores (rating on a 0 to 5 scale) to the logistics operations of each logistics process. Based on these values, the score of each logistics process is computed as the average of logistics operations scores. Similarly, the total score of logistics management is computed as the average of logistics processes, and this can be achieved with simple averages or through a hierarchical weighting process (Cano et al., 2017). Accordingly, performance measures can be grouped facilitating the improvement and decision-making on business and logistics processes (Gómez et al., 2016).

Thus, based on quantitative values it is possible to assess the logistics management in the company under study, and it facilitates the selection of the process to be improved. Therefore, the students must select the logistics process with the lowest score, and within this process, they must select the logistics operation with the lowest score. Then, some elements such as indicators, information systems, resources, flowcharts, images, layouts, videos of the operation, other supporting documentation are described in-depth for the selected logistics operation. Even, a SIPOC matrix can be applied to describe the objective, scope, suppliers, inputs, activities, outputs and suppliers of the selected operation (Salazar et al., 2017).

Once the details of the selected logistics operation are thoroughly understood, a proposal for improvement is made based on techniques, models, and methodologies seen in the course of logistics management. Alike, solutions from bibliographic sources can be applied to solve the main issues of the logistics operation. Additionally, the improvement project must be based on a technical analysis, supported by indicators, information systems, resources, flowcharts, images, layouts, videos of the operation, and other information that shows the detail of the improvement proposal and justify the benefits of its implementation.

Accordingly, the methodology has an MSExcel template for a Gantt chart, as shown in Figure 2, to set the schedule of the improvement project. The schedule the improvement project implementation consists of activities, responsible, results and the time required for each activity. Due to the scope of the improvement projects, students are advised to use weeks as periods. As a result, the completion time of the last activity in the Gantt chart determines the required time to implement the improvement project.

ACTIVITY	RESPONSIBLE	RESULTS	Weeks													
ACTIVITY	RESPONSIBLE	RESOLTS	1	2	3	4	5	6	7	8	9	10				
1	CEO	Diagnosis ofreality, as far as the service of distribution in Copies Girardot. Report on the distribution and transportation service provided by the company														
2	CEO	De finition of general standards for operator choice. Standards established to enter to e valuate potential logistics operators to hire														
3	Supplier	Analyse logistic operators of distribution approach price, deliverytimes, quality and a vailability. Comparative analysis between suppliers														
4	Consultants	Selection of the operator with the best proposal														
5	Supplier	Comparative evaluation. Document in which the cash flows are compared with the implementation of the proposal and without this, in order to visualize the visbility of the new distribution model														
6	Logistics Analysts	Logistics operator recruitment. Contract with the terms agreed by both parties (Copias Grandot - Logistic Operator)														
7	Operations Manager	Relocation of own distribution personnel. Description of the position exercised by the former distributor and his new contract														
8	Warehouse employees	Trialperiod, Reportshowing performance in the trial period of the proposal														
9	CEO	Final result of the implementation of the project. Final conclusions of the proposal and report for feedback														

Figure 2. Gantt chart for the implementation of the project

Furthermore, an economic analysis gives greater validity to the improvement project to the extent that it measures the sustainability of the project over time. For this, students calculate in period 0 the initial investment, which is derived from the activities outlined in the Gantt chart, i.e., the activities required to start up the improvement project. From period 1, the students calculate the incomes and expenses of the improvement project, which gives the net profit in each period. Once the net profits are obtained in each period, the financial indicators of net present value (NPV), internal rate of return (IRR), and the payback period (PP) are calculated in the MSExcel template shown in Figure 3.

					_		_		_				M	ONTHS							_				_	
	E	0	T	1		2		3		4	—	5	-	6		7		8		9	—	10	-	11		12
			_								_		IN	COMES					_							
INCOMES AND SAVINGS 1	\$		\$		\$	333	\$	333	\$	333	\$	333	\$	333	\$	333	\$	333	\$	333	\$	333	\$	333	\$	333
INCOMES AND SAVINGS 2	\$		\$		\$		\$		\$		\$		\$		\$	400	\$	400	\$	400	\$	400	\$	400	\$	400
INCOMES AND SAVINGS 3	\$		\$	300	\$	300	\$	300	\$	300	s	300	\$	300	\$	300	\$	300	\$	300	\$	300	\$	300	\$	300
TOTAL	\$	•	\$	300	\$	633	\$	633	\$	633	\$	633	\$	633	\$	1.033	\$	1.033	\$	1.033	\$	1.033	\$	1.033	\$	1.033
	_																									
													EXI	PENSES	3											
EXPENSES AND INVESTMENTS 1	\$	•	\$	167	\$	- 2	\$	3	s		\$		\$	6	\$		s		\$	-	\$	1	s	3	\$	167
EXPENSES AND INVESTMENTS 2	\$	140	s	-	s	83	\$	83	s	83	s	83	\$	83	\$	83	\$	83	\$	83	\$	83	s	83	\$	
EXPENSES AND INVESTMENTS 3	\$	-	\$		\$	833	\$	833	s	-	\$	-	\$		\$		s		\$	-	s	-	s	-	\$	-
EXPENSES AND INVESTMENTS 4	\$	1.0	\$		\$		\$		\$	583	s	583	\$		\$	180	s	1.0	\$	100	\$	~	s		\$	
EXPENSES AND INVESTMENTS 5	s		s	100	\$		\$		s		s		\$	667	s	100	s		\$	1.0	s	- 5	s		s	
EXPENSES AND INVESTMENTS 6	s	1	\$	-	\$		\$	-	s		\$	-	\$	167	\$	1.0	s	~	\$	-	\$	-	\$	-	\$	-
EXPENSES AND INVESTMENTS 7	\$	263	s		\$		s		s		\$		\$		s		s	•	\$		s		s		s	
EXPENSES AND INVESTMENTS 8	\$		\$	138	\$	138	\$	138	s	138	s	138	\$	138	\$	138	\$	138	\$	138	\$	138	s	138	\$	138
TOTAL	\$	263	\$	305	\$	1.055	\$	1.055	\$	805	\$	805	\$	1.055	\$	221	\$	221	\$	221	\$	221	\$	221	\$	305
NET PROFIT	\$	(263)	\$	(5)	\$	(421)	\$	(421)	\$	(171)	\$	(171)	\$	(421)	\$	812	\$	812	\$	812	\$	812	\$	812	\$	729
	_												_		_											
RETURN INVESTMENT RATE	Γ	1%	Mo	nthly																						
NPV	\$	2.913	1																							
IRR		16%	1																							
PP		7	1																							

Figure 3. Economic analysis template for the improvement project

The last stage of the methodology is the preparation of a written management report where all stages of the proposed methodology are documented, and the benefits of the improvement proposal are highlighted to be implemented in the study company. Equally, the students must perform an executive talk in the classroom to share with other classmates the challenges and solutions of the business improvement project.

After socializing the results of improvement projects, working teams receive feedback from the professor, and based on this, details of the improvement project are corrected so that a report can then be sent to the company that provided the information to carry out the study. Thus, the university-company relationship is strengthened, where students learn from real working environments, the companies benefit from a characterization of their logistics processes and from a feasible improvement project which is validated technically and economically.

3. RESULTS AND DISCUSSION

In order to validate the contribution of the proposed methodology to the learning process of business management students, a survey in Google Forms was applied to 247 students. The students were consulted about their satisfaction, benefits obtained and suggestions for improvement for the proposed methodology.

As a result, students express great satisfaction with the methodology, with an average of 4.4 on a scale from 1 to 5 (1: definitely not satisfied; 5: very satisfied). These results are obtained after 96% of students express great satisfaction with the methodology (117 students with the satisfaction of 5 and 121 students with the

satisfaction of 4). Therefore, it indicates that students perceive that the methodology contributes to its professional training process in logistics management.

Regarding the benefits of the methodology, Figure 4 demonstrates that the methodology allows the students to have contact with the directives of a real company, and allows them to know in depth the logistic system of a company. Likewise, the methodology identifies improvement opportunities based on technical and economic aspects and supports the improvement of logistics processes based on qualitative and quantitative information. These benefits are also derived from project-based learning, which is based on active and cooperative learning of the students, who become protagonists of their learning. It is clarified that the percentages in Figure 4 do not have to add 100% because several benefits can be chosen by the students.

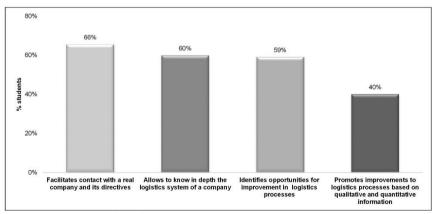


Figure 4. Benefits of the methodology in logistics management training

Intending to improve the proposed methodology, Figure 5 illustrates the main suggestions to improve the results of the methodology, which are related to advising the establishment of working teams and implement the methodology from the beginning of the course. Likewise, it is suggested to support students in the search and selection of companies.

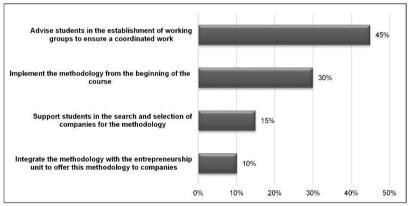


Figure 5. Suggestions for the improvement of the methodology

Therefore, heterogeneous working teams can improve the performance of students, avoid the creation of unbalanced teams (Oakley et al., 2004), and for this can be applied existing methods for assigning members to work teams (Layton et al., 2010).

Finally, the proposed methodology proves to be efficient for logistics management training in students of business administration, approaching students to real work environments and encouraging them to propose improvement project that can enhance the logistics performance in real companies.

4. CONCLUSIONS

This paper investigated a teaching methodology in logistics for business administration students to solve real problems in companies and integrate the knowledge acquired in the logistics management course. The methodological proposal presented in this study is pertinent and consistent with the professional practice of business managers, allowing them to consolidate and implement in a real case a set of knowledge, skills and business tools acquired in the course of business logistics and other subjects of the business administration program.

As an implication for practice, the methodology allows business administration students to systematically identify improvement opportunities in logistics processes, and to sustain them technically and economically. Furthermore, the methodology aims to close the gap between universities and companies, making the training process more efficient and effective.

Finally, the methodological proposal is pertinent and consistent with the professional practice of business managers, allowing them to consolidate and implement in a real case a set of knowledge, skills and business tools acquired in the course of business logistics and other subjects of the business administration program. For future research, it is recommended to implement the methodology in operations management and supply chain management courses, adapting the processes and operations of each course in the assessment stage.

REFERENCES

- CANO, J.A., CAMPO, E.A., & GÓMEZ-MONTOYA, R.A., 2017. International market selection using weighing and Monte Carlo simulation. Polish Journal of Management Studies, 16(2), 40-50.
- GOFFNETT, S. P., HELFERICH, O. K., & BUSCHLEN, E., 2013. Integrating service-learning and humanitarian logistics education. Journal of Humanitarian Logistics and Supply Chain Management, 3(2), 161–186.
- GÓMEZ, R.A., CANO, J.A., & CAMPO, E.A., 2016. Selección de proveedores en la minería de oro con lógica difusa. Revista Venezolana de Gerencia (RVG), 21(75), 530–548.
- GVILIYA, N.A., PARFENOV, A.V., & SHULZHENKO, T.G., 2018. Interorganizational logistics entities: Categorization of forms and quantitative evaluation. Opcion, 34(86), 266–279.
- HUMMEL, V., HYRA, K., RANZ, F., & SCHUHMACHER, J., 2015. Competence development for the holistic design of collaborative work systems in the logistics learning factory. Procedia CIRP 32(1), 76–81.
- JARRAH, H., & AL MAJALI, S., 2019. Creative skills acquired by university students through curricula. Opcion, 35(21), 752-767.
- LAYTON, R.A., LOUGHRY, M.L., OHLAND, M.W., & RICCO, G.D., 2010. Design and validation of a web-based system for assigning members to teams using instructor-specified criteria. Advances in Engineering Education, 2(1), 1-28.
- LU, Q., GOH, M., & DE SOUZA, R., 2013. Learning mechanisms for humanitarian logistics. Journal of Humanitarian Logistics and Supply Chain Management, 3(2), 149–160.
- NEUMANN, G., 2008. Simulation education in logistics: Case studies in a virtual learning environment. [in:] Proceedings - 22nd European Conference on Modelling and Simulation, ECMS 2008. Nicosia, Cyprus.
- NIINE, T., & KOPPEL, O., 2015. Findings from cluster analysis of logistics undergraduate curricula in Europe. [in:] IEEE Global

Engineering Education Conference, EDUCON, IEEE Computer Society. Tallin, Estonia.

- NUSSBAUM, M., & DIAZ, A., 2013. Classroom logistics: Integrating digital and non-digital resources. Computers & Education, 69(1), 493–495.
- OAKLEY, B., FELDER, R. M., BRENT, R., & ELHAJJ, I., 2004. Turning student groups into effective teams. Journal of Student Centered Learning, 2(1), 9-23.
- SALAZAR, F., GOMEZ, R.A., & CANO, J.A., 2017. El problema de carga de pallets en centros de distribución utilizando diseño de mezclas. Espacios, 38(2), p. 2
- ŚLUSARCZYK, B., & KOT, S., 2011, Logistics education as a way for unemployment reduction. [in:] Proceedings of the IETEC'11 Conference. Kuala Lumpur, Malaysia.
- SMOLĄG, K., KOT, S., & OANE-MARINESCU, C. M., 2015. Contemporary conditions of engineers education process management, Polish Journal of Management Studies, 11(2), 149-159.
- THAI, V. V, IBRAHIM, K. B., RAMANI, V., & HUANG, H.-Y., 2012. Competency profile of managers in the Singapore logistics industry. Asian Journal of Shipping and Logistics, 28(2), 161–182.
- TONG, J., 2011. Managing logistics higher education using logical framework analysis. International Journal of Innovation, Management and Technology, 2(4), 309–314.
- YANG, B., ZHAO, L., & HU, J.-K., 2011. Researches on logistics teaching software based on GIS. Communications in Computer and Information Science, 218 CCIS (PART 5), 462–466.
- YUNI, H.T.E, & SITI, K., 2019. The management performance and the absorption of graduation. Opcion, 35 (21), 288–305.



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