RESUMO [1]

OS ERP's, A ASI E AS SOPAS DE LETRINHAS [2]

(engessam a empresa e não registram os seus negócios; faz orçamento estático não permitindo o seu ajuste as contínuas mudanças do ambiente econômico; não faz apuração de custo para atender aos negócios da empresa e não geram relatórios gerenciais)

Denominar um ERP (Enterprise Resources Planning) de Sistema Integrado de Gestão é uma expressão muito forte. Ele não resiste a uma análise mais acurada.

O ERP vem do MRP e hoje MRP II (Manufature Resource Planning) com sua origem na área de produção e que a literatura consultada define como:

- um sistema de informações para uma organização
- que facilita o fluxo de informações entre as áreas:
  - manufatura
  - logística
  - finanças
  - recursos humanos

Arquitetura de Sistema de Informação – ASI

Para ampliar a visão do ERP, como forma de contribuir para o desenvolvimento e implantação do ERP, surge a abordagem de gestão de processos, através desta arquitetura **ASI** que tem evoluído com a apresentação de modelos de ASI com enfoques diferenciados e envolvem de modo geral, a intenção de integração (mas não tem condições de integrar em decorrência da sua origem) entre:

- a organização
- os negócios
- os sistemas (1)
- a tecnologia
- e os usuários

É a modelagem procurando a integração que, neste ambiente, jamais ocorrerá.

Há outros modelos de arquitetura, como a **ARIS** (Arquitetura de Sistema Integrado de Informação).

Comentamos: O Sistema Integrado de Informação é decorrente do Sistema Integrado de Gestão. Aqui, a intenção é pegar os números (não os dados) e torná-los integrados (sic). O texto diz que a ferramenta ASI possibilita (mas não realiza) a integração de todos os processos do negócio.

Comentamos: Esta é uma informação fantasiosa.

1 De matérias publicadas

2 Não têm conceitos, concepção sistêmica, princípios contábeis, estruturação e organização para serem apelidados de Sistema Integrado de Gestão, com abrangência em toda a empresa e nem ser ensinado nos cursos de especialização de produção, com esta denominação de sistema integrado de gestão. E também o Conselho Federal de Administração – CFA – pela Resolução Normativa nº 374 de 12.11.2009 confere registro aos diplomados em curso superior de tecnologia, em determinada área da Administração, segmentando as atividades nas empresas. Pelos textos lidos, os fornecedores destes produtos estão sabendo que eles não atendem as necessidades das organizações e que, pelos seus elevados custos, não conseguem conquistar o mercado de médias empresas e os usuários sabem que estão pagando elevados valores e não têm as informações que precisam, corretas e na hora certa, para as suas análises e tomada de decisão. Este Resumo é baseado em textos publicados em revistas especializadas de ensino e do mercado de TI. Ver no site www.bmainformatica.com.br

Sopas de Letrinhas

Com o objetivo de ajustar o ERP e a ASI, empresas de TI criaram programas complementares, no jogo de mercado, com o objetivo de dar soluções para etapas que o ERP e a ASI não tinham condições de resolver.

Temos dois campos:

- **Para registrar e entender o passado (na tentativa de transformar números históricos em dados históricos)**

  BI – Business Intelligence

  Tudo o que envolve o movimento e entendimento de dados.

  Comentário: Para este fato oferecemos o nosso **Sistema Integrado de Contabilidade, Custo e Tesouraria** que engloba o ERP, a ASI e de resto toda a empresa e gerando automaticamente relatórios de cunho gerencial.

- **Para projetar os negócios da empresa**

  BPM – Business Performance Management

  ou Gerenciamento de Processos de Negócios

  Ajuda a projetar e administrar o futuro dos negócios.

  O objetivo é auxiliar na elaboração de planos orçamentários mais flexíveis e integrados, capazes de se adaptar as mudanças inesperadas do cenário econômico.

  O resultado disto tudo é o planejamento estático e desintegrado que acaba por engessar a organização e incapacitar o seu ajuste a mudanças repentinas no cenário econômico interno e externo.

  Ver no site o artigo Sistema Integrado de Gestão e o exemplo numérico do nosso Sistema Integrado de Orçamento Empresarial.

  Comentário: Para este fato oferecemos o nosso **Sistema Integrado de Orçamento Empresarial** que é a contabilidade projetada.

  Fica em linha com o Sistema Integrado de Contabilidade, Custo e Tesouraria e faz SIMULAÇÕES para atender a qualquer fato novo apresentado pelo Ambiente Total da empresa.

  O CPM é o processo de evolução do EIS (Enterprise Information System)

  Outros consultores de TI apresentaram o EPM (Enterprise Performance Management); o CPM (Corporate Performance Management), bem como PM (Performance Management) que afirmam que é a integração entre o BI e o CPM.

  Mais recentemente estão ensinando modelagem de Processo com BPM N 1.2 que capacitam os participantes a desenhar processos de negócios.

  BPMN (Business Process Modeling Notation) para representar graficamente os processos de negócios.

  Tudo isto para empresa industrial.

  De elevado custo de treinamento; elevados custos de adaptações (customizações) e por fim a empresa tem que se ajustar ao programa.

  Não entende (e não registra) os negócios da empresa.

  As pequenas e médias empresas, por todas estas dificuldades e do seu elevado custo não podem adquirir este programa que não é integrado.

  Aliás, é melhor não adquirir.

Para as empresas de serviços estão empurrando o SOA (Arquitetura Orientada a Serviços) com as mesmas conseqüências e estão ensinando o BPEL (Business Process Execution Linguage) que é uma linguagem para definição e execução de processos de negócios.

E afirmar que o mercado ERP não viverá sem o SOA.

É provável: os dois morrerão.

Este produto ERP, com os Legados e Parceiros, sua arquitetura ASI e estas BPM e BI não podem, em nenhum momento, ser denominado de Sistema Integrado de Gestão e, muito menos, ser ensinado que é Sistema Integrado de Gestão.

Não conseguem registrar os negócios da empresa.

A base (os arquivos) **escondem (ou esconde?)** números em vez de registrar dados e, sobre estes números, criam relatórios sem qualquer conteúdo gerencial.

Enterprise Resource Planning

Enterprise Resource Planning systems (ERPs) integrate **(or attempt to integrate**) all data and processes of an organization into a unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a unified database to store data for the various system modules.

Origin of the term ERP

The term ERP originally implied systems designed to plan the use of enterprise-wide resources. Although the acronym ERP originated in the manufacturing environment, today's use of the term ERP systems has much broader scope. ERP systems typically attempt to cover all basic functions of an organization, regardless of the organization's business or charter. Business, non-profit organizations, non governamental organizations, governments, and other large entities utilize ERP systems.
Additionally, it may be noted that to be considered an ERP system, a software package generally would only need to provide functionality in a single package that would normally be covered by two or more systems. Technically, a software package that provides both payroll and accounting functions would be considered an ERP software package.
However, the term is typically reserved for larger, more broadly based applications. The introduction of an ERP system to replace two or more independent applications eliminates the need for external interfaces previously required between systems, and provides additional benefits that range from standardization and lower maintenance (one system instead of two or more) to easier and/or greater reporting capabilities (as all data is typically kept in one database).

Overview

Some organizations – typically those with sufficient in-house IT skills to integrate multiple software products – choose to implement only portions of an ERP system and develop an external interface to other ERP or stand-alone systems for their other application needs. For instance, the PeopleSoft HRMS and Financials systems may be perceived to be better than SAP's HRMS solution. And likewise, some may perceive SAP's manufacturing and CRM systems as better than PeopleSoft's equivalents. In this case these organizations may justify the purchase of an ERP system, but choose to purchase the PeopleSoft HRMS and Financials modules from Oracle, and their remaining applications from SAP.[citation needed]
This is very common in the retail sector[citation needed], where even a mid-sized retailer will have a discrete Point-of-Sale (POS) product and financials application, then a series of specialised applications to handle business requirements such as warehouse management, staff rostering, merchandising and logistics.
Ideally, ERP delivers a single database that contains all data for the software modules, which would include:

- Manufacturing Engineering, Bills of Material, Scheduling, Capacity, Workflow Management, Quality Control, Cost Management, Manufacturing Process, Manufacturing Projects, Manufacturing Flow
- Supply Chain Management

Inventory, Order Entry, Purchasing, Product Configurator, Supply Chain Planning, Supplier Scheduling, Inspection of goods, Claim Processing, Commission Calculation

- Financials

General Ledger, Cash Management, Accounts Payable, Accounts Receivable, Fixed Assets

- Projects

Costing, Billing, Time and Expense, Activity Management

- Human Resources

Human Resources, Payroll, Training, Time & Attendance, Benefits

- Customer Relationship Management

Sales and Marketing, Commissions, Service, Customer Contact and Call Center support

- Data Warehouse

and various Self-Service interfaces for Customers, Suppliers, and Employees
Enterprise Resource Planning is a term originally derived from manufacturing resource planning (MRP II) that followed material requirements planning (MRP). MRP evolved into ERP when “routings” became major part of the software architecture and a company’s capacity planning activity also became a part of the standard software activity. ERP systems typically handle the manufacturing, logistics, distribution, inventory, shipping, invoicing, and accounting for a company. Enterprise Resource Planning or ERP software can aid in the control of many business activities, like sales, marketing, delivery, billing, production, inventory management, quality management, and human resource management. ERPs are often incorrectly called back office systems indicating that customers and the general public are not directly involved. This is contrasted with front office systems like customer relationship management (CRM) systems that deal directly with the customers, or the eBusiness systems such as eCommerce, eGovernment, e Telecom, and e Finance, or supplier relationship management (SRM) systems.

ERPs are cross-functional and enterprise wide. All functional departments that are involved in operations or production are integrated in one system. In addition to manufacturing, warehousing, logistics, and Information Technology, this would include accounting, human resources, marketing, and strategic management.
ERP II means open ERP architecture of components. The older, monolithic ERP systems became component oriented. EAS – Enterprise Application Suite is a new name for formerly developed ERP systems which include (almost) all segments of business, using ordinary Internet browsers as thin clients.

Before

Prior to the concept of ERP systems, departments within an organization (for example, the Human Resources (HR) department, the Payroll (PR) department, and the Financials department) would have their own computer systems. The HR computer system (Often called HRMS or HRIS) would typically contain information on the department, reporting structure, and personal details of employees. The PR department would typically calculate and store paycheck information. The Financials department would typically store financial transactions for the organization. Each system would have to rely on a set of common data to communicate with each other. For the HRIS to send salary information to the PR system, an employee number would need to be assigned and remain static between the two systems to accurately identify an employee. The Financials system was not interested in the employee level data, but only the payouts made by the PR systems, such as the Tax payments to various authorities, payments for employee benefits to providers, and so on. This provided complications. For instance, a person could not be paid in the Payroll system without an employee number.

After

ERP software, among other things, combined the data of formerly separate applications. This made the worry of keeping numbers in synchronization across multiple systems disappear. It standardised and reduced the number of software specialities required within larger organizations.

Best Practices

Best Practices were also a benefit of implementing an ERP system. When implementing an ERP system, organizations essentially had to choose between customizing the software or modifying their business processes to the “Best Practice” functionality delivered in the vanilla version of the software.
Typically, the delivery of best practice applies more usefully to large organizations and especially where there is a compliance requirement such as IFRS, Sarbanes-Oxley or Basel II, or where the process is a commodity such as electronic funds transfer. This is because the procedure of capturing and reporting legislative or commodity content can be readily codified within the ERP software, and then replicated with confidence across multiple businesses who have the same business requirement.
Where such a compliance or commodity requirement does not underpin the business process, it can be argued that determining and applying a best practice actually erodes competitive advantage by homogenizing the business compared to everyone else in their industry sector.

Implementation

Because of their wide scope of application within a business, ERP software systems are typically complex and usually impose significant changes on staff work practices. Implementing ERP software is typically not an “in-house” skill, so even smaller projects are more cost effective if specialist ERP implementation consultants are employed. The length of time to implement an ERP system depends on the size of the business, the scope of the change and willingness of the customer to take ownership for the project. A small project (e.g., a company of less than 100 staff) may be planned and delivered within 3 months; however, a large, multi-site or multi-country implementation may take years.
The most important aspect of any ERP implementation is that the company who has purchased the ERP product takes ownership of the project.
To implement ERP systems, companies often seek the help of an ERP vendor or of third-party consulting companies. These firms typically provide three areas of professional services: Consulting, Customization and Support.

Consulting Services

The Consulting team is typically responsible for your initial ERP implementation and subsequent delivery of work to tailor the system beyond “go live”. Typically such tailoring includes additional product training; creation of process triggers and workflow; specialist advice to improve how the ERP is used in the business; system optimisation; and assistance writing reports, complex data extracts or implementing Business Intelligence.
The consulting team are also responsible for planning and jointly testing the implementation. This is a critical part of the project, and one that is often overlooked.
Consulting for a large ERP project involves three levels: systems architecture, business process consulting (primarily re-engineering) and technical consulting (primarily programming and tool configuration activity). A systems architect designs the overall dataflow for the enterprise including the future dataflow plan. A business consultant studies an organization’s current business processes and matches them to the corresponding processes in the ERP system, thus ‘configuring’ the ERP system to the organization’s needs. Technical consulting often involves programming. Most ERP vendors allow modification of their software to suit the business needs of their customer.
For most mid-sized companies, the cost of the implementation will range from around the list price of the ERP user licenses to up to twice this amount (depending on the level of customization required). Large companies, and especially those with multiple sites or countries, will often spend considerably more on the implementation than the cost of the user licenses — three to five times more is not uncommon for a multi-site implementation.

Customization Services

Customization is the process of extending or changing how the system works by writing new user interfaces and underlying application code. Such customisations typically reflect local work practices that are not currently in the core routines of the ERP system software.
Examples of such code include early adopter features (e.g., mobility interfaces were uncommon a few years ago and were typically customised) or interfacing to third party applications (this is ‘bread and butter’ customization for larger implementations as there are typically dozens of ancillary systems that the core ERP software has to interact with). The Professional Services team is also involved during ERP upgrades to ensure that customisations are compatible with the new release. In some cases the functionality delivered via a previous customization may have been subsequently incorporated into the core routines of the ERP software, allowing customers to revert back to standard product and retire the customization completely.
Customizing an ERP package can be very expensive and complicated, because many ERP packages are not designed to support customization, so most businesses implement the best practices embedded in the acquired ERP system. Some ERP packages are very generic in their reports and inquiries, such that customization is expected in every implementation. It is important to recognize that for these packages it often makes sense to buy third party plug-ins that interface well with your ERP software rather than reinventing the wheel.
Customization work is usually undertaken as bespoke software development on a time and materials basis. Because of the specialist nature of the customization and the ‘one off’ aspect of the work, it is common to pay in the order of $200 per hour for this work. Also, in many cases the work delivered as customization is not covered by the ERP vendors Maintenance Agreement, so while there is typically a 90-day warranty against software faults in the custom code, there is no obligation on the ERP vendor to warrant that the code works with the next upgrade or point release of the core product.
One often neglected aspect of customization is the associated documentation. While it can seem like a considerable — and expensive — overhead to the customization project, it is critical that someone is responsible for the creation and user testing of the documentation. Without the description on how to use the customisation, the effort is largely wasted as it becomes difficult to train new staff in the work practice that the customization delivers.

Maintenance and Support Services

Once your system has been implemented, the consulting company will typically enter into a Support Agreement to assist your staff to keep the ERP software running in an optimal way. To minimize additional costs and provide more realism into the needs of the units to be affected by ERP (as an added service to customers), the option of creating a committee headed by the consultant using participative management approach during the design stage with the client's heads of departments(no substitutes allowed) to be affected by the changes in ERPs to provide hands on management control requirements planning. This would allow direct long term projections into the client's needs, thus minimizing future conversion patches (at least for the 1st 5 years operation unless there is a corporate-wide organizational structural change involving operational systems)on a more dedicated approach to initial conversion.
A Maintenance Agreement typically provides you rights to all current version patches, and both minor and major releases, and will most likely allow your staff to raise support calls. While there is no standard cost for this type of agreement, they are typically between 15% and 20% of the list price of the ERP user licenses.

Advantages

In the absence of an ERP system, a large manufacturer may find itself with many software applications that do not talk to each other and do not effectively interface. Tasks that need to interface with one another may involve:

- design engineering (how to best make the product)
- order tracking from acceptance through fulfillment
- the revenue cycle from invoice through cash receipt
- managing interdependencies of complex Bill of Materials
- tracking the 3-way match between Purchase orders (what was ordered), Inventory receipts (what arrived), and Costing (what the vendor invoiced)
- the Accounting for all of these tasks, tracking the Revenue, Cost and Profit on a granular level.
- Change how a product is made, in the engineering details, and that is how it will now be made. Effective dates can be used to control when the switch over will occur from an old version to the next one, both the date that some ingredients go into effect, and date that some are discontinued. Part of the change can include labeling to identify version numbers.

Computer security is included within an ERP to protect against both outsider crime, such as industrial espionage, and insider crime, such as embezzlement. A data tampering scenario might involve a terrorist altering a Bill of Materials so as to put poison in food products, or other sabotage. ERP security helps to prevent abuse as well.

Disadvantages

Many problems organizations have with ERP systems are due to inadequate investment in ongoing training for involved personnel, including those implementing and testing changes, as well as a lack of corporate policy protecting the integrity of the data in the ERP systems and how it is used.

Limitations of ERP include:

- Success depends on the skill and experience of the workforce, including training about how to make the system work correctly. Many companies cut costs by cutting training budgets. Privately owned small enterprises are often undercapitalized, meaning their ERP system is often operated by personnel with inadequate education in ERP in general, such as APICS foundations, and in the particular ERP vendor package being used.
- Personnel turnover; companies can employ new managers lacking education in the company's ERP system, proposing changes in business practices that are out of synchronization with the best utilization of the company's selected ERP.
- Customization of the ERP software is limited. Some customization may involve changing of the ERP software structure which is usually not allowed.
- Re-engineering of business processes to fit the "industry standard" prescribed by the ERP system may lead to a loss of competitive advantage.
- ERP systems can be very expensive to install often ranging from 30,000 to 500,000,000 for multinational companies.
- ERP vendors can charge sums of money for annual license renewal that is unrelated to the size of the company using the ERP or its profitability.
- Technical support personnel often give replies to callers that are inappropriate for the caller's corporate structure. Computer security concerns arise, for example when telling a non-programmer how to change a database on the fly, at a company that requires an audit trail of changes so as to meet some regulatory standards.
- ERPs are often seen as too rigid and too difficult to adapt to the specific workflow and business process of some companies—this is cited as one of the main causes of their failure.

- Systems can be difficult to use.
- Systems are too restrictive and does not allow much flexibility in implementation and usage.
- The system can suffer from the “weakest link” problem – an inefficiency in one department or at one of the partners may affect other participants.
- Many of the integrated links need high accuracy in other applications to work effectively. A company can achieve minimum standards, then over time “dirty data” will reduce the reliability of some applications.
- Once a system is established, switching costs are very high for any one of the partners (reducing flexibility and strategic control at the corporate level).
- The blurring of company boundaries can cause problems in accountability, lines of responsibility, and employee morale.
- Resistance in sharing sensitive internal information between departments can reduce the effectiveness of the software.
- There are frequent compatibility problems with the various legacy systems of the partners.
- The system may be over-engineered relative to the actual needs of the customer.

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SOFTWARE ■ De 500 executivos, 80% reavaliariam os processos antes de automatizá-los

E mudam os sistemas de gestão

Ana Carolina Saito

■ SÃO PAULO. Depois de investir pesado em softwares corporativos, as empresas confessam que, se tivessem uma segunda chance, mudariam tudo na forma como implantaram o seu sistema de gestão empresarial. Usado para automatizar os processos administrativos, o chamado ERP (sigla em inglês para *Enterprise Resource Planning*) ganhou grande escala na década de 90 e hoje é indispensável em qualquer negócio. Mas erros, resultados insuficientes e necessidades de remendos eram e ainda são freqüentes demais.

De 500 executivos de multinacionais, 80% afirmam que primeiro precisariam entender melhor todos os processos antes de automatizá-los para não perder oportunidades de melhorias. A pesquisa da consultoria alemã IDS Scheer, baseada em dados da Computerweek, mostra ainda que 65% deles avançariam mais no alinhamento da adoção da tecnologia aos objetivos do negócio, evitando o que classificam como vôo cego, e 60% teriam feito uma avaliação mais cuidadosa sobre os impactos em todas as áreas e conseqüências no conjunto da empresa. Ou seja, uma avaliação não apenas funcional mas sistêmica.

– Em geral, a fase de análise de processos foi muito simplificada e as implementações ficaram pouco aderentes ao negócio. A empresa no final teve de se adaptar ao ERP – afirma Luís Fernando Camargo Faria, consultor executivo de soluções de negócios da IDS Scheer do Brasil.

Faria cita como exceção as companhias japonesas, que antes de automatizar, realizam uma avaliação exaustiva da operação. O resultado, segundo o executivo, é melhoria no processo de negócio e gastos menores em tecnologia.

– A adoção do ERP pode ter um impacto por cinco anos em uma empresa. O que são três meses de análise de processos? – questiona.

Outra pesquisa da IDS mostra uma mudança na percepção sobre o tema nas empresas. Os 150 executivos entrevistados consideram apenas satisfatório seu desempenho na organização dos processos. Em uma escala de notas de 1, para muito bom, a 5, para insatisfatório, a média foi de 3,06 (satisfatório) no ano passado. Em 2004 e 2005, o índice ficou em 2,81 e 2,88.

– Eles perceberam que sabiam muito pouco do processo de negócios de suas empresas.

Entre suas prioridades, 58% dos executivos apontaram a necessidade de aumentar a eficiência e reduzir custos das operações e 48% buscam maior eficiência nos processos e inovação. Para 41%, a padronização e harmonização das atividades são tópicos importantes. Nesse cenário, avançam conceitos como a arquitetura orientada a serviços (SOA), que, em resumo, tem como princípio oferecer aos usuários as funcionalidades das aplicações de software na forma de serviços. No entanto, os desafios são os mesmos.

– O mote da SOA é a reutilização da tecnologia, mas se a empresa não conhece o seu negócio como vai reutilizá-lo? – pergunta o consultor.

80% dos executivos de multinacionais precisariam entender melhor todos os processos antes de automatizá-los para não perder oportunidades

150 executivos entrevistados consideram apenas satisfatório seu desempenho nos procedimentos administrativos

■Infor pretende abrir capital

Maior empresa de software de capital fechado do mundo, a Infor prepara sua abertura de capital. Segundo o presidente para as Américas, Jerry Rulli, é natural imaginar que uma empresa que chega aos US$ 2 bilhões de faturamento comercialize suas ações.

– A empresa já atua como se tivesse capital aberto e deve estar pronta para ter ações em bolsa num período entre 12 e 18 meses – diz. – Mas isso não significa que vamos entrar no mercado acionário logo depois de estarmos prontos.

A Infor é hoje a terceira maior empresa de software de gestão empresarial do mundo, atrás da líder alemã SAP e da Oracle, junto a qual é responsável pela forte consolidação do mercado. No começo da década, a SAP já liderava o segmento, mas os nomes dos outros participantes do mercado eram bem diferentes - empresas como PeopleSoft, SSA, JD Edwards e Baan, em sistema de gestão integrada (ERP), e a Siebel, em programa para relacionamento com clientes (CRM).

A Oracle lutava para ficar entre as cinco primeiras de ERP.

■Skype deve vender celular

O serviço de telefonia pela internet do eBay, Skype, deve anunciar em breve um acordo com a operadora de telefonia móvel 3 para vender seu primeiro celular, afirmou uma fonte próxima do assunto.

Os planos da Skype prevêem o lançamento do aparelho nos países onde a 3 opera, informou a fonte, sem informar o cronograma ou onde o celular será vendido primeiro.

A 3 é uma operadora do grupo de Hong Kong Hutchison Whampoa e atua na Austrália, Hong Kong, Indonésia, Áustria, Dinamarca, Itália, Irlanda, Suécia e Reino Unido.

O porta-voz da Skype, Chaim Haas, confirmou que a 3 e a Skype “estão trabalhando em conjunto em um novo produto que tornará o Skype completamente móvel”, mas não deu mais detalhes. A Skype deve revelar seus planos na última semana deste mês, informou a fonte.

O software da Skype, que permite aos usuários fazer chamadas gratuitas pela internet, já funciona em alguns dos celulares vendidos pela 3. Mas o novo aparelho é o primeiro encomendado pela Skype e será mais fácil de usar que os modelos atuais, que são compatíveis com o software da empresa, de acordo com a fonte.

A 3 tem mais de 10 milhões de clientes, incluindo mais de 3,5 milhões no Reino Unido.

A Administração, em toda a sua extensão, funciona do mesmo modo que o Corpo Humano, com os seus Órgãos e as suas Funções.

Ambos tornam-se um só corpo, quando analisamos a Teoria Geral de Sistemas: Cada Órgão, com as suas funções, trabalha para si mas relaciona-se, automática e continuamente, com os demais Órgãos e as suas Funções e, cada Órgão com as suas funções realizando, de modo autônomo, as suas atividades.

E o Sangue que funciona do mesmo modo que a Contabilidade Gerencial, conforme o artigo neste site, interfacea todos os Órgãos, levando à cada um deles, as “informações gerenciais” para exercerem as suas Funções