A NEW MODEL FOR INFORMATION LOGISTICS SYSTEM ARCHITECTURE

SAFWAN AL SALAIMEH

Asstt Prof, Computer Science Department, Irbid National Univrsity Irbid/ Jordan
E-mail: salsalaimeh@inu.edu.jo.com

ABSTRACT

The concept of logistics systems Lies in the coordination of productive activities, financial, economic and information associated with each other for computing systems technology. The first appearance of these systems was during World War Two to resolve the issue of strategic effects in the field of industry and military affairs as well as to solve the problem of transportation in order to provide troops with military equipment and fuel.
The technological logistics system is: Support for these systems, in terms of information and computerized. Lies in two areas: the first is a computer support for decision-making in the logistics systems specific type, and the second lies in the logistical and informational self-management that is implemented through the use of a package of software.
This paper aims to provide a general model of the logistical systems and provide study in the application of this system in the area pharmaceutical industry management, we have found that strong information usage lead to strong productivity that aimed to increase revenue from productivity and reduce costs production leading eventually of the work of the technological logistics.

Keywords: *Logistics, Information Technology, Management Functions, Relationships, Technical Information, Administrative Organization.*

1. INTODUCTION

It is known that the quality of management technology for the organization based on the work of technological systems, and is intended to deploy the Logistic system the "Group of sub-elements of the system technology and logistics management information system associated with each other and which are all defined."

Reflect the installation of logistics systems accurately state the relative stability of the internal composition and internal organization of the system. And, more broadly can be viewed as a concept adds the operating characteristics that reflect the defining relations between the internal parts of the system and the distribution of materials and information among themselves.

The problem of composition is to design a mathematical model and the selection of methods and algorithms that work on the analysis of installation of the system logistics, and on the basis of the coordination of solutions (resolutions) are improved and taken in order to obtain highly effective system, and returns the amount of revenue in each stage of the logistics.

Logistic model can be considered as a key to understanding the industrial systems and military and economic elements, and each addition to the data input and output, has developed models based on mathematical theory and data analysis [2,3].

Now, after this introduction, logistics has become (computer, information, and trade) is selected and visible. The solution of logistical matters simple computer depends on the specialized expert systems or computer network managers and database administrators

At present, the information technology systems adequate to support the logistics of Commerce and Industry, and the best example of this comprehensive system of corporate governance, which was designed by the German company SAP[3,4].

The most important functions carried out by logistics systems are:
1- Management of material resources.
2- Planning for the consumption of material within the companies.
3- Analysis of market suppliers.
4- Procurement and supply.
5- Department Stores.
6- Control accounts and others.

And when you get on the composition of technological systems, the logistics solutions will serve the financial systems and systems analysis of the internal activities of the companies.

2. THE GENERAL MODEL OF THE LOGISTICS

General framework for management functions of the Organization identifies solutions to various problems of the system, where each of the problems of planning and control and management of the total production and subsections as possible be divided into problems of front and rear: The problems of front require determining the value of objective function and the problems of background include the range of factors matched with the value ideal objective function, and of the value of the profit from each item cost or value of one commodity[1,4].

The following are some of the manifestations associated with the model year, with properties ideal for solving production planning and management:
Overall structure of the S_{OS} model of logistics needed to run the systems consist of a set of organizational structures and which can be expressed as follows:

system, parts production, and tasks of people in decision-making process. And to document these relationships between the elements of the administrative system, the S_{ORG} contain several levels and can be displayed were as follows:

$$S_{ORG} = \{S_{MP}, S_{CONT}, S_{MANAG}\}$$

Where:
S_{MP}: the structure of production planning,
S_{CON}: the structure of effective control,
S_{MANAG}: effective management structure.

The structure of S_{IT} Technical Information dedicated to providing full and qualitative information necessary for the people and media to participate in presenting technical solutions can be introduced were as follows:

$$S_{IT} = \{S_{SYS.COL}, S_{DATA.PROSS}, S_{INF.COMP.NET}\}$$

Where:
$S_{SYS.COL}$: the structure of the data collection system.
$S_{DATA.PROSS}$: the structure of processing and data conversion.
$S_{INF.COMP.NET}$: the structure of the computer network information.

And told Algorithm structure that displays the mathematical description of the issue and methods of solution can be introduced were as follows:

$$S_{ALG} = \{S_{EFECT.CRITIR}, S_{MM}, S_{MS}, S_{ALG}\}$$

$$S_{OS} = \{S_{MAN}, S_{ORG}, S_{IT}, S_{ALG}\}$$

Where:
S_{MAN}: productivity, which reflects the composition of components and relations of its constituent elements in the closed loop of production.
S_{ORG}: organizational structure, which shows the relationship between the various management functions and types of activities at the system level.
: S_{IT} Technical Information structure which reflects the mode and style of work of the means of collection, transport and information processing.
S_{ALG}: Algorithm structure which reflects the mathematical description of the issue and steps the solution.

S_{MAN} designed according to the principle of technology, which reflects the process of converting source material to finished goods can be expressed for the process as follows:

$$S_{MAN} = \{S_{MT}, S_{BAS.MAN}, S_{MAR}\}$$

Where:
S_{MT}: the structure of the material technical supply.
$S_{BAS.MAN}$: the basic productive structure.
S_{MAR}: structure catalog of products.

S_{ORG} reflects the organizational structure and content of powers between the: Elements of management in the system, and sub-elements of the

Where:
$S_{EFECT.CRITIR}$: structure of the efficiency measures of the problem.
S_{MM}: the structure of the mathematical model.
S_{MS}: support structure sports.
S_{ALG}: support structure algorithm and compiler.

Installation of the set of structures of the technological system, and has been presented previously to be selected by each (based on) a number of technical and economic indicators.

After selecting the appropriate structure should be suitable in terms of economic and provides highly effective for the management of production as measured by real time and the lowest cost.

Any change in the productive structure always requires organizational and installation of my knowledge and technical addition to the composition algorithm. From here we can see that the issue of a combination structure of the system governing logistics technology in general close to the category of simple systems. And resolve such issues should determine the following:
1. Purpose and objectives through the design or development.
2. Nature of the project.
3. Stages of the life cycle of the system..
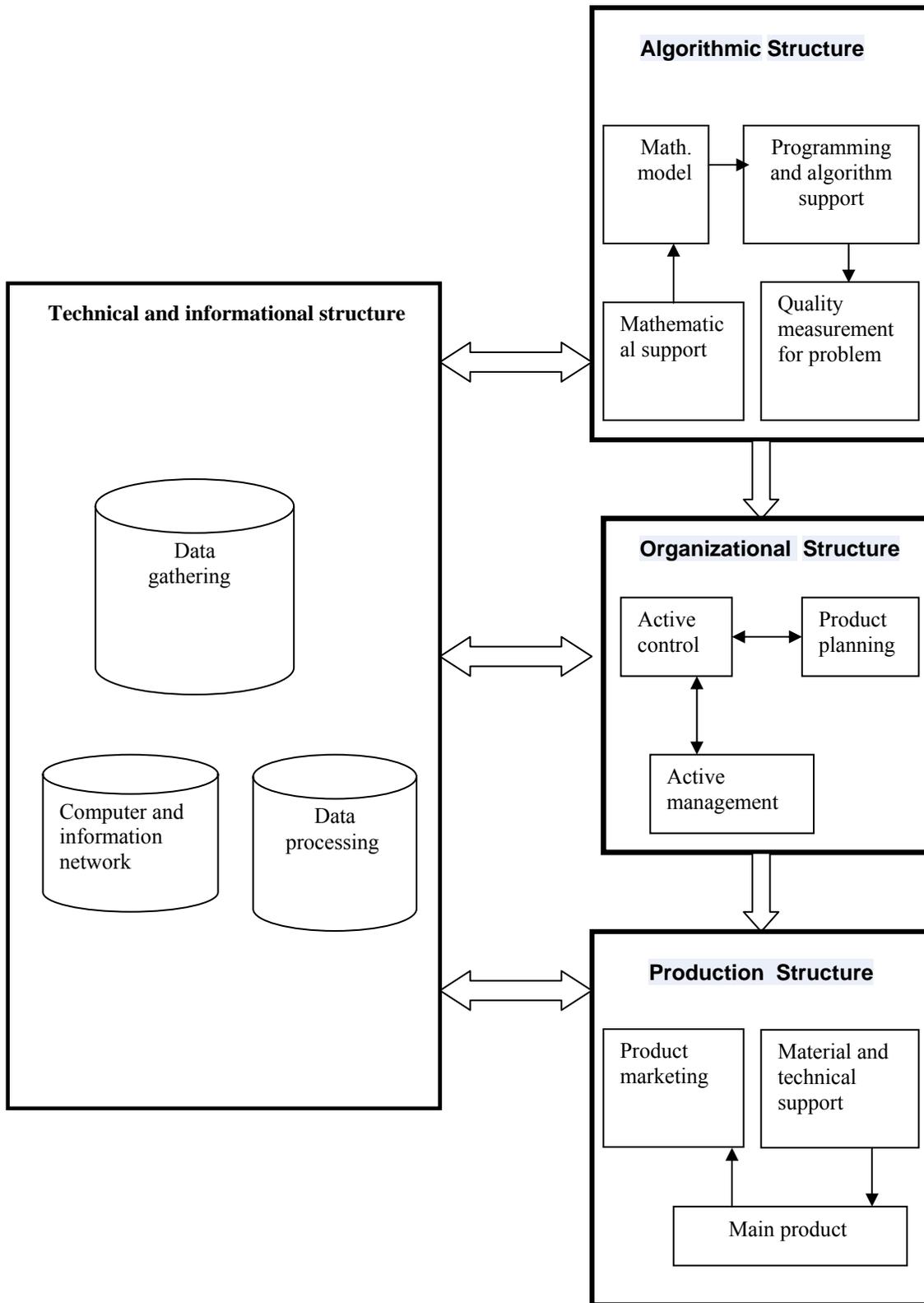
(Figure 1): General model for structure of logistics system

3. MODEL ADMINISTRATIVE ORGANIATION OF THE PROPOSED SYSTEM:

It can be applied to the system governing logistics technology to many companies and institutions that need constant change in the supply of material, technical and conservation of raw materials and finished goods production and storage operations. Has been selected to pharmaceutical companies. Where the company is considered the drug under study is one of the investment companies, Jordan, and can display the organizational structure of the company in the figure (2).
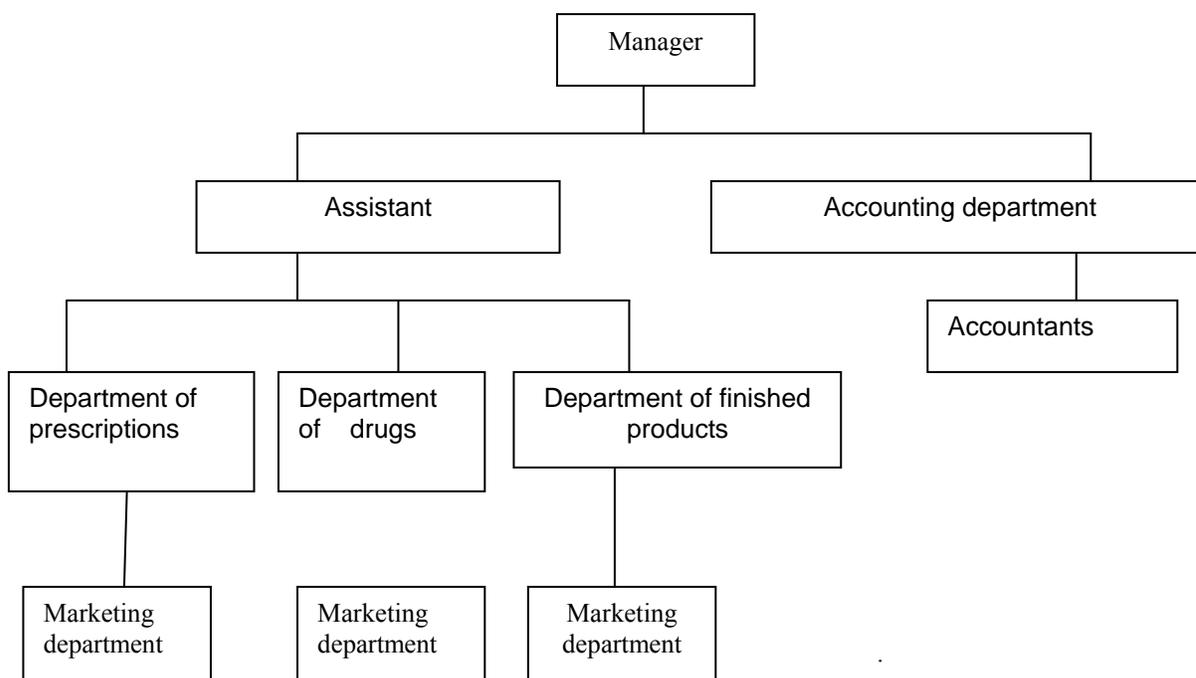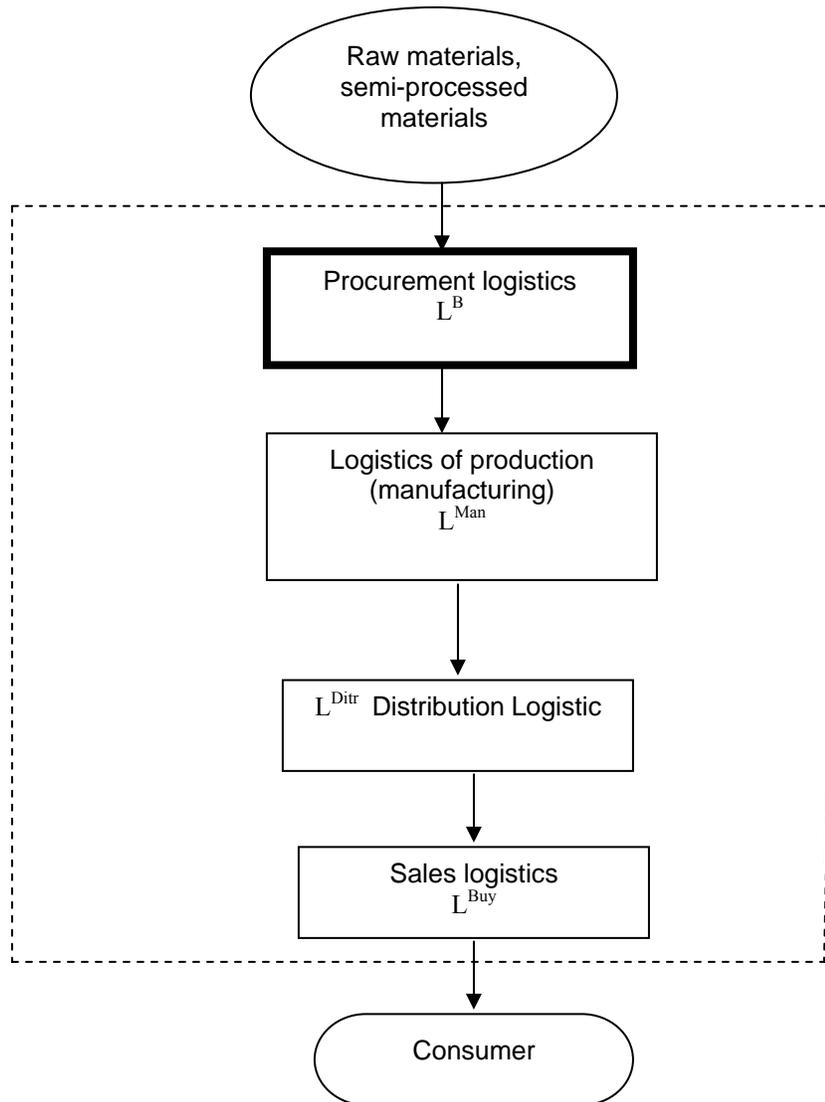
Figure 2): The organizational structure of pharmaceutical company.

Needed sections of finished products and pharmaceutical and prescriptions to address the logistical passed through several phases can be explained as figure (3).

(Figure 3): Stages of logistics

The implementation of logistics in all the stages set out above (procurement, manufacturing, distribution, and sales) is a complex process and very difficult, and therefore we decided to perform one of the stages of the logistics in the process of procurement.

In general can be discussed several sets of issues, which can appear at the stage of procurement and can be divided into four groups:
1. Calculation and analysis of therapeutic properties of materials and proposed by the suppliers.
2. Recording and analysis of the remains of the raw materials of therapeutic materials.
3. Planning and organizing the purchase of therapeutic materials.
4. Monitor the procurement process.

The synthetic scheme of the model administrative organization in a company drug under study can be presented as figure (4).

From the previous scheme we see that::
B^2_4 : is a set of procurement that describe the question of accounting standards for treatment.
B^2_5: Is a set of procurement specifications describe the analysis of the issue of treatment offered by suppliers.

$$f \begin{array}{c} B^2_4 \\ B^2_5 \end{array}$$: The process of getting the price list

provided by the supplier.
B^2_7: Is a set of procurement that describe the outline of the procurement by the selected partition and the allotted time.

$$f \begin{array}{c} B^2_5 \\ B^2_7 \end{array}$$: The process of obtaining a

document compared with the prices of goods purchased.
B^3_1: Is a set of procurement that describe the question of the expense of the remaining quantities of the type of specific treatment.
B^3_2 : A group which describes the issue of procurement account, and modify the specific amounts of treatments purchased.

$$f \begin{array}{c} B^3_1 \\ B^3_2 \end{array}$$: The process of obtaining a document

on the availability of the remains of materials used within the company.
B^2_2: Is a set of procurement that describe the question of the expense of specific quantities of

treatments purchased in a specific section of the company.

$$f \begin{array}{c} B^3_2 \\ B^2_2 \end{array}$$: Process of obtaining a receipt for

each document type treatment.
B^2_6 : Is a set of procurement that describe the issue of planning for the materials and to organize the purchase of therapeutic materials as needed per section and the solutions according to the results it contains procurement scheme.

$$f \begin{array}{c} B^2_2 \\ B^2_6 \end{array}$$: The process of getting close to a

consumption of natural therapies.

$$f \begin{array}{c} B^2_6 \\ B^2_7 \end{array}$$: Process of obtaining a procurement

plan for the group treatments.
B^2_8: Of the Group of procurement that describe the formation of the shopping list and a particular resource to a particular section.

$$f \begin{array}{c} B^2_7 \\ B^2_8 \end{array}$$: The process of obtaining materials

procurement plan according to the given time (daily, monthly, annual).
B^2_9: Is a set of procurement that describe the issue of prepayment according to the list provided.

$$f \begin{array}{c} B^2_8 \\ B^2_9 \end{array}$$: The process of obtaining a list of

items reserved in advance with the supplier.
B^2_{10}: Is a set of procurement that describe the question of the preparation of documents for the procurement process and according to the attached list.

$$f \begin{array}{c} B^2_9 \\ B^2_{10} \end{array}$$: The process of obtaining a document

pre-payment of a certain part of the items purchased with the supplier.
B^2_3 : Is a set of procurement that describe the issue of consumption analysis of one section of treatments purchased.

$$f \begin{array}{c} B^2_3 \\ B^2_6 \end{array}$$: The process of obtaining a document

in consumption purchases a range of treatments.

B^3_3: Is a set of procurement that describe the issue of consumption analysis of treatments purchased.

$$f^{B^3_3}_{B^2_3}$$: The process of obtaining a document

for each consumption natural treatment.

$$f^{B^3_1}_{B^3_3}$$: The process of obtaining goods and

documents transmitted.

$$f^{B^3_2}_{B^3_3}$$: The process of obtaining a document

for each consumption natural treatment.

B^2_{15} : Is a set of procurement that describes the issue of amending the procurement plan at the level of a particular section.

$$f^{B^2_{15}}_{B^2_8}$$: Process of obtaining a revised plan

for materials purchased by a given time (monthly, weekly).

B^2_{14}: Is a set of procurement that describe the question of analyzing the difference between planned purchases and remedial materials supplied to the specified section.

$$f^{B^2_{14}}_{B^2_{15}}$$: Process to obtain and document

additional consumption of materials purchased.

B^2_{11}: Is a set of procurement that describe the account and control of therapeutic materials purchased by one section.

$$f^{B^2_{11}}_{B^2_{14}}$$: Process to obtain and document the

transfer of materials to the company.

B^2_{12}: I is a set of procurement that describe the question of the introduction of documents as per section.
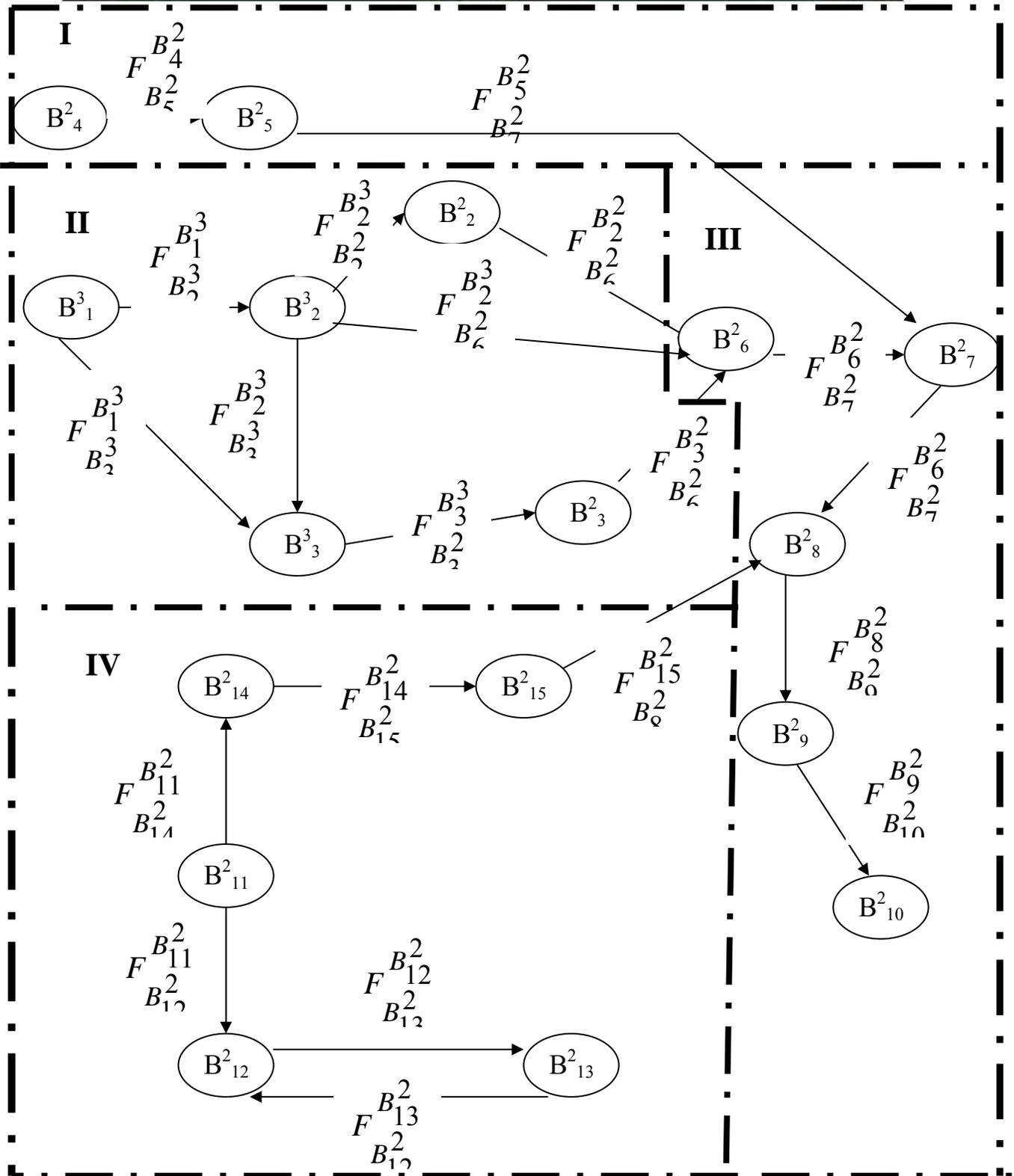
$$f^{B^2_{11}}_{B^2_{12}}$$: Process to obtain and document the

transfer of materials to the company.

B^2_{13}: Is a set (class) that describes the issue of procurement audit.

$$f^{B^2_{12}}_{B^2_{13}}$$: The process of getting at the

expense of material (financial receipts).

$$f^{B^2_{13}}_{B^2_{12}}$$: Process to obtain and document

completion of payment to the supplier.

(Figure 4): Synthetic scheme of the administrative organization model in the company.

4. THE RESULT

Based on the above view of the concept of logistics systems and the benefits that contribute to the logistics in several areas, the logistic model was built and its application in pharmaceutical companies and through the Show-General of the logistical system and shown in Figure (1). And then view the stages undergone by the logistic model as shown in Figure (3). In addition to the planned structural model of the administrative organization of the pharmaceutical company.

From here we can see that this research was responsive to his plans or goals which put out for it a new model for the logistics system architecture.

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AUTHOR PROFILES:

Safwan Al salaimeh received the degree in electronics engineering from kharkiv state university for radio electronics / Ukraine, in 1997. Currently, he is an Associate Professor at computer Department in Irbid National University. His interests are in Logistics information Systems, operation Research system and system modeling.