Impact of Logistics Information Systems on Logistics Performance

Ismahane BELKACEM BOUZIDA[*]

Doctrante, LED, FSECSG, Université de Bejaia, 06000, Algérie
ismahane.belkacembouzida@univ-bejaia.dz

Slimane MERZOUG

Docteur, LED, FSECSG, Université de Bejaia, 06000, Algérie
merzougslimane@yahoo.fr

Abstract:

The aim of this paper is to analyze the available Logistics Information Systems (LIS) in Algerian companies and their impact on activities coordination, commercial strategies, and logistics activities. In order to reach the desired results, a questionnaire havebeen prepared and distributed to a random sample of Algerian companies in August-September 2019. The questionnaire was printed and sent via email in the format of Google forms. The usable response rate was 24%and the collected data was analyzed by SPSS 25 and Excel 2013. Major results show that Algerian companies use many Logistics Information systems and that there are correlations between them and the different activities of Algerian companies.

Keywords: Logistics Information Systems (LIS) - Company Performance - Algerian companies

1- Introduction:

In the actual economic environment, information and technology infrastructure are a crucial factor for barriers removal inside the organizations themselves, and between them and other organizations. Companies operations are demand driven, putting the customer in the heart of the planning and operational activities. Therefore, it is imperative to adapt to new techniques and technologies to meet customers constantly changing needs.

---

[*]Author Corresponding

Among these technologies, we aim particularly for the innovative logistics information systems. Their implementation is one of the reasons companies are more likely to have customer satisfaction since they drasticallyimprove the flexibility of operations and the quality of the outputs; on the other hand, they reduce delivery times and different costs(Heredero and Gómez, 2014).

Whereas they offer information, which is crucial to the logistics operations success, their cost can be really expensive and out of the reach of many organizations. Their cost is not the only factor that would drive away Algerian companies from implementing such systems, but the implementation process is a complex operation based on many requirements such as vendor support, personal training, and the necessary infrastructure for these systems to function.

Due to the transversal nature of these systems, since they may cover many activities inside the company such Enterprise Resources Planning, coordination between the different activities and the actors performing these activities might be influenced by the introduction of the Logistics Information Systems.

Therefore, the main question of the study is: Does the availability and use of Logistics Information System have an impact on the logistics performance of Algerian companies?From this main question we formulate two sub-questions, with the first one we try to verify if Algerian companies implement and use logistics information systems, and the second one we will try to confirm if Logistics Information Systems have an impact on logistics performance.

This later will be divided into three hypotheses which makes a whole of four hypotheses for our study as follows: **H₁:**Algerian companies use LogisticsInformation systems;**H₂:**Logistics Information Systems have an impact on internal and external coordination;**H₃:**Logistics Information Systems have an impact on operational strategies; and finally**H₄:**Logistics Information Systems have an impact on logistics activities.
This article begins by a necessary review of literature to recognize the different logistics operations and the most important logistics information systems. After that, we present the methodology of our case study, the descriptive results, and the correlations calculated. Finally, we

summarize the results of our study and the future perspective in the conclusion.

2- Background:

Logistics are a set of many enchained activities aiming for providing customers with their desired products in the right place and the right time adding more value to the materials as they move from one point to another. In this section we will present the different activities of logistics function.

2-1. Logistics activities:

Before we present the different activities of logistics, we define this later as the handling of the movement of materials and storing them from suppliers to end customers. Logistics usuallyinclude the following activities: procurement, warehousing, transportation, material handling, distribution and customer service as well as the relations between these activities (Dang and Yeo, 2018). We can divide logistics activities in the following sections(Waters, 2003),(13-14):

2-1-1. Inbound Logistics:

It includes procurement or purchasing activities starting from the purchase order. It discusses the right choice of suppliers based on quality and cost as well as the inward transportation with the most appropriate means and routes, receiving the materials, handling them in the proper warehousing conditions, and the inventory management.

2-1-2. Outbound logistics:

It includes the transfer of the materials to customers by order picking and checking the characteristics of the order and consolidating the materials in appropriate batches than distributing them.

2-1-3. Manufacturing and production:

It includes planning the products to be manufactured according to customer desires. In order to accomplish this, all manufacturing must be divided into a series of steps and the company must allocate the necessary capacity for every step like the machines to be used or the number of human resources to be deployed and define schedules and cycle times to coordinate and synchronize with the available inventory and the stocking capacity.

2-1-4. Marketing&Sales:

In order to offer good customer service, companies must be close to its customer and collect the appropriate data on their approximate numbers

and their requirements on quality and quantity of the desired products as well as their expected delivery times. It comprises the study of the location to be the nearest possible, type of transportation and the most suitable packaging.

2-1-5. Customer services:

   It is about handling customers' needs before, during and after the purchase operations. It encompasses the identification of the company's customers, establishing good relationships with them and maintaining them besides handling their different complaints in a way that preserves a long-term relationship especially with valuable customers.

In general, logistics performance aims at ensuring customer satisfaction in the most cost-effective way (Ouariti and Zeroual). In order to reach this effectiveness of cost levels, organizations must detect possibilities to reduce costs in every activity and make sure it is not simply a transfer of cost from one activity to another, but rather a cost reduction on the macro-level (Christopher, 2016).

2-2. Logistics information systems:

Logistics Information systems offer companies value-added inbound logistics activities through the availability of accurate information. They also support business processes by coordinating the different activities of forecasting, production scheduling, and inbound logistics. Companies can be more agile and responsive to changes, therefore, inventory levels are minimized which reduces also the costs and helps reach more capacity utilization. (Jonsson et al., 2007). In the following, we will present the most used logistics information systems in Algerian companies.

2-2-1. Supply chain management (SCM):

       This system is defined as scheduling and planning applications used to optimize the material flow between the different partners of the supply chain such as procurement, transportation, distribution, … They help reduce cycle times, inventory and material handling costs as well as processing costs while they enhance customer services (Helo and Szekely, 2005).

2-2-2. Enterprise Resources Panning ERP:

ERP could be defined as a system used to integrate many software together, each with its own specific function in the aim to support the different company activities. (Falatifah et al., 2019) It may contain many or all business modules representing the different functions of the

business.(Shim and Shim, 2019) Instead of having multiple software each working independently within the company, ERP uses one database for the different modules that could create changes in information seen from any spot of the system. Therefore, it offers timely information.

Another definition of ERP is that they are "commercial software packages that embodyand integrate any number of business processesinvolved in the operation of an organizationincluding but not limited to manufacturing,supply chain, sales, financial, human resources,budgeting, and customer service activity."Expected benefits from implementing an ERP are reduction of time and cost of operations, automation of processes, standardize the flow of information and enhance its quality. (Yusuf et al., 2004)

Major challenges that might be faced to have an ERP are the implementation cost, acquiring an ERP package could be compared to acquiring new facilities or infrastructure.(Wenrich and Ahmad, 2009) The cost doesn't only cover the buying cost but also, all the money spent to go from the previously used software into the ERP, whether they are software, hardware or human factor costs.

To the colossal cost of acquiring an ERP, the system also requires extensive hardware infrastructure as well as software that facilitate its uses while creating networking facilities and appropriate databases for the important amount of information that would be stored. Personal trainingis obligatory, same for having experts that would ensure the constant maintenance of the system(Wenrich and Ahmad, 2009). These two activities could be outsources for the proper cost.Nevertheless, in the overall view, companies must invest considerably in order to implement an ERP.

2-2-3. Advanced Planning Systems APS:

Advanced planning systems use mathematical algorithms in order to find an optimal plan to schedule the resources of the company and find strategic solutions under the constraints of the company by automating and computerizing process.(Hvolby and Steger-Jensen, 2010) They comprise different modules, each one for a specific activity of planning. (Meyr et al., 2015). They could be used independently or integrated within the ERP system.

Expected benefits from implementing and using an advanced planning system properly are obtaining more accuracy, reduction of lead times,

and planning resources by enhancing the visibility of customer orders.It is also mentioned that APS helps reducing inventory levels and increase return on investment up to 300%(Hvolby and Steger-Jensen, 2010). Intangible benefits of APS could be more appreciated than the tangible ones. It is believed that APS helps to understand the cost of alternative plans, raise awareness of the business environment, and remediate the supply chain problems by offering proactive improvements. (Jonsson et al., 2007)

In general, APS might be a source of a competitive advantage to the company. (Kilger et al., 2015)

Due to the complexity of the operations related to such a system, many requirements may affect the proper implementation and use of the APS like the lack of training, low accuracy of data inputs, and little support from vendors of the software. (Hvolby and Steger-Jensen, 2010)

2-2-4. Electronic data interchange EDI:

We can define electronic data interchange as "a standardized inter-organizational communication between independent computerized information systems and technological components that enable this". Therefore, it is a system enables the transfer of information between computers through an automated standard system. It can integrate internal and external systems of an organization, helping to establish e-commerce basically between trading partners. (Lyytinen, 2001)Transferring data through this system could be accomplished by internal networks or external ones like the internet, therefore, providing on-time data in a more cost effective way.(Kilger et al., 2015)

Implementing an EDI has many characteristics that we can resume in the following points (Lyytinen, 2001):

- Since it relates different organizations to one another, it has no central authority controlling it.
- It reduces boundaries between organizations and within the company.
- Acquiring proper IT infrastructure is important for the use of EDI, same for the networking facilities that connect the different sections of the organization or connect it with its partners.
- The necessity to deal with this technology is a growth factor for companies. It implies the obligation to constantly training its employees and maintaining the system.

- Due to the nature of inter-organizational communication, standardization of processes is elementary between the different companies using it.
- The use of internet or another third-party networking operator might a source of complexity.

2-2-5. Barcode:

Barcodes are two-dimensional tags composed of parallel close lines and digits from 0 to 9 with no letters. The whole number represents the Universal Product Code (UPC). It requires a laser scanner to read the tag from a close distance to identify the product and its characteristics(Attaran, 2007). This technology dominates tracking operations due to its cheap cost and fast retrieval of information.

2-2-6. Radio Frequency Identification (RFID):

As an evolution of tracking technologies, Radio Frequency Identification came to revolutionize this activity by providing a programmable and reprogrammable tag that could be read and identified without approaching it to a scanner or a reader(Preradovic et al., 2008). It is based on a tag placed on the product which could be passive (with no electrical power within) or active (with an inside battery). The tag sends signals that are received by a reader that sends the collected data to a computer. The major problem with this type of technology is the cost; passive tags vary from 0.05$ to 0.25$ while active tags vary from 4$ to 20$. Consequently, its cost can only be covered by high added-value products (Attaran, 2007).

2-2-7. Customer Relations Management (CRM):

Customer Relations Management applications are systems integrating the use of IT infrastructure, available data, and customer knowledge in order to create an added value for the organization and for its customers.Its use leads to less transaction costs, more revenues, and improvement of the repetition level of selling operations to valuable customers (Payne and Frow, 2006).The main objective is to establish relationships with customers, develop, and maintain them.Compared to other technologies, CRM is less expensive and easily implemented, allowing its collected data to be transferred and used by ERP throughout the entire supply chain. Where CRM deals with the external part of the organization's environment, ERP operates internally(Alshawi et al., 2011).

2-2-8. Transportation Management System (TMS):

It is a system that automates all the transportation activities like the vehicles allocation, capacity utilization, route planning, and travel documents. It offers an optimal transportation plan on the short term, helping to enhance customer service by ensuring more on-time deliveries and better invoicing services (Helo and Szekely, 2005). TMS helps reduce operational transportation costs by optimizing routes followed for collecting and distributing as well as giving a more precise information, which contributes to more accurate scheduling. Through many sensors, it can detect the status quo of the transportation activity and offer real-time data to the users of the system and customers to follow the cargos (Li and Zhao, 2019).

2-2-9. Warehousing Management system (WMS):

It is a system used to track the flow of materials in the warehouse, thus offering on-time data that would allow the planning of an optimal use of the warehouse facility and the equipment needed for material handling and transportation. This system makes it possible to detect problems and differences between the usual and actual performance, therefore it allows to remediate them in the shortest possible time. It helps retrieve, store, and track different items in the warehouse. (Helo and Szekely, 2005)The system also contributes majorly to logistics activities such as outbound logistics and virtual warehouse management (Li and Zhao, 2019).

We shall point to the fact that Supply Chain Management Applications, Transportation Management Systems, and Warehousing Management Systems are usually integrated within the Enterprise Resources Planning.

2-2-10. Coordination:

Different tasks of the logistics performance of a company are transversal and may include many agents. As a result, coordinating the different process is empirical to ensure a win-win situation for all members of the supply chain. This can be achieved on the daily operations basis or to improve processes. It can also be built vertically between the different levels of the organizations or horizontally between divisions of the company or the different partners in one supply chain. Formalization of process and communication facilitation help reduces barriers and establish a climate of trust, thus encouraging the sharing of information in a standard system. (Huiskonen and Pirttilä, 2002)

Figure N° 01:Software solutions for supply chain management
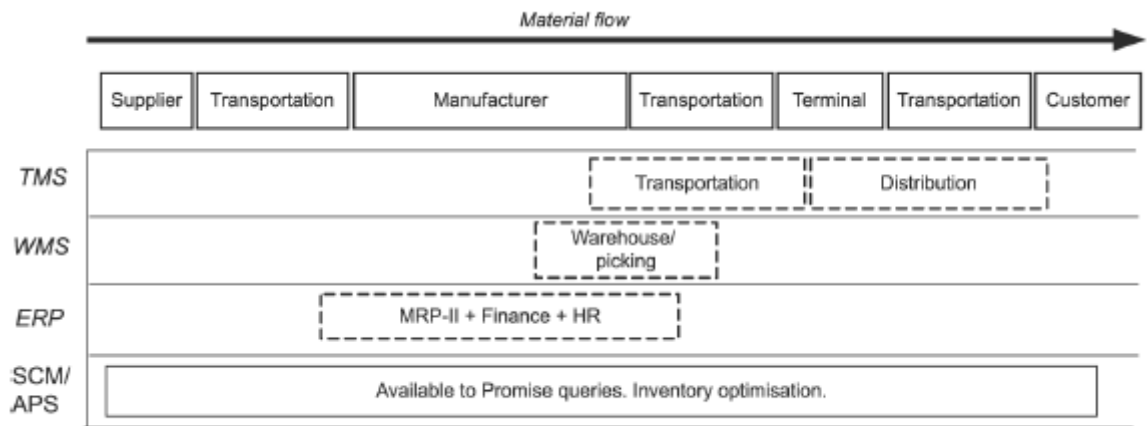
3- Methodology:

In order to identify the impact of the availability of logistics information systems, we have prepared a questionnairethat was distributed by hand and sent by email in the format of Google forms. Collected answers were treated by SPSS 25 using descriptive and analytical methods. Out of the total distributed (140 copies), 37 were retrieved and only 34 were usable making a response rate of 24%.

The questionnaire is divided in five sections, the first is about the company's information (size, sector…), and the second is for the approximate annual budget for information technology. The third section includes the different software used by the company followed by a section reserved for the security measures applied to protect IT infrastructure and another section for the availability of training and its forms regarding IT infrastructure use. The final section studies the impact of LIS on the company performance.

After analyzing the results, many sections were not used such as the budget reserved for IT; the vast majority refused to answer due to discretion measures. Other sections were not found to be of an importance to our study such as the security measure or the employee training. Consequently, we will present only the significant data in the results.

4- Results:

The results of our study will be presented in the order of our questionnaire, starting by sample characteristics, than the available IT infrastructure. Afterwards, we present the impact of LIS on logistics activities and strategies. Following that, we analyze the different correlations calculated that were found to be significant for our study.

4-1. Sample characteristics:

The first section of the questionnaire was dedicated for information about the companies; the sample gathers companies from different sectors, the highest mode stands for the machinery and equipment sector (14.7%) followed by food industry (11.8%).
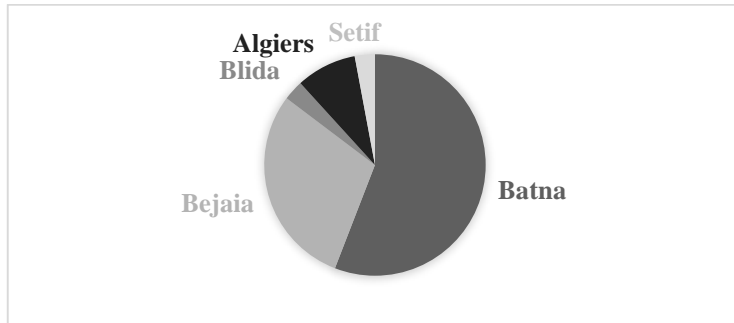
Figure N° 02: Companies sector
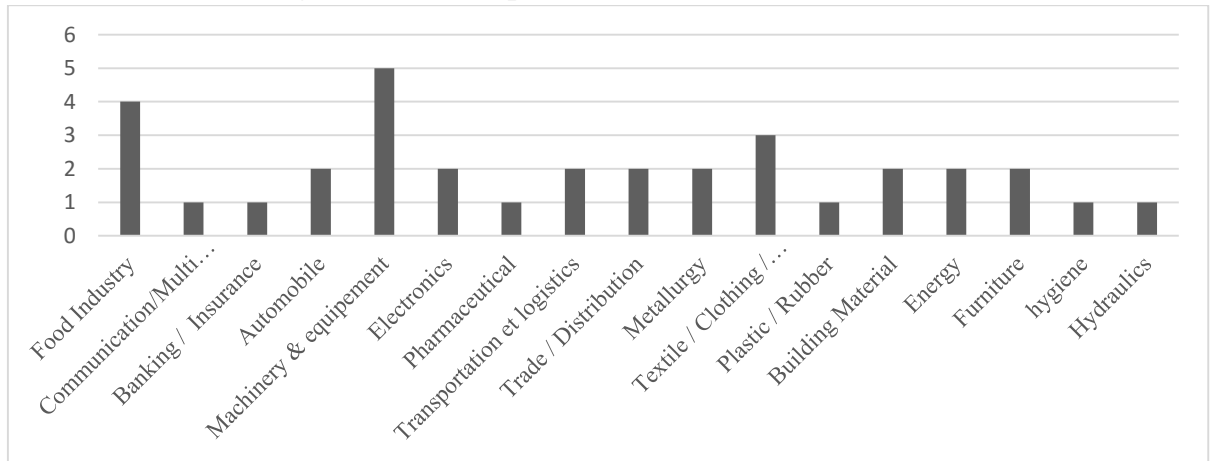
Source:Made by the authors based on the questionnaire

Due to the difficulties in receiving answers via online format, we were forced to hand the questionnaire by hand or use personal contacts, by consequence, the companies come from 05 wilayas, 55.9% of them from Batna.
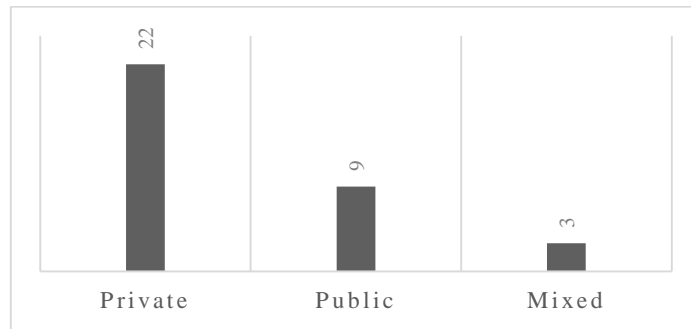
Figure N° 03: Companies Wilaya

Source: Made by the authors based on the questionnaire

The majority of companies are privately owned (64.7%). Public companies have many restrictions towards access of information and responses to questionnaires.

Figure N° 04: Companies Ownership
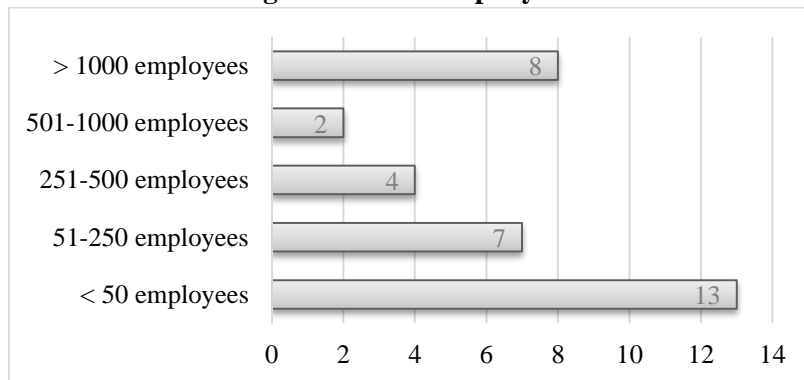

Source: Made by the authors based on the questionnaire

We aimed for different sized companies, which can be seen in table N°04. 38.2% are small companies having less than 50 employees while 23.5% are big companies having more than 1000 employees.

**Figure N° 05: Company size**

Source: Made by the authors based on the questionnaire

4-2. Available IT infrastructure:

From the logistics information systems that were previously mentioned, we find that Algerian companies use ERP, CRM, APS, EDI, Barcode, and RFID. Other systems might be included in the ERP itself. Nearly half of our sample of companies are using intranet to communicate internally, only four companies uses extranet which is due to the widespread internet networks. Wireless and mobile applications and storage data are more used after the implementation of more sophisticated systems like ERP and APS. 76.5% use emails to communicate but only 47.1% have websites. 47.5% use fingerprint clocking. As for accounting, stock management, payment, and billing software they are less used because of their replacement by the ERP which will be presented in the correlations below.

Figure N° 06: Available IT Infrastructure
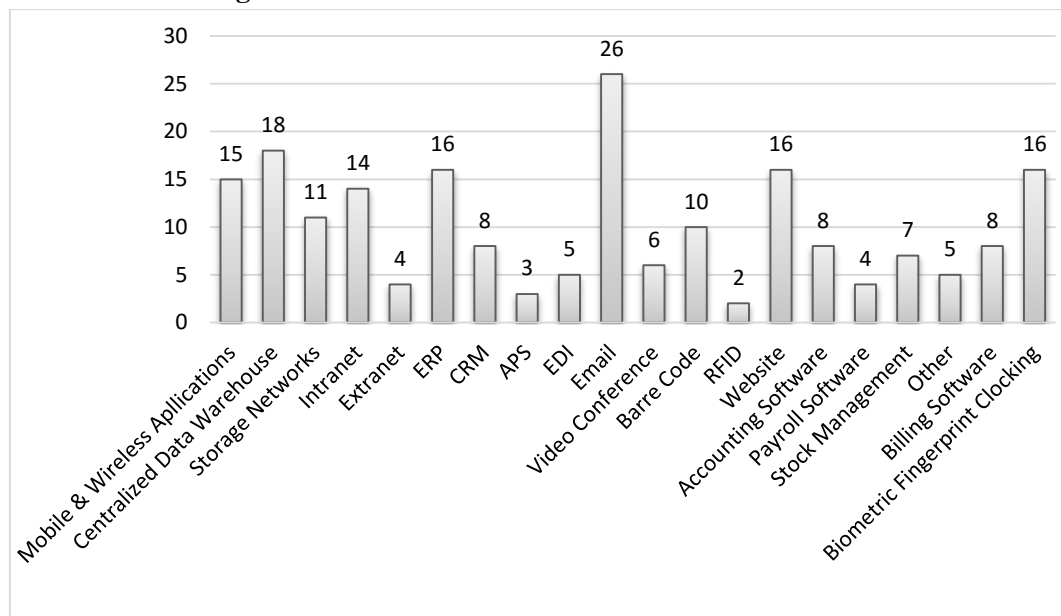
Source: Made by the authors based on the questionnaire

4-3. Impact of SIL of the company:

4-3-1. IT use and activities coordination:

The introduction of IT in the company can be preceded by consulting the employees about their needs which have a mean of 3.41 and a standard deviation of 1.019. Publishing a usage charter in the company for the available IT infrastructure has a mean of 3.15 and standard deviation of 1.132, as for the consistency of this infrastructure with the company's strategy, it has a mean of 3.59 and a standard deviation of 1.019. IT is considered to be a factor of better coordination and more formalized processes. The means are 3.74 and 3.15 and the standard deviations are

1.024 and 0.821. The results of group works can be accessed directly through the information systems used which has a mean of 3.21 and a standard deviation of 1.122. the last item in this section is the importance of IT in communicating with external partners has a mean of 3.59 and a standard deviation of 1.258, the highest of them all. Whilst other items have modes of 3 "neutral" (E_1, E_2, E_5, E_6) or 4 standing for "agree" (E_3, E_4), this item has a mode of 5 "Strongly agree".

Table N° 06:IT and activities coordination

E_1	You consult your employees about their needs in IT.
E_2	Your company has issued an IT Usage Charter.
E_3	The IT tools available in the company are consistent with your company's stated strategy.
E_4	IT has allowed better coordination between the different services.
E_5	The processes are formalized by the introduction of IT.
E_6	The results of the group work can be accessed directly online in the information system.
E_7	IT facilitate communication with the company's external partners.

Source: Made by the authors based on the questionnaire

Figure N° 02: IT and activities coordination
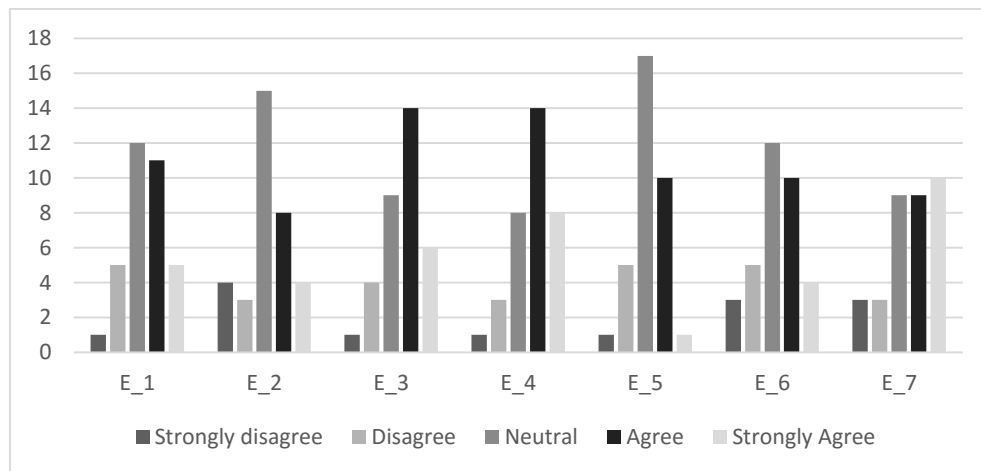
Source: Made by the authors based on the questionnaire

4-3-2. Impact of LIS on operational strategies:

The logistics system used is considered to be a factor for low-cost production with a mean of 3.59, enhancing the flexibility of the manufacturing operations 3.50, enhancing customer relations and linkages: 3.68, providing added value services: 3.68, enhancing existing products or services: 3.62, creating new products or services: 3.35, and finally, providing opportunities to enter new markets: 3.53. All the means are close in value and slightly above the average; the mode is

always 3 "neutral" but the standard deviation is less than 1 for (F_1, F_2, F_5) showing less data spread.

Table N° 07: Items ofoperational strategies

F_1	Being a low-cost producer
F_2	Having manufacturing/operations flexibility
F_3	Enhancing customer linkages
F_4	Providing value-added services
F_5	Enhancing existing products/services
F_6	Creating new products/services
F_7	Entering new markets

Source: Made by the authors based on the questionnaire

Figure N° 03: Impact on operational strategies
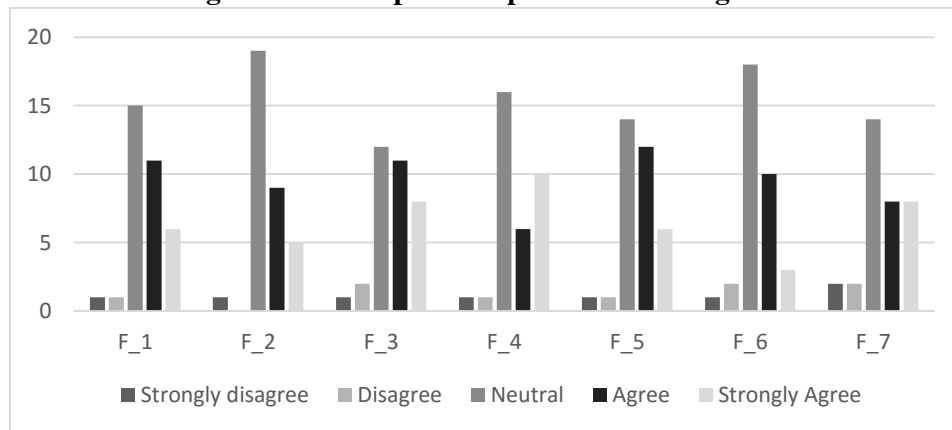
Source: Made by the authors based on the questionnaire

4-3-3. Impact of LIS on logistics activities:

The means of this section are the highest compared to the previous two; being all above the average (3.82, 3.76, 3.62, 3.91, 3.76, 3.79). The standard deviation is less than zero for outbound logistics (0.855) and marketing activities (0.933). We notice that according to the respondents, logistics information systems help the most with marketing activities, the mode is 4 "agree" and the mean is the highest of all sections followed by customer services, which has a mode of 5 "Strongly agree".
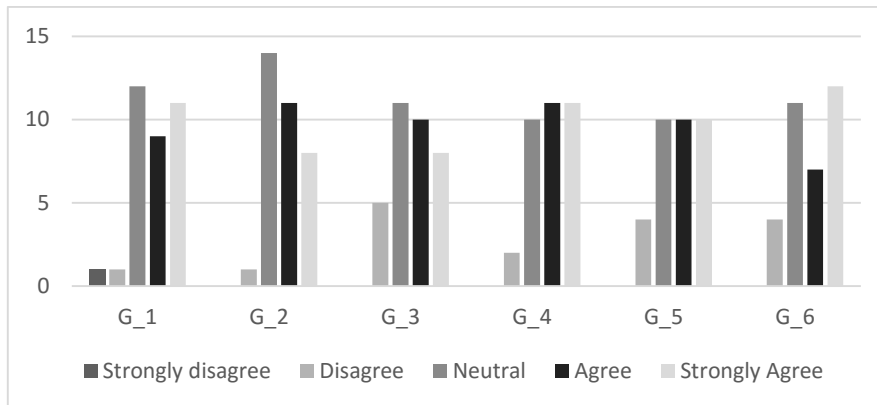
Table N° 08: Items oflogistics activities

G_1	Inbound logistics (e.g., purchasing)
G_2	Outbound logistics (e.g. Warehousing)
G_3	Manufacturing/operations

G_4	Marketing
G_5	Sales
G_6	Customer services

Source: Made by the authors based on the questionnaire

Figure N° 04: Impact on logistics activities

Source: Made by the authors based on the questionnaire

4-4. Correlations:

Correlations have been measured by the coefficient of Spearman after checking if the distribution of the data was not normal. The results for every section are presented below.

From table N ° 09, we see that there is a correlation between the availability of ERP is correlated to all the items regarding activities coordination except the formalization of processes. As for Customer Relationship Management, it has a correlation with better coordination between the different services, formalization of processes by the introduction of IT, and the facilitation in communicating with the company's external partners. Advances Planning Systems and Electronic Data Interchange do not have significant correlations. Lastly, barcode has correlations with consulting employees about their needs of IT, accessing directly group works in the information system and the facilitation of communication with the company's external partners.

Table N° 09:IT and activities coordination

		E_1	E_2	E_3	E_4	E_5	E_6	E_7
ERP	Coefficient	-,386*	-,387*	-,388*	-,433*	-0,176	-,368*	-,403*

		F_1	F_2	F_3	F_4	F_5	F_6	F_7
	ofcorrelation							
	Sig. (bilateral)	0,024	0,024	0,023	0,011	0,319	0,032	0,018
CRM	Coefficient of correlation	-0,044	-0,213	-0,178	-,364*	-,365*	-0,279	-,358*
	Sig. (bilateral)	0,804	0,227	0,313	0,034	0,034	0,110	0,038
APS	Coefficient of correlation	-0,088	-0,045	-0,044	-0,067	-0,224	0,071	-0,289
	Sig. (bilateral)	0,619	0,802	0,803	0,708	0,203	0,688	0,097
EDI	Coefficient of correlation	-0,186	0,201	-0,196	-0,187	-0,032	-0,145	-0,118
	Sig. (bilateral)	0,293	0,254	0,267	0,290	0,857	0,413	0,506
Barcode	Coefficient of correlation	-,430*	-0,087	-0,062	-0,291	0,143	-,417*	-,367*
	Sig. (bilateral)	0,011	0,625	0,727	0,095	0,420	0,014	0,033

Source: Made by the authors based on the questionnaire

The use of ERP is also crucial for this section, since it has correlations with all its items except enhancing customer relationship. Many companies that use the ERP do not include their customers in their networks for discretion measures. Customer Relations Management is correlated with lost-cost production, enhancing customer relations, offering value added services, and entering new markets. As for Advanced Planning Systems, there are related to enhancing current offer, creation of new products or services, and penetrating new markets. This can be logically explained by the fact that these activities request strategic planning, which is the function of the APS. Electronic Data Interchange and barcode do not have significant correlations.

Table N° 10: Impact on operational strategies

F_1	F_2	F_3	F_4	F_5	F_6	F_7

ERP	Coefficient of correlation	-,504**	-,382*	-0,293	-,471**	-,441**	-,340*	-,410*
	Sig. (bilateral)	0,002	0,026	0,093	0,005	0,009	0,049	0,016
CRM	Coefficient of correlation	-,363*	-0,142	-,419*	-,463**	-0,339	-0,334	-,535**
	Sig. (bilateral)	0,035	0,424	0,014	0,006	0,050	0,053	0,001
APS	Coefficient of correlation	-0,282	-0,183	-0,327	-0,318	-,372*	-,465**	-,345*
	Sig. (bilateral)	0,106	0,301	0,059	0,067	0,031	0,006	0,046
EDI	Coefficient of correlation	-0,127	-0,127	-0,231	-0,141	-0,194	0,149	-0,249
	Sig. (bilateral)	0,475	0,473	0,189	0,426	0,272	0,400	0,155
Barcode	Coefficient of correlation	-0,049	0,015	-0,217	-0,159	-0,112	0,083	-0,007
	Sig. (bilateral)	0,782	0,934	0,217	0,369	0,528	0,640	0,969

Source: Made by the authors based on the questionnaire

The use of ERP is seen to contribute to outbound logistics, production and manufacturing, distribution, sales, and customer services except inbound logistics. Customer Relations Management is correlated to Customer service but the other software were not found to have a correlation with any of the logistics activities.

Table N° 11: Impact on logistics activities

G_1	G_2	G_3	G_4	G_5	G_6

ERP	Coefficient of correlation	-0,281	-,402*	-,431*	-,542**	-,575**	-,355*
	Sig. (bilateral)	0,107	0,018	0,011	0,001	0,000	0,039
CRM	Coefficient of correlation	-0,234	-0,237	-0,279	-0,200	-0,338	-,374*
	Sig. (bilateral)	0,183	0,178	0,110	0,256	0,050	0,030
APS	Coefficient of correlation	-0,161	-0,225	-0,231	-0,261	-0,286	-0,260
	Sig. (bilateral)	0,363	0,201	0,189	0,136	0,101	0,138
EDI	Coefficient of correlation	-0,156	-0,329	-0,172	-0,169	-0,203	-0,089
	Sig. (bilateral)	0,379	0,058	0,332	0,340	0,250	0,618
Barcode	Coefficient of correlation	-0,304	0,199	0,133	-0,003	-0,158	-0,124
	Sig. (bilateral)	0,080	0,258	0,452	0,985	0,374	0,485

Source: Made by the authors based on the questionnaire

The questionnaire included other data like the use of other software, which has in general a significant correlation with the availability of the ERP since this later has functions that replaces the other software like accounting, payroll and billing. Significant correlations between stock software and ERP were not found. ERP is also correlated but positively to the availability of wireless and mobile data and storage networks, these later activities are required for the implementation of the ERP.

Table N° 12: Correlation between ERP and other software

		Accounting Software	Payroll Software	Stock Software	Billing Software	Wireless Apps.	Storage networks
ERP	Coefficient of correlation	-,523**	-,344*	-,334	-,523**	.468**	.653**
	Sig. (bilateral)	,002	,046	,053	,002	.005	.000

Source: Made by the authors based on the questionnaire

5- Conclusion:

As information sharing is the backbone of the logistics activity in organizations, the growing need for Logistics Information Systems must be ensured by Algerian companies. From our study we can confirm that Algerian companies have been integrating different logistics information systems, such as ERP, CRM, SCM, and APS. Barcode are more used than RFID due to their respected costs. The availability of storage facilities and information sharing networks is recognized as an obligation to implement and use properly these systems, which can be seen basically from the important correlation between them and the availability of the ERP. This system seems to have the most important status compared to the other software. Its implementation in an organization correlates negatively with ancient independent software like accounting and stock management. From the above we can accept the first hypothesis since Algerian companies use different Logistics Information Systems.

The use of LIS is seen as an influencing factor on internal and external coordination, operational strategies, and logistics activities; mainly due to the use of the ERP. As for CRM is only seen to contribute to activities related to customer service which is its core function. Same for the APS that is considered to influence the strategic planning activities such as planning new products or entering new markets.Out of this, we can confirm the second, third and fourth hypothesis that LIS impact internal and external coordination, they contribute to the different operational activities and logistics strategies of the organization. Consequently, they impact the overall logistics performance of the company.

Future researches might be specific to the study of one specific software independently and should try to enlarge the size of the studied sample.

Bibliography:

1- ALSHAWI, S., MISSI, F. & IRANI, Z.,. *Organisational, technical and data quality factors in CRM adoption—SMEs perspective*,Industrial Marketing Management, 40, 2011**,**PP. 376-383.
2- ATTARAN, M.,. RFID, " *an enabler of supply chain operations"*,Supply Chain Management: An International Journa*l,* 12**,**2007, PP.249-257.
3- CHRISTOPHER, M.,*Logistics & supply chain management*, Pearson UK,2016.
4- DANG, V. L. & YEO, G. T.,"*Weighing the Key Factors to Improve Vietnam's Logistics System*,"The Asian Journal of Shipping and Logistics, 34**,**2018,PP.308-316.

5- FALATIFAH, M., SUMUNAR, K. I., SHAUKI, E. R. & DIYANTY, V. , *SAP Implementation, User's Satisfaction, and Its Utilization*, Asia Pacific Business and Economics Conference (APBEC 2018), Atlantis Press, 2019.

6- HELO, P. & SZEKELY, B.,*Logistics information systems: an analysis of software solutions for supply chain co-ordination*,Industrial Management & Data Systems*, 105*,2005, PP. 5-18.

7- HEREDERO, C. P. & GÓMEZ, C. G., *The contribution of CRMs to the ability of market segmentation: the case of the VIPs group*,Procedia Technology, 16*,2014, PP.355-364.

8- HUISKONEN, J. & PIRTTILÄ, T.,"*Lateral coordination in a logistics outsourcing relationship"*,International Journal of Production Economics*, 78*,2002, PP.177-185.

9- HVOLBY, H.-H. & STEGER-JENSEN, K.,"*Technical and industrial issues of Advanced Planning and Scheduling (APS) systems. Computers in Industry"*, 61*,2010, PP.845-851.

10- JONSSON, P., KJELLSDOTTER, L. & RUDBERG, M., "*Applying advanced planning systems for supply chain planning: three case studies*"International Journal of Physical Distribution & Logistics Management, 37*,2007, PP. 816-834.

11- KILGER, C., MEYR, H. & STADTLER, H.,*Supply chain management and advanced planning: concepts, models, software, and case studies*, Springer, 2015.

12- LI, L. & ZHAO, L.,*Design about Cost Management of Logistics Enterprises under the Background of the Big Data and Informatization*, 2018 International Symposium on Social Science and Management Innovation (SSMI 2018), Atlantis Press, 2019.

13- LYYTINEN, J. D., KALLE,*The role of intermediating institutions in the diffusion of electronic data interchange (EDI): How industry associations intervened in Denmark, Finland, and Hong Kong,*The Information Society*, 17*,2001, PP.195-210.

14- MEYR, H., WAGNER, M. & ROHDE, J.,*Structure of advanced planning systems,*Supply chain management and advanced planning,*Springer, 2015.

15- OUARITI, O. Z. & ZEROUAL, P. L.,*L'impact Des Systèmes D'information Sur La Performance Des Chaines Logistiques*: Une Revue De Littérature.

16- PAYNE, A. & FROW, P.,"*Customer relationship management: from strategy to implementation"*Journal of Marketing Management, 22*,2006,PP.135-168.

17- PRERADOVIC, S., BALBIN, I., KARMAKAR, N. C. & SWIEGERS, G.,*A novel chipless RFID system based on planar multiresonators for barcode replacement,* 2008 IEEE International Conference on RFID, IEEE, 2008., PP.289-296.

18- SHIM, S. J. & SHIM, M. K.,"*Effects of user perceptions of SAP ERP system on user learning and skills"*,Journal of Computing in Higher Education*,2019, PP.1-16.

19- WATERS, C. D. J.,*Logistics: an introduction to supply chain management*, Palgrave Macmillan, 2003..

20- WENRICH, K. & AHMAD, N., *Lessons learned during a decade of ERP experience: A case study*,International Journal of Enterprise Information Systems (IJEIS)*,* 5**,**2009,PP.55-73.

21- YUSUF, Y., GUNASEKARAN, A. & ABTHORPE, M. S.,"*Enterprise information systems project implementation:: A case study of ERP in Rolls-Royce"*,International Journal of Production Economics*,* 87**,**2004, PP.251-266.