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## ECONOMIC FUNDAMENTALS FOR VERTICAL INTEGRATION

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### ABSTRACT

According to received economic theory, vertical integration is mainly justified with the occurrence of productive efficiencies in addition of transaction costs between production stages. The present study aims to confirm the presence of these factors in the health care sector, thus justifying the urgency of vertical integration operations of the different health care stages. It is proposed an analysis of the vertical integration efforts in the Portuguese Health Sector, that comprises an attempt to decipher the benevolence and congruence of its catalysts, solutions and results. In addition, the results obtained with international operations of vertical integration are briefly reviewed and discussed, namely the positive outcomes regarding lifestyle diseases. It is generally expected that vertical integration in the health care sector should deliver more efficient and better health care to the populations, badly needed in low-income countries.

**Keywords:** Vertical Integration, Productive Efficiency, Transaction Costs, Local Health Units, Health Care Provision., Lifestyle diseases.

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## FUNDAMENTOS ECONÔMICOS PARA INTEGRAÇÃO VERTICAL

### RESUMO

De acordo com a teoria econômica, a integração vertical é justificada principalmente pela ocorrência de eficiências produtivas, além dos custos de transação entre as fases de produção. O presente estudo tem como objetivo confirmar a presença desses fatores no setor de saúde, justificando, assim, a urgência das operações de integração vertical das diferentes etapas da cuidados de saúde. Propõe-se uma análise dos esforços de integração vertical no Sector da Saúde Português, que compreende uma tentativa de decifrar a benevolência e congruência dos seus catalisadores, soluções e resultados. Além disso, os resultados obtidos com as operações internacionais de integração vertical são brevemente revisados e discutidos, ou seja, os resultados positivos em relação às doenças do estilo de vida. Em geral, espera-se que a integração vertical no setor da saúde ofereça serviços de saúde mais eficientes e melhores às populações.

**Palavras-chave:** Integração Vertical, Eficiência Produtiva, Custos de Transação, Unidades Locais de Saúde, Prestação de Cuidados de Saúde, Doenças relacionadas com o Estilo de Vida.

### 1 INTRODUCTION

The significant development occurred in the 70s and 80s in the integration of care is, according to Grone and Garcia-Barbero (2001) cit. in Costa and Santana (2008), one of the important challenges of the European health systems. Thus, the integration between Primary Health Care (CSP) and Hospital Health Care (CSH) can be considered a strategy to improve access, adequacy, technical quality, continuity and effectiveness of health care provided to the population (Nunes et al, 2012).

The response given by health organizations has been influenced by the set of social and demographic phenomena that Portugal has been experiencing, being these phenomena the main influencers of vertical integration (Lopes et al, 2014). The catalysts of change are several factors such as the aging of the population, the epidemiological change, the modification of the consumers' profile, scientific progress in the treatment of diseases, the speed in providing information and sharing knowledge, the improvement of the quality of care and the change in the definition of health care provision, in which the concept of "benefit" will tend to focus on well-being.

The economic justification for a Vertical Integration operation is the increase of organizational and productive efficiency, which will enable health organizations to respond better to the referred changes, allowing better directing of both the new technological resources available to treat a patient (supply variables), and the resources needed to meet the new requirements of health care demand (demand variables) (Lopes et al, 2014).

In 2008, WHO defines this concept as "The management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system." (Lopes et al, 2014, p.1)

Vertical Integration in health has been studied and introduced for the first time in the 1990s, being its main focus on the integration of several distinct segments of a productive process (Lopes et al, 2014). This aspect can be verified in the portuguese health area through the different health care structures that the National Health Service (SNS) provides, so that in 1999 a process of vertical integration was initiated in Matosinhos, where the integration of several structures (primary, hospital



and continued care) occurred, and years later, integration into other districts of the interior and north coast (Loureiro, Brou e Fernandes, 2017). was carried out. These integrated units emerged sequentially, but without any associated demographic, social or technological justification, thus appearing to be unfounded (Loureiro, Brou e Fernandes, 2017).

This study intends to revisit the economic fundamentals of Vertical Integration, to confirm its existence in the health area and to comment on the productive gains and responsiveness that can be expected in health organizations that carry out well-designed and completed vertical integration.

## 2 VERTICAL INTEGRATION

There are several fundamentals in the economic literature about vertical integration. In a generalist and introductory way, it can be considered that vertical integration happens when an organization owns and/or controls its assets in successive phases of the value chain, that is, when organization has several economic activities in its management (Fronmueller and Reed, 1996).

According to Williamson, 1985 p.445, vertical integration can be characterized as "the combination of technologically distinct processes (eg production, processing, distribution, sales) within the borders of the same enterprise that is under the same decision-making command, (...) and involving the total ownership of the assets. " For Porter 1985 vertical integration is the combination of processes of production, distribution, sales and / or other technologically distinct economic processes within the borders of the same company, representing the company's decision to use internal transactions rather than using (external) transactions in the market to achieve their own objectives.

Considering the two authors mentioned, vertical integration can be defined as the company's decision to integrate several activities in adjacent phases of the production and marketing chain located upstream (activities ranging from research and development to purchasing) or downstream (activities ranging from the sale and distribution of the final product) (Barros, 2012).

The main determinants of vertical integration are identified by (Perry, 1989):

- Technological economies;
- Transaction economies;
- Market imperfections (imperfect competition).

Years later Monchandreas (1994) identifies the factors that lead the organizations to integrate vertically, in which it is important to retain: productive efficiency and transaction costs.

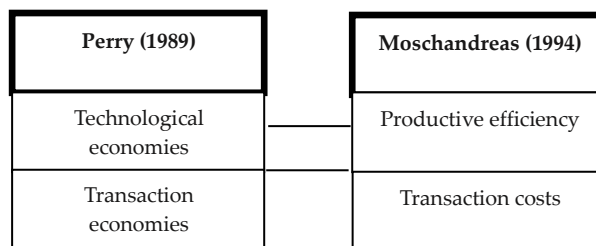


Figure 1: Essential factors to Vertical Integration  
Source: Self elaboration

As it can be seen in Figure 1, there is a direct relationship between the determinants presented by the two authors. These two determinants (Productive Efficiency and Transaction Costs) are the main pillars of vertical integration, and it is important to substantiate them.

### Productive Efficiency

When two production phases are technologically independent, integration can reduce production costs (Moschandreas, 1994). A good example of technological interdependence arises in thermal efficiencies in which several materials can be obtained by integrated production (Moschandreas, 1994).



For example, in the production of iron and steel, in the absence of integration, iron produced in high temperature furnaces needs to be cooled in order to be transformed into a solid form and carried to the steel production site and to be heated (Moschandreas, 1994). If applying integrated production, the heated iron is transported directly into the steel production process generating thermal and handling savings.

According to Raunick & Fischer (1972) cit. in Quiroz and Queiroz (2006) the perspective of the problem must also be multidimensional and consider all the product costs: capacity, quality, employee's morale, management control and the commercial history of the organization, not only in a material and economic context, but also in the human context of the organization. It is only after analyzing these data and confirming whether there is productive efficiency with vertical integration that the next determinant must be considered: transaction costs.

According to (Moschandreas, 1994), it is the presence of transaction costs that leads to Vertical Integration, rather than any technological interdependence, since technology may indicate that two production phases should be close to each other, but it is irrelevant who is the owner of each productive phase. Thus, when there are two different ownership stages, there may be high transaction costs (for instance, due to contractual opportunism) and vertical integration will become effective. According to Williamson (1994), it is an error to assign only technological factors to integration when there are two distinct production phases, since technological factors (technological interdependencies) do not always entail vertical integration as a solution. Similarly, according to Rocha (2002), what makes vertical integration the economic form of organization chosen are essentially the transaction costs.

### Transaction Costs

Transaction Costs were first discussed by Coase in 1937, which study awarded him the Nobel Prize for Economics in 1991, questioning under what circumstances organizations produce for their own needs. Coase (1937) cit. in Barros (2012) reports that companies exist due to the fact that there is a cost of using prices, thus arising the idea of the existence of transaction costs. This relationship considers the company as an alternative way in coordinating production, being the organization of the production process selected based on the factors that will bring lower transaction costs (Barros, 2012).

According to Pondé (1996) cit. in Fagundes, s.d., the transaction costs are the consumption of economic resources to adapt, structure and monitor interactions between the different agents, ensuring compliance with contracts. According to Coase (1937) cit. in Barros (2012), Vertical Integration is no longer beneficial to the company when the internal cost of production of an asset is higher than the its market price, adding the associated transaction cost.

The theory presented by Coase argues that transactions imply not only costs, but also the attempt to minimize these costs influencing the way economic activities organize themselves (Rocha, 2002). As it can be seen, all the theories of transaction costs are associated with negotiation costs with other organizations, which are essentially contractual relations costs, resulting from market failures (Rocha, 2002). This theory defends that transaction costs are not only important but also provide essential tools to understand certain forms of economic organization (Rocha, 2002). In this way, transaction costs are defined as: "... costs not directly related to production, but that arise as agents interact with each other and coordination problems emerge" (Azevedo 1996, pp. 28-29). According to Williamson (1994), the minimization of these costs materializes through the alignment of management structures with the elaboration of unique structures, therefore reducing the opportunistic behavior of the other party, especially if there is a dependency relationship between the two parts.

The various factors that influence market failures make it almost impossible for companies to pass on the specific information of what they need at a reasonable cost (Foss, 1993) and this occurs due to four main factors: high opportunism, limited rationality, uncertainty/complexity (contractual and organizational) and presence of specific assets (Moschandreas, 1994).

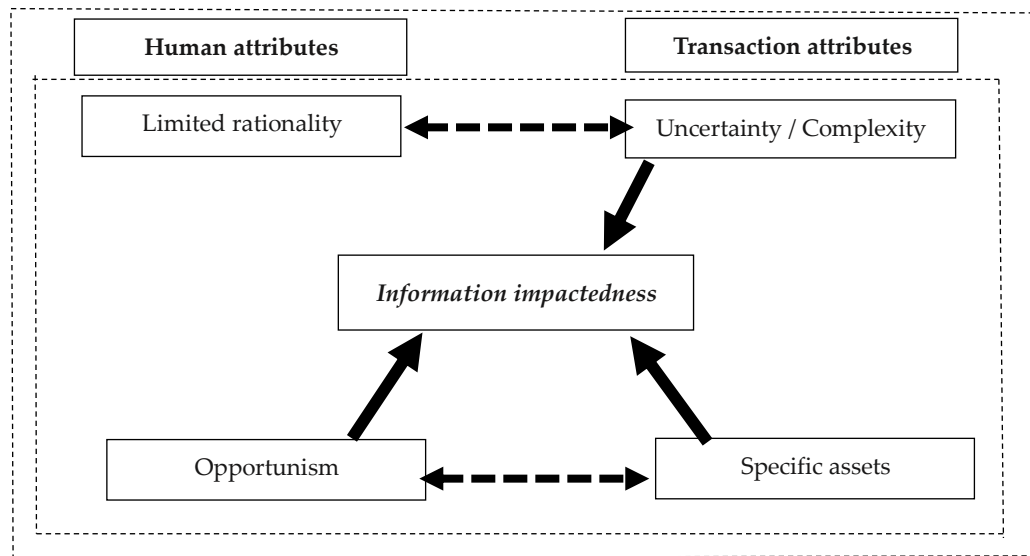


Figure 2: Information impactedness  
Source: Adapted from Moschandreas (1994)

As it can be seen in the figure above, the Information Impactness, a concept that comes from Oliver Williamson (Nobel Prize in Economics - 2009), is a derived condition that arises when, in the presence of uncertainty/complexity, one participant in the transaction is better informed than the other and takes advantage of the context to act opportunistically (adverse selection and moral hazard) (Moschandreas, 1994).

Asset specificity is one of the most important factors contributing to high transaction costs and thus to integration. There are other factors leading to market failures which are also relevant to vertical integration. One of these flaws identified by Moschandreas, (1994) is limited rationality, which in its turn presupposes decision making using simplifying rules that extract key aspects of the problem without capturing all its complexity. Since the rationality of economic agents is limited, this leads to incomplete contracts in the sense that it is impossible for them to predict all future events [18]. According to Kreps (1990) cit. in Kato and Margarido (2000) limited rationality means that it will be very costly for individuals to foresee and contract for every eventuality that may arise throughout the transaction.

Considering that the rationality of the economic agents is limited, since they are not able to develop a model that can perfectly predict future events, this necessarily means that contracts relevant to any transaction are incomplete (Kato and Margarido, 2000). Although the economic agent's rationality is limited, they are aware that their contractual relations need adaptations and negotiations to protect their interests (Kato and Margarido, 2000)

Opportunism is also considered a human behavioral feature that can lead to market failures. According to Moschandreas, (1994) individuals have fallacious behaviors for their own interests, distorting information and influencing various economic factors. The asymmetry of information in a transaction arises when an economic agent has more access to information than its market competitor, thus taking benefit of additional advantages over the others (Kato and Margarido, 2000).

On balance, if there is informational impact (or problems of asymmetry in complex contracts), opportunism and specific assets, we may be facing influential determinants of vertical integration.

The specific assets, together with the scheme presented by Besanko et al, (2006) years after the contribution of Moschandreas, (1994), will be analyzed next, presenting the main presumptions for Vertical Integration (Table 1). A specific asset is one that can not be used in other transactions without incurring a significant loss of its value (Rocha, 2002). Consequently, the non-devaluation of the asset depends on the continuity of the commercial relationship for which it specifically exists (Rocha, 2002). In some cases, the product is standardized and has many different uses and users, meaning that there is no asset specificity in its production or distribution (Moschandreas, 1994). In other cases, the specificity of transport assets makes negotiation between firms excessively expensive and leads to integration





(Moschandreas,1994). In fact, the degree of asset specificity varies between products and, more importantly, both production costs and transaction costs depend on asset specificity (Moschandreas, 1994).

Table 1 - Asset specificity

Asset specificity	Uncertainty		
	Low	Medium	High
Low	Market	Market	Market
Médium	Contract	Contract or Vertical Integration	Contract or Vertical Integration
High	Contract	Contract or Vertical Integration	Vertical Integration

Source: Adapted from Brickley, Smith and Zimmerman (2009)

The decision to integrate vertically or to opt for the market (in order to meet the organization’s needs) implies defining the weight of the costs and benefits of integration, and a careful analysis of these factors should be carried out, given the complexity of this information. To that end, Besanko et al, (2006) elaborated a guiding scheme that foresees the different hypotheses (prior to the integration) available and their possible outcomes: to integrate vertically or to look for answers in the market.

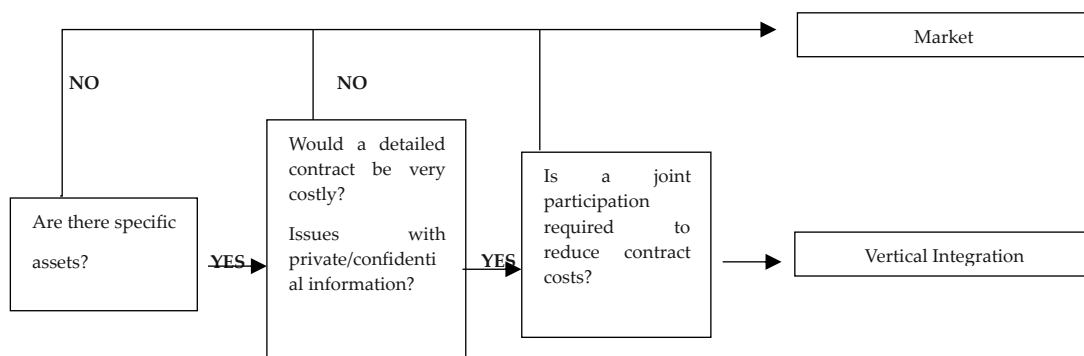


Figure 3: Hypothesis Scheme for Vertical Integration

Source: Adapted from Besanko et al, (2006)

The first question that Besanko et al, (2006) formulates concerns the existence of specific assets, which, according to the author is the primal reason for vertical integration. According to Rocha (2002), specific assets are those that can not be used in other transactions without significant losses of value, so the non-devaluation of this asset depends on the continuity of the commercial relationship for which it is specific. In situations where there are specific assets for which high investments are needed, the probability of the company opting for vertical integration increases Williamson (1985) to counteract the possibility of opportunistic behavior induced by the differentiation of these investments. Therefore, according to Coase (1937) this problem can only be solved through Vertical Integration. For Williamson (1985), not only the specificity of the assets but also the location of the company, may encourage vertically integrated production. If we consider the existence of an exclusive raw material in a particular location, which can only be moved to other locations with high associated costs, we can predict the need to integrate production in order to reduce transport costs associated with distance. As an example, a petrochemical industry, characterized by location specificity, because its production factors are difficult



to handle, transport or store and entail very high costs, the users and suppliers of this industry will be encouraged to install their factories near each other and near their productive factors (Fan, 2000). In this way, there are several factors that influence Vertical Integration, but the main and decisive one will always be the Transaction Costs; Vertical Integration is only profitable if there are contractual difficulties or post-contractual opportunistic behavior.

Regarding vertical integration, according to Slack et al (1997, pp.185), all companies must answer a very pertinent question: "whether the advantages that vertical integration brings, considering a particular set of business circumstances, meet the performance objectives necessary for them to compete more effectively in markets".

### **Vertical Integration in Health**

The implementation of integrated models is, according to several authors, a process to follow in an administrative and resource management perspective and in clinical production.

According to Lawrence and Lorsh (1967) health care integration is defined as a process to unify efforts among the various subsystems in achieving the organization's goals. Years later, in 2000, care integration was defined as a technique and organizational model designed to create collaboration, coordination, and cooperation within and between care providers, including financial and administrative relations (Kodner and Kyriacou, 2000). It is said that we are in the presence of a complete Vertical Integration when a health care system can provide all services to all patients who attend that same system (Brown and McCool, 1986). Thus, according to the integration theories presented in the previous subsection, we can confirm that Vertical Integration in health (in this case, the Local Health Units (ULS)) was tendentially based on the theory of vertical integration, therefore involving the creation and maintenance throughout the time of a common structure between organizations, with the purpose of coordinating interdependencies, within the scope of a collective project, the patient. Altering responsibilities, command-and-control relationships, and hierarchical power are the major modifications that occur in the change from horizontal integration to vertical integration (Byrne and Ashton, 1999) and (Conrad and Shortell, 1996) cit. in (Santana, 2011).

According to Kodner and Spreeuwenerg (2002, pp. 3), "integration is a coherent set of methods and models on the funding, administrative, organizational, service delivery and clinical levels designed to create connectivity, alignment and collaboration within and between the cure and care sectors. The goal of these methods and models is to enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex, long term problem cutting across multiple services, providers and settings. The result of such multipronged efforts to promote integration for the benefit of these special patient groups is called 'integrated care'".

According to Kodner and Spreeuwenerg (2002), integration not only involves continuity of care, but also integration of financial methods and techniques, aiming for a standardization in all areas related to the health and well-being of the patient.

The Vertical Integration model emerges in the Health Sector in Portugal as a structural and organizational effort to mitigate the relational problems between Primary Health Care and Hospital Care, aiming at reducing the fragmentation and discontinuity of care and revalorizing the generalist professional functions as family doctor and nurse, working in close complementarity, in a multiprofessional team with differentiated and specialized care (Nunes et al, 2002). Thus, the integration of health care (primary, hospital and continued) is intended to be a solution to overcome the obstacles that health systems face today, resulting from demographic changes in the population, decrease in the availability of health professionals and poor access to health care.

The first step towards vertical integration in the health system comes up with the Health Units model, regulated by Decree Law No. 11 of January 15, 1993, designating both Hospital Health Care and Primary Health Care with personality, autonomy and self management, which was repealed years later (Nunes et al, 2002). Subsequently, the Local Health System emerges through legal support in the late twentieth century and aims at an open system involving a set of institutions and partners in the process of health "production" within a local community (with the designation of Local Health Unit), today implemented in several regions.

According to [1] the integration of health care has the following objectives:

- Monetize the installed capacity of hospital and primary health care (CSP) facilities;



- Replace hospitalization by programmed ambulatory;
- Reduce hospitalization time;
- Increase the quality of care through disease management programs aimed at minimizing errors and breaking down barriers between patients and health professionals;
- Greater focus by the health system on the patient and her individual needs;
- Promote the well-being of the population, emphasizing the primary phases of the disease (prevention);
- Increase the economies of scale through coordination of different levels of care.

These objectives are based on the main and distinctive feature of the structuring of the production process, where it should be considered as a continuum of health care delivery (Parker et al., 2001).

### 3 ECONOMIC FOUNDATIONS FOR VERTICAL INTEGRATION IN HEALTH

In the analysis of the theories previously presented, two main topics can be substantiated: productive efficiency (through technological interdependencies) and transaction costs (in particular due to the complexity of contracts and post-contractual opportunism).

It is now important to deduce some incentive-related aspects of the constitution of the Local Health Units. For this purpose, we will consider the location of the different units in Portugal, using this country as an analytical model regarding this factor. It can be observed that their implementation was generally carried out in problematic areas concerning access, population and resources, believing that their constitution would be adequate in the majority of the areas where the model (Local Health Unit) was implemented and efficiency gains through integration would be expected, responding to the demands and mitigating the problems of the regions.

Analyzing the supply structure of the Local Health Units, there are three common points among the integrated structures: population, access and resources. Therefore, one can enhance possible pillars for the constitution of Local Health Units, which could answer the question: "What were the possible factors that influenced the constitution of the Local Health Units?"

Population - Concerning population there is no common point in the population size of the Local Health Units in Portugal, since they cover between 100,000 inhabitants and 250,000. However, the Local Health Units have been constituted essentially in areas where the population has a higher index of aging, thus being associated with a greater and more differentiated demand. As it can be seen in figure 4 below, the data referring to the aging index in the year 2016, show a higher incidence in the whole interior, in Alto Minho (northwest Portugal) and in the Alentejo coast (southwest Portugal).

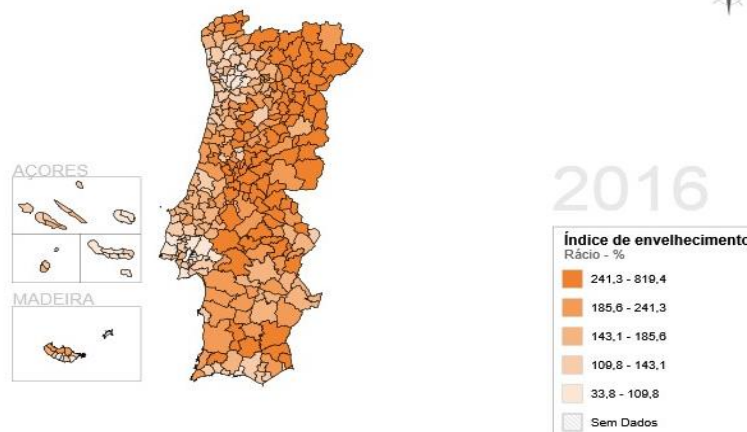


Figure 4: Aging index in Portugal  
Source: Pordata (2011)

Accesses - Frequently associated with the aging of the population is the ease of access to health care, in this case, the existing infrastructures for the health care delivery as well as the means (of information and transport) available to access the necessary care. Accordingly, we may consider that





there is a greater incidence of the implementation of Local Health Units in areas that have poor access, distant health structures, damaged transportation routes and a deficit in the dissemination of medical and non-medical information.

Resources - Not only the difficulty in hiring new health professionals in the interior of the country and its low ratio per 1000 inhabitants, but also the existence of advanced medical technology centralized in some geographically remote units, makes a new relationship (integration) between units (of various types of care) necessary to maximize and take advantage of the existing resources.

To minimize the identified problems, there have been some changes mainly in the creation of Integrated Units (Local Health Units), in order to provide a centralized response to the patient.

Considering the three topics identified above (resources, access and population) as possible reasons for the constitution of Local Health Units, we can perceive that the patient has to face several obstacles to obtain health care services from the perspective of accessibility, which associated to an aging population with mobility difficulties forms a very complex scenario. These aspects may have been the catalysts, considered by the responsible entities, for the constitution of the Local Health Units, anticipating an increase in efficiency from the implementation of this new model.

Following the analysis of the previous topics, we will present the main determinants that may exist in Health Units and which are essential for Vertical Integration, considering the theory of vertical integration formerly reviewed which is substantiated by productive efficiency and transaction costs.

In this perspective, the relationship of these topics with the health area, specifically with the Local Health Units seems unclear. However, if we scrupulously verify all the factors, there are several connections between industrial production, approached earlier in revising economic motives for Vertical Integration, and health production.

### **Productive Efficiency**

The health providers are essential not only for their technological capabilities but also for their human resources specificity. Seasonal needs due to epidemics (short term) or socio-demographic changes of the population (medium long term) are some of the examples where we can see that human resources must be mobilized according to the needs of the services and the patients, that is, it is necessary to adapt human resources (supply) to patients (demand).

However, not only the mobility of resources between the different types of care, but also the sharing of existing knowledge between Primary Care and Hospital Care, will be assets for the disease management in an integrated context, thus being a productive advantage. These interdependencies of knowledge and resources can exponentially improve the efficiency of the care provided to the patient as well as the responsiveness of services in different types of care.

Another important factor, which will contribute to favorable outcomes after integration, is post-surgical follow-up (patient monitoring). It is easily understandable that the patient's safety increases significantly and the treatment costs decrease when the follow-up of the intervention is performed by the Primary Health Care.

This relationship becomes productive not only for the patient and the Primary Health Care but also for the Hospital Health Care that thus focuses only on surgical care, delegating all the rest of the follow-up care to the prepared and specialized care of proximity (CSP) in the monitoring, evaluation, treatment and referral of the patient, taking advantage of the installed capacity of primary health care and its resources, thus reducing hospital costs.

In the areas of administrative support (management, accounting, logistics), integration already occurs when it comes to Hospitals in which horizontal integration already exists. However, in these areas, the existence of vertical integration results in an increase in the standardization of the items consumed and in reductions of human resources, waste as well as in the existing stock and in the necessary available stock. This integration in the support areas provides a more efficient management of existing resources and better information between different units, since the unification of procedures and methodologies brings advantages not only in terms of contractual information but also in terms of resource management.

### **Transaction costs**



The human resources available in the Health Units are increasingly scarce, so there is a need to hire several professionals in outsourcing. With regard to the medical professional, the great problem of the increase in health expenses begins here, due to the complexity of these hirings. In this type of hiring, health professionals are covered by very "flexible" contracts with few contractual specifications. Since the contractual requirements are minimal, the professional tends to increase several consumptions, mainly Complementary Diagnostic and Therapeutic Means (MCDT) and Medications, due to their opportunism and the uncertainty/complexity of some situations.

Complementary Diagnostic and Therapeutic Means (MCDT) are essential assets for the functioning of certain health units and most of the time they are differentiating assets of these health facilities. So, its use depends on good medical referral, where the information deficit, the complexity of the problem and the existence of a differentiating asset, can lead the professional to be opportunistic, referring the patient to health units of his interest. This is an example of information problems in health units where there is no explicit information on the contractual objectives of Health Units with the upper levels (ministries).

The existence of this specific medical technology leads to a more detailed management of the equipment, where the request for Complementary Diagnostic and Therapeutic Means (MCDT's) out of the unit should decrease exponentially when integrating the various types of care - considering that all MCDT's are carried out internally in order to take advantage of existing resources.

Another important problem in the contractual relationship, is the referral, which, for financial reasons, increases more and more between units of different types (Primary Health Care and Hospital Health Care). In this case Primary Health Care has interest in referring patients to hospitals, in order to be able to dissipate the patient's situation without the consumption of resources associated to its unit (CSP).

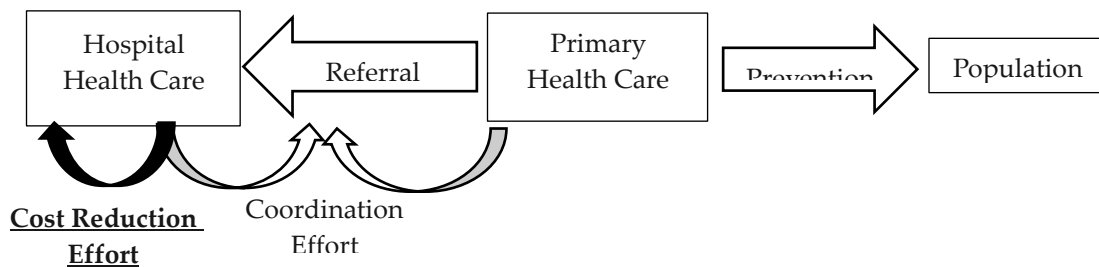


Figure 5: Referral in Health Care

Source: Adapted from Barros (2013)

On the other side, regarding hospital level, if funding is based on production, there is a great need to receive these patients from Primary Health Care, especially when it comes to situations of simple resolution (Barros, 2013).

In this case, since all institutions are managed by the same entity (the State) at a structural level, they are, a priori, coordinated by the same administration, but after integration they will be organized in a vertical perspective with a single management, where one entity is responsible for all the elements of the continuity of health care throughout the several levels of care (Primary Care, Hospital Care and Continued Care) (Santana and Costa, 2008).

As it has previously been shown, the uncertainty and complexity of contracts in the health area can be improved by searching for vertical integration among the different types of care. The new Primary Health Care management policies, in this case the Family Health Units, increasingly provide their own incentives to work around the patient, thus reducing referral and increasing efficiency and medical production. Within the scope of the Local Health Units, its strategy focuses on the continuation and patient follow-up always in the same structure, reducing inefficiencies of the sector and increasing existing synergies, although there is no incentive structure already in place to influence the integration



and the reduction of referrals among units of different types. However, this case is an explicit example of transaction costs, where there are high costs due to the opportunism of the professionals, the lack of contractual requirements and also to the informational costs that come from referrals.

#### 4 DISCUSSION

From what has been stated in the previous subsection, it is expected that there will actually be positive results from the vertical integration of the various levels of health care. Over the years, several international studies in integrated care have been carried out and they seem to confirm this theory. The processes of integration have already been analyzed by several american authors, where there is economic efficiency subsistence through the rationalization of services that comes from the integration of services and, in some cases, economies of scale arise from that same integrated management.

Table 2 - International Results on Integration

	<b>Reducing costs / rationalizing services</b>	<b>Scale economy</b>
<b>Findlay (1993)</b>	X	X
<b>Coddington (1994)</b>	X	
<b>Shortell (1989)</b>	X	
<b>Peters (1994)</b>	X	X
<b>Ackerman (1992)</b>	X	X
<b>Gillies (1993)</b>	X	
<b>Conrad (1993)</b>	X	
<b>Wheeler (1986)</b>	X	
<b>Johnson (1993)</b>	X	
<b>Conrad e Downing (1990)</b>	X	
<b>Brown e McCool (1986)</b>	X	X

Source: Adapted from Walston, Kimberly and Burns (1996)

We can thus expect the existence of economic gains in vertical integration, due to the rationalization of services. These gains come from several determinants, based on structural and organizational factors of the institutions that thus provide a more efficient management with a tendency to better results.

According to the studies analyzed by Nolte and Pitchforth (2014) presented in Table 3 below, there are several results regarding the positive consequences on health, patient satisfaction and cost reduction, resulting from vertical integration in health.



Table 3 - Favorable results after integration

Main focus of intervention	Proportion (%) of studies with positive result		
	Health	Patient satisfaction	Cost Reduction
Changing relationships between service providers (for example: case management, multidisciplinary teams)	65,5%	<b>66,7%</b>	16,7%
Coordination of clinical activities (for example: joint consultations, joint evaluations)	<b>61,3%</b>	33,3%	20%
Improve communication between service providers (for example: case conferences)	<b>55,3%</b>	54,5%	14,3%

Source: Adapted from Nolte and Pitchforth (2014)

As can be seen in Table 3, in all areas the effect on cost reduction is minimal compared to other results (Health and Patient Satisfaction). Regarding this, it will be considered that when there is a change in the relationship between the service providers, the studies with positive results are mainly in the satisfaction of the user (66.7%). In the coordination of clinical activities, the health of the patient is benefited, with a 61.3% proportion with positive results. In the communicative context, the studies indicate positive results mainly in the health of the patient and in his satisfaction.

It thus should be noted that according to the studies analyzed, in the case of integration of care, the positive effects occur in all areas, but with a main focus on the health of the patient.

Sutton and Long (2014) reports that integration has increased capacity, but in return it has taken time and required investment. According to [34], disease management programs (vertical) were effective in reducing the incidence of HIV infection, for example. With regard to Health Administration, in the future health systems should focus on health management rather than on disease management. It can be argued that low- and middle-income countries need strong and dynamic health systems to respond effectively to changes in the epidemiological pattern of disease.

For Nigatu (2012), integrated approaches provide the population with holistic options focused on people's health needs. For example, integration of HIV, diabetes and control of hypertension has shown good acceptance and good results (Janssens, 2007).

An integrated approach for HIV and noncommunicable diseases management is appropriate in all countries (Nigatu, 2012).

It can be generically concluded that the structural changes resulting from economically justified vertical integration lead to the following positive developments:

- As in other areas where there is technological development of excellence, vertical integration allows an approach of distant populations to the reference health units, thus enabling, through the existence of advanced medical technology, a better response to the population;



In this way, there is also a facility to improve communication between the various productive areas, namely: Primary Health Care, Hospital Care and Continued Care.

- In the face of epidemics (short term) or socio-demographic changes of the population (medium- long term), it can be seen that human resources can be mobilized more efficiently according to the needs of services and patients, adapting human resources (supply) to patients (demand). There is clear evidence of the flow of professionals in the various productive phases and also sharing of knowledge in the relationship between professionals. With this, there is a clear adaptation of the resources to the needs of each productive phase, thus existing also adapting to the needs of each area.

- Post-surgical follow-up of the patient is another important change that will contribute to favorable outcomes after vertical integration. Not only the transition from the patient to the next stage of care (primary health care for hospital care and hospital care for continued care) but also the return of hospital care to primary health care, as a post-surgical support phase and as care of support with risk minimization to hospital infection, is, in this way, more accompanied.

- The reduction of the need for human resources, increased standardization, reduction of waste, as well as a reduction of stock necessities (logistic);

- The use of medical technology, through the application of Complementary Diagnostic and Therapeutic Means (MCDT's), is now internalized, leveraging existing resources.

- Finally, vertical integration will minimize the possibility of contractual opportunistic behavior.

## 5 CONCLUSIONS

The current paradigm of health and the social and demographic phenomena that have been observed in recent years has led to a structural change in the Portuguese National Health Service. In order to obtain health gains, there were several ways to respond to socio-demographic problems that the country has suffered, for which the most implemented solution, in recent years, were the Local Health Units.

Integrated approaches provide the population with options focused on their health needs. It can be generically concluded that the structural changes, resulting from economically justified vertical integration, allow positive developments but require time and investment.

Following the implementation of the vertical integration model, continuous improvements and a positive increase in results are expected. However, in the particular case of the Portuguese model, it can be concluded that it still has scarce legal basis and few organizational guidelines in order to obtain completely different results from other health structures which are not integrated. Perhaps there are various aspects for which we can consider that the model is favorable and will essentially bring benefits from the care point of view, although there is still a lack of investment in primary health care and in the use of telemedicine.

It should also be noted that the present study of economic fundamentals for vertical integration in health translates a first approach that will merit further research and further investigation.

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## Conflict of Interest

There are no conflicts of interest

## Notes/Thanks/Other declarations

## REFERENCES

Azevedo, P. F. d., 1996. Integração vertical e outros arranjos. s.l., s.n., pp. 1327-1344.

Barros, P. M. A., 2012. Determinantes da Integração Vertical: uma análise de empresas Portuguesas. S.l: UMinho.

Barros, P. P., 2013. Economia da Saúde. 3ªEd ed. Lisboa: Almedina.





Besanko, D., Dranove, D., Shanley, M. & Schaefer, S., 2006. *A economia da estratégia*. 3ª ed. s.l.:Bookman Companhia.

Brickley, J. A., Smith, C. W. & Zimmerman, J. L., 2009. *Managerial economics and organizational architecture*. 5th ed ed. New York: McGraw-Hill/Irwin.

Brown, M. & McCool, B., 1986. Vertical integration: exploration of a popular strategic concept. *Health Care Management Review*, pp. 7-19.

Coase, R., 1937. The Nature of the Firm. *Economica*, Novembro, pp. 386-405.

Costa, C. & Santana, R., 2008. A integração vertical de cuidados de saúde: aspectos conceituais e organizacionais. *Revista portuguesa de saúde pública*, 7 (Organização dos cuidados de saúde)

Fagundes, J., s.d. *Economia Institucional: Custos de Transação e Impactos sobre Política de Defesa da Concorrência*. s.l.:UFRJ.

Fan, J. P., 2000. Price uncertainty and vertical integration: an examination of petrochemical firms. *Journal of Corporate Finance*, 21 April, pp. 345-376.

Foss, N., 1993. Theories of the firm: contractual and competence perspectives”. *Journal of Economic Behavior and Organization*, pp. 127-144.

Fronmueller, M. P. & Reed, R., 1996. The competitive advantage potential of vertical. *The International Journal of Management Science*, December, p. 715–726.

Janssens B, Van Damme W, Raleigh B, Gupta J, Khem S, Soy Ty K, et al. 2007. Offering integrated care for HIV/AIDS, diabetes and hypertension within chronic disease clinics in Cambodia. *Bull World Health Organ*.

Kato, H. T. & Margarido, M. A., 2000. Economica dos custos de transação (ECT): análise do conflito das bananas. *Revista de Administração*, outubro/dezembro, pp.13 -21.

Kodner, D. & Kyriacou, C., 2000. Fully integrated care for frail elderly: two American models. *International Journal Integrated Care*, 1 november.

Kodner, D. L. & Spreeuwenberg, C., 2002. Integrated care: meaning, logic, applications, and implications – a discussion paper. November.

Lawrence, P. & Lorsh, J., 1967. Differentiation and integration in complex organizations. *Administrative Science Quarterly*, jun, pp. 1-47.

Lopes, H. et al., 2014. Relatório do Grupo de Trabalho criado para a definição de proposta de metodologia de integração dos níveis de cuidados de saúde para Portugal Continental, s.l.: Ministério da Saúde

Loureiro, R., Brou, E., & Fernandes A.C., (2017). Estrutura e organização dos cuidados de saúde em Portugal Introdução das unidades locais de saúde e os problemas da integração vertical, *Revista Portuguesa de Gestão e Saúde*, n°22, pp. 32-37



- Moschandreas, M., 1994. *Business Economics*. New York: Thomson.
- Nigatu, T., 2012. Integration of HIV and Noncommunicable Diseases in Health Care Delivery in Low- and Middle-Income Countries. Preventing Chronic Disease.
- Nolte, E. & Pitchforth, E., 2014. What is the evidence on the economic impacts of integrated care?, Copenhagen: World Health Organization.
- Nunes, C. et al., 2012. Interligação e integração entre cuidados de saúde primários e cuidados hospitalares, Lisboa: Ministério da Saúde
- Perry, M. K., 1989. Vertical integration: Determinants and effects. Em: *Handbook of Industrial Organization*. Amsterdam: North Holland, pp. 185-255.
- Pordata, 2001. Pordata. [Online] Available at: <http://www.pordata.pt/Portugal/Indicadores+de+envelhecimento-526> [Acedido em 03 11 2017]
- Porter, M., 1997. *Estratégia Competitiva: Técnicas para a análise de indústrias e da concorrência*. Rio de Janeiro: Campus
- Queiroz, R. V. d. & Queiroz, A. E. F. S. d., 2006. Integração Vertical versus Terceirização: análise da viabilidade em um estudo de caso na indústria moveleira. Fortaleza: s.n.
- Rocha, M. M. d., 2002. *Integração vertical e incerteza*. São Paulo: Universidade de São Paulo.
- Santana, R. & Costa, C., 2008. A integração vertical de cuidados de saúde: aspectos conceptuais e organizacionais. *Revista Portuguesa de Saúde Pública*, 7, pp. 29-56.
- Santana, R., 2011. O financiamento por capitação ajustada pelo risco em contexto de integração vertical de cuidados de saúde: a utilização dos consumos com medicamentos como proxy da carga de doença em ambulatório. Lisboa: Escola Nacional de Saúde Pública.
- Slack, N. et al., 1997. *Administração da produção*. 1ªEd. ed. São Paulo: Atlas.
- Sutton, M. & Long, J., 2014. Integration of health and wellbeing services with general health services, Health Research Board
- Walston, S., Kimberly, J. & Burns, L., 1996. Owned vertical integration and health care: promise and performance. *Health Care Management Review*, pp. 83-92.
- WHO, 2008. Integrated health services - What and why? , s.l.: s.n.
- Williamson, O. E., 1985. *The Economics Institutions of Capitalism*. s.l.:The free press.
- Williamson, O., 1994. *Strategizing, Economizing, and Economic Organization*. Em: *Fundamental Issues in Strategy*.. s.l.:Harvard Business School Press.