Proposal of Organization Framework Model, using Business Processes and Hierarchical Patterns to provide Agility and Flexibility in Competitiveness Environments

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Abstract

It is very known that the administration of the Organizations is structured in the departmentalization and specializations, coming from the traditional model developed by F.W. Taylor and his followers. The information flows is basically top down and bottom up, following the pyramidal model. When the Business Process model is implemented together with a new Information System, the sequence of activities of the business processes are performed in a horizontal flow in the various departments of the organization; consequently, the management based on business processes provokes the rupture of the departmental barriers and specializations, that are characteristic of the pyramidal organization. Due to these facts, a dichotomy is established, because the formal organization remains pyramidal, with vertical flow of information, while the Information Systems make operational the management by Business Processes, with horizontal information flow [1].

A new organization model appears as necessary, to conciliate the better characteristics of both models, and diminish the impact of the non-alignment of other ones, as horizontal and vertical information flow, information flow constraints due to silos of power characteristics of pyramidal model, between others. The new model, named as Organization Framework, proposes the definition of plans or levels composed by Business Processes that will be hierarchically superimposed from the first Technological Infrastructure level business processes, following with Production Management, Financial and Strategic and Political levels. Each plan have the horizontal information flow composed of respective business processes, and the vertical information flow connection between plans is made through the respective business processes, that connects information (or activities) between business processes of each plan. The hierarchy between plans is made starting from the Technological Infrastructure Plan, understood as the foundation of the Organization Framework, supporting the Management plan, that supports the Financial Plan, that supports, on other hand, the Strategic Planning and Directions plan. So, the Organization Framework establishes rules of precedence that fixes the business processes ordinance and hierarchy, in a different mode of those established by the traditional hierarchic model.

This article proposes the development of the Organization Framework with the intention of reduction or even the elimination of the dichotomy between the Pyramidal Management and Business Processes Management models, searching the necessary close association between these two administration models. The adoption of the Organization Framework tends to provide more agility and flexibility to the organization and the easier approval of the Business Processes Management model by the superiors levels of the organization, mainly for business reasons, due to the increase of agility and flexibility,
necessary to compete in the very competitiveness environment of the years 2000. As part of the implementation strategies, it is discussed the need of training and educational programs to the higher level management, to stabilize the sense of need of a new Business Model, to attend the external environment pressures.

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1. Introduction

The enterprise competitiveness can be understood as its capacity of continuously review its competition strategies, obtaining favorable position in the markets where actuates. Consequently, it shall provide conditions to generate higher profits than the average of companies of the market where actuates, operating in a sustainable way, with quality, speed and flexibility. Also, must satisfy stakeholders, and be compliant with environment requirements [2]. One can split competitiveness in two aspects: a) external competitiveness, where the enterprise must have the capacity of provoke in the consumer the desire of change a product from a company where traditionally buy to the new one. This capacity will drive the so called internal competitiveness, that can be understood as a set of harmonic and synergetic methodological and technological factors that induce the external market perception to change products from the previous organization to the new one. This state of competitiveness is obtained as consequence of its organizational and technological behavior, defined as competitiveness attributes. proper characteristics of the management system, expressed by continuous, comprised and integrated practice of methodologies, as part of the organizational and technological management. The competitiveness attributes and sub attributes are classified according its range of application [1]:

Market driven attributes: proper characteristics of the management system of the organization expressed by the continuous, comprehensive and integrated of methodologies driven to provide conditions of attendance of needs of the consumer markets. The market driven attributes are deployed in the following sub attributes: Innovation: The process of technological innovation comprises a complex set of activities that transforms ideas and scientific knowledge into physical reality and real world applications. Also, integrates existing technology and inventions to create a new product, service or process. Innovate companies look for ideas of any kind, and provide organizational culture that supports its development in viable business programs. Agility: The enterprise agility can be reached when the technological and administrative infrastructure are flexible, and can be rapidly created, configured, and rearranged, attending external business needs. Among others, this attribute facilitates a superior time to market for new business initiatives. Responsiveness: Characteristic of the organization to respond the external needs in adequate times, also called “time to market “. These characteristic include pro-active search of feedbacks from customers and suppliers, ability to be rapid cycle organization, flexible in thinking and do things in short periods of time [3].

Organization driven attributes- proper characteristics of the management system of the organization expressed by the continuous, comprehensive and integrated of methodologies driven to provide conditions to organizational structures to attend the external needs that determine the external competitiveness. The organization driven attributes determine the way that the administrative and management business process are applied throughout the organization itself. The organization driven attributes can be split in: a) coexistence between the hierarchical and business process organization models; b) information infrastructure; c) knowledge management; d) organization controls [4].

Human capital driven attributes – proper characteristics of the management system of the organization expressed by continuous, comprehensive and integrated of methodologies to provide conditions to the human capital develop programs of selection, education, training of the human capital that support the organization reach
organization level that lead to the competitiveness status. The human capital driven attributes can be split in: 
a) teamwork; b) project clusters; c) human networking d) hierarchy versus participation [5].

2. Objective

This article proposes a new organization model, called Organization Framework, with the intention of reduction or even eliminates the dichotomy between the Hierarchical Model and Business Processes model, searching the necessary close association between these two. The adoption of the Organization Framework tends to provide more agility and flexibility to the organization and the easier approval of the Business Processes Management model by the superiors levels of the organization, mainly for business reasons, due to the increase of agility and flexibility, necessary to compete in the very competitiveness environment of the years 2000.

3. Organizations models

It will be introduced the main organizational models, with their characteristics and applications:

3.1. – Hierarchical Model

The hierarchical model had its origin in the beginning of last century, derived from F.W.Taylor’s Scientific Management and organization models implemented by Henry Ford. The inspiration of this model is the functions specializations studies [6], and the religious and military models. Its main characteristics are: a) several hierarchical levels; b) stable and rigid organization; c) responsibilities clearly defined; d) Information flow essentially vertical (top-down-bottom up); e) Maintenance and prioritization of functions specialization; f) fitted to stable environments. Taking into consideration these characteristics it can be stated:

- The hierarchical model is necessary to management, because define clearly responsibilities
- The hierarchies always existed and will continue to exist in the organizations.
- Each person has a previously defined function. If it is correctly exerted, it can be transformed in recognition and promotion.
- Usually, the functions meet a small portion of the persons talent. The functions occupants reluctant in share knowledge in order of not loose the function security.

Due to vertical information flow, there are restrictions to the interactions with external environment. Also, due to its several hierarchical levels, the decisions are taken in specific high levels, deployed in the organization to be full filled. The hierarchic structure can have from 10 to 15 hierarchical levels, with a complex set of operational procedures, communications channels, different levels of authority, work definitions and operation policies. This structure is based in which the planning comes from the organization top level, and its effectiveness is made in the base of the pyramidal structure. The limitations of the hierarchical organization are: a) Top – down command model, where the orders are executed with few questions. b) presupposition is that individuals that occupy working posts in the lower levels do not need contribute to the strategies and objectives of the organization. d) Internal competition.

e) Silo thinking. f) Task delegation instead of authority and responsibility delegation. Due to these characteristics, besides its need as organizational and management model, and be used by the majority of the enterprises, the hierarchical model has disadvantages, mainly in the highly competition environment of the 2000 years such as inability to attend reduction of time to market, lack of agility and flexibility to attend external demands on time, between others.
3.2. – Business Process Model

The organization based on business process opposes the hierarchical model as an option to focus in the markets needs instead of internal realities. A business process can be defined as a sequence of activities ordered according Rules of precedence. The processes activities cross horizontally departments of the hierarchical model [6]. According the American Production and Quality Control (APQC) [7], the business processes can be classified as:

**Key Business Processes** – set of processes that initiates with the market needs, cross horizontally the organization and deliver to the market the correspondent product or service: Develop Vision and Strategy – Design and develop products and services – Sell and commercialize products and services – Deliver products and services – Manage after marketing services.

**Support Business Processes** – set of processes that support the effectiveness and execution of the key business processes: Manage improvements in the management system – Manage human capital – Define strategies and architecture of Information Technology – Manage financial resources – Manage external relationships – Manage security and environment programs – Manage knowledge.

The figure 1 shows the Business Process Organization model, with the key and support business processes.

![Business Process Organization model](image)

**Figure 1 – Business Process Organization model[7]**

4. Competitiveness and the need of a new organization model

The competitive environment of the years 2000 challenges the organizations with the needs of reduction of products useful lifetime, continuous pressure for diversification, constant technological changes, internationalization of competition and great variability of external environment. In order to attend this competitive environment, the organizations are leaded to structure themselves with the following characteristics: reduced response time to the customers; need to reach world class score cards and coexistence with international competitors. Due to the competitiveness characteristics, the enterprises are challenged to search a new organization model, mainly because the hierarchical model, due to its intrinsic characteristics described above, has a high response time to the market needs. The transition to a business process model is complex, mainly related to the human resources. The team work and the necessary support to its functioning are some of the conditions to explore the business process model, allowing a more integrated and comprehensive vision of the organization.[8][9].
5. Organization Framework

It will be presented a new organizational model named Organizational Framework, taking into account the organization's information flow, linking the several business processes according to rules of precedence, instead of the traditional top-down, bottom-up hierarchical model.

The General Information Flow of Information of an organization can be explained in the sequence showed in figure 2 [9]:

- **Market needs**: The General Information Flow begins with the market prospection, looking for the product attractiveness, and the so-called customer voice, to decide what will be input data to be used in the product design and dimensioning.

- **Product generation**: The knowledge of the product is developed, such as basic configurations, main specifications, and product characteristics that will allow its competitiveness in the market where the organization acts. The dimensioning calculation, functional specifications, reliability tests, and parts design and drafting, with the dimensional, geometric tolerances, materials specifications are also determined in this phase. So, it is completed the product knowledge fixation, representing the concept of “what to do” [7].

- **Manufacturing technological specifications**: The manufacturing technological specifications to be developed in this phase are the process routing and processes planning operations. The process planning plays an important role to fix the manufacturing technology. Through its utilization, it is possible to eliminate the randomness of the possible alternative to manufacture parts, adopting an ordered sequence of operations, based on technological criteria, allowing that the parts manufacturing being performed always in the same manner, maintaining the quality demands by the technological specifications showed in the parts drawings. The fixation of the manufacturing routes and processes fix the manufacturing knowledge, representing the concept of “how to do”.

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5.4. Work and resources measurement

After the determination of manufacturing routes and processes, it is determined the work or resources necessary to execute the operations of the manufacturing route, expressed by the standard time of each operation and, as extension, to the set of parts of the product.

The standard time for each operation completes the remaining set of information of the product manufacturing, allowing the determination of the management control indexes of the manufacturing shop floor, shop floor lay out and flow, manufacturing costs, and future investments. The manufacturing times fix the knowledge of work measurement, representing the concept of "how much to do".

The three concepts: what to do, how to do and how much to do, install the technological infrastructure foundations that will support other processes that compose the general information flow. So, it will be defined the Technological Infrastructure Plan, supported by three pillars: a) Product generation - what to do; b) Manufacturing technological specifications - how to do; c) Work and resources measurement - how much to do. The figure 3 represents graphically the Technological Infrastructure Plan.

5.5. Planning and Production

The information flow continues with the business processes of Planning the production volumes and the production itself, using the information of Production programs, with quantities and delivery dates for the products, operations routing of parts, and the respective standard times of the products to be produced. The production planning is implemented, taking in account the information described above, the existing parts inventory and materials supply. Also, the parts production is carried out, again using information of manufacturing routes, parts standard time, planned quantities for each part/operation.[9]. The Planning and Productions knowledge constitutes a new pillar, that, together with the already defined pillars of Manufacturing technological specifications and work and resources measurement, define the Management Plan, where are performed the set of processes related to Planning and Production in shop floor installations. It must be highlighted that the Management Plan will be effective if the Manufacturing Infrastructure Plan is already in place. The figure 4 shows graphically the Management Plan, placed in superior level in relation to the Manufacturing Infrastructure Plan, and supported by the Planning and Productions knowledge, Manufacturing technological specifications and Work and Resources Measurement pillars.
5.6. Financial controls

The general information flow continues, performing the financial business processes, using information of produced quantities of each product, standard times, and product materials, coming from the bill of materials, salary depreciation, purchasing expenses. These parameters of Planning, Standard Times and Expenses will compose the three pillars of the Financial Plan. In the Financial Plan is performed the economical-financial management of the organization, composed of the business processes of cost determination, billing, profit calculation and cash flow management. The figure 5 shows graphically the Financial Plan, and its relationships with the Management and Technological Infrastructure Plan.
5.7. Strategic Planning and Directions

Finalizing the General Information Flow, it is defined the organization Strategic Planning and Directions, which business processes will define the strategic direction of the organization as function of the economical conditions expressed by the profit and cash flow, the need of new investments in products, research and development, and the strategic positioning in new geographic areas, new markets, or eventually market niches [10][11]. The strategic information, such as design of new installations, selection of new machine tools and equipment, forecast of new investments for the next 2-5 years, derived from the determination of new markets and products, and the profit and cash flow are the three pillars that define the Strategic Planning and Directions Plan.

5.8. Organization Framework

The Strategic Planning and Directions, Financial, Management and Technological Infrastructure Plans, related themselves Rules of Precedence compose the Organization Framework, with the following basic characteristics:

1) Each plan is composed by horizontal information flow, derived from its respective business processes activities and relationships.
2) Each plan is supported by its respective pillars, as developed above.
3) The relative position of one plan related to another is determined by the rules of precedence between the business processes that compose each plan.
4) The vertical information flow between the plans is made through their respective pillars.
5) The Technological Infrastructure Plan is the foundation that allows the viability and stability of the other plans, and consequently, the solidity of the Organization Framework.

The graphic representation of the Organization Framework showed in the figure 6 uses geometric features (plans and pillars) is adopted in this work to facilitate the comprehension of the new organization model.
6. Conclusions

The main conclusions that can be extracted from this article are:

1- The competitive environment of the years 2000 challenges the organizations with the needs of reduction of products useful lifetime, continuous pressure for diversification, constant technological changes, internationalization of competition and great variability of external environment [12].

2- It is necessary to have close association between the traditional pyramidal management and the business process management. The conciliation of the two organization models is essentially a strategic problem.

3- A new organization model appears as necessary, to conciliate the better characteristics of both models, and diminish the impact of the non-alignment of other ones, as horizontal and vertical information flow, information flow constraints due to silos of power characteristics of pyramidal model, between others [13].

4- The new model, named as Organization Framework, proposes the definition of plans or levels composed by Business Processes, that will be hierarchically superimposed from the first Technological Infrastructure level business processes, following with Production Management, Financial and Strategic and Political levels. The Organization Framework establishes rules of precedence that fixes the business processes ordinance and hierarchy, in a different mode of those established by the traditional hierarchical model.

5- The Technological Infrastructure Plan is the foundation that allows the viability and stability of the other plans, and consequently, the solidity of the Organization Framework.

The Organization Framework model intends to conciliate the horizontal information flow, characteristic of the Business Processes model and the vertical information flow, characteristic of the Hierarchical model, attending the organizations competitiveness requests as agility, reduction of time to market, etc., and their internal management needs as effective control, hierarchy, discipline, etc.

References

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