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Digital economy and Strategic Vigilance

I. The digital economy

1. the definition

The digital economy is an economic activity in which the main key factor of production is digital data, the processing of large volumes and the use of the analysis results of which, in comparison with traditional forms of management, can significantly increase the efficiency of various types of production, technologies, equipment, storage, sale, delivery goods and services. In other words, a characteristic feature of the "Digital Economy" is the maximum satisfaction of the needs of all its participants through the use of information, including personal information. This becomes possible thanks to the development of information and communication and Internet technologies, as well as the availability of infrastructure, which together provide the possibility of full interaction in the hybrid world of all participants in economic activity: subjects and objects of the process of creation, distribution, exchange and consumption of goods and services (Alisher, 2022, pp. 1-4).

In 2023 global eCommerce market will cross the two trillion US$ threshold. With US$1,318.7 billion in sales in 2023, China is clearly number one in eCommerce and the report shows it will stay in the lead through 2027. A shift in purchasing power from the U.S. and Europe to China and Southeast Asia has begun, fueled by the growing number of Asian consumers gaining access to eCommerce due to growing purchasing power and internet penetration, especially on mobile devices.

The index system of digital economy and society constructed by the European Union includes network connectivity, human resources, network applications, digital technology integration, and digital public services (Russo, 2020, pp. 427–442)

the measurement of the digital economy basically includes the digital economic infrastructure, digital technology, digital industry, and digital application, and it is recognized that information and communications technology, ICT industry, e-commerce, and other important factors influence the development of the digital economy.

2. Components of the Digital Economy

2.1. Infrastructure

Infrastructure is comprised of the basic physical materials and organizational arrangements that support the existence and use of computer networks and the digital economy; primarily ICT goods and services.

Table 1. describes the subcomponents included in infrastructure

Infrastructure subcomponent	Subcomponent description
Hardware	The manufactured physical elements that constitute a computer system including, but not limited to, monitors, hard drives, and semiconductors. Also includes communications products and audio and visual equipment products.
Software	The programs and other operating information used by devices such as personal computers and commercial servers, including both commercial software and software developed in-house by firms for their own use.
Structures	The construction of buildings intended for the creation of digital economy goods or the provision of digital economy services. The structures category also includes buildings that provide support services to digital products. This includes the construction of data centers, semiconductor fabrication plants, the installations of fiber optic cables, switches, repeaters, and so forth.

2.2. The digital economy and the emergence of new business models

The digital economy has given rise to a number of new business models.

Although many of these models have parallels in traditional business, modern advances in ICT have made it possible to conduct many types of business at substantially greater scale and over longer distances than was previously possible. This section discusses several prominent examples of these new business models. Some of these business models may complement each other and in some cases overlap with each other (for example, payment services could be described under e-commerce or under cloud computing).

The business models discussed below are by no means exhaustive. Indeed, just as innovation in the digital economy allows the rapid development of new business models, it can also quickly cause existing businesses to become obsolete. The types of business discussed include several varieties of e-commerce, app stores, online advertising, cloud computing, participative networked platforms, high speed trading, and online payment services (OECD, 2014).

3. E-commerce

E-commerce is the remote sale of products, or goods and services, over computer networks by methods specifically designed for the purpose of receiving or placing orders. Products purchased through ecommerce are also referred to as "digitally ordered."

Table 2. defines the e-commerce subcomponents.

E-commerce subcomponent	Subcomponent description
Business-to-business (B2B) e-commerce	Purchasing of goods and services between businesses using the internet or other electronic means. Manufacturers, wholesalers, and other industries engage in both interfirm and intrafirm e-commerce to produce goods and services for final consumption.
Business-to-consumer (B2C) e-commerce	The sale of goods and services by businesses to consumers, or retail e-commerce, using the internet or other electronic means
Consumer-to-consumer	Consumer-to-consumer (C2C) transactions are becoming

(C2C) e-commerce	more and more common. Businesses involved in C2C e-commerce play the role of intermediaries, helping individual consumers to sell or rent their assets (such as residential property, cars, motorcycles, etc.) by publishing their information on the website and facilitating transactions. These businesses may or may not charge the consumer for these services.

3.1. Priced Digital Services

Priced digital services relate to computing and communication and are performed for a fee charged to the consumer. Additionally, this category includes services that support the digital economy, such as computer repair services and digital consulting services.

Priced digital services subcomponent	Subcomponent description
Cloud services, priced	Computing services based on a set of computing resources that can be accessed in a flexible, elastic, on-demand way with low management effort. Remote and distributed hosting, storage, computing, and security services
Digital intermediary services, priced	The service of providing information on, and successfully matching, two independent parties to a transaction via a digital platform in return for an explicit fee. The output of these platforms typically consists of the fees paid by the producer and/or the consumer of the product being intermediated.
All other priced digital services	All other purchased digital services (excluding cloud computing and digital intermediation services).

3.2. Growth of e-commerce

The Internet facilitates transactions such as ordering goods and services.
This means that many transactions that would have taken place without the Internet can be conducted more efficiently and at less expense. In addition, the Internet has expanded the reach of smaller businesses, enabling them to reach markets that would not have been possible to reach without its existence. As a result, the number of firms carrying out business transactions over the Internet has increased dramatically over the last decade.

4. Online advertising

Online advertising uses the Internet as a medium to target and deliver marketing messages to customers. Internet advertising offers a number of advantages over traditional advertising. For example, many Internet advertisers have developed sophisticated methods for segmenting consumers in order to allow more precise targeting of ads. Many Internet advertising publishers have also developed ways for clients to monitor performance of ads, tracking how users interact with their brands and learning what is of interest to current and prospective customers. Online advertising takes a number of forms, the most prominent of which are display ads, in which an advertiser pays to display ads linked to particular content or user behaviour, and search engine ads, in which an advertiser pays to appear among Internet search results.

5. Electronic contract

An electronic contract is a legally binding agreement in a digital format, typically exchanged through email or by using contract management software.

Just like with paper contracts, it has to contain the following legal elements to be enforceable:

- **Identification.** Which parties are involved?
- **Offer.** From one party to another to pay for goods or perform a service.
- **Acceptance.** Agreement to the terms of the offer.
- **Consideration.** The value given by one party to the other in exchange for goods or services.
- **Legality and capacity**. Assurance that the signers understand the contract's terms.

Digital contracts have a few more requirements, spelled out in ESIGN and other related laws:

- **Consent for e-signature.** Usually, the act of digital signing is already a show of consent. However, some jurisdictions require a separate statement regarding this matter.
- **Clear consequences.** The signee must understand that their signature applies to the terms of contract.
- **Alternatives**. If a party doesn't want to sign the contract electronically, they must be provided with a hard-copy version.
- **Copy storage.** All the parties need to have access to the stored copies of the agreement.
- **Consent withdrawal.** The parties must understand that they can break off the deal at any time before the signature is placed.

6. Electronic signature

An electronic signature is an electronic indication of a person's intent to agree to the content of a document or a set of data to which the signature relates(European Commission, 2023).

Like its handwritten counterpart in the offline world, an electronic signature is a legal concept capturing the signatory's intent to be bound by the terms of the signed document.

6.1. Three types of electronic signatures

There are three levels of electronic signature: 'simple' electronic signature, advanced electronic signature and qualified electronic signature. The requirements of each level build on the requirements of the level below it, such that a qualified electronic signature meets the most requirements and a 'simple' electronic signature the least.

- Simple Electronic Signatures

An electronic signature is defined as "data in electronic form which is attached to or logically associated with other data in electronic form and which is used by the signatory to sign" . Thus, something as simple as writing your name under an e-mail might constitute an electronic signature.

- Advanced Electronic Signatures

An advanced electronic signature is an electronic signature which is additionally:

- uniquely linked to and capable of identifying the signatory;
- created in a way that allows the signatory to retain control;
- linked to the document in a way that any subsequent change of the data is detectable.

6.2. Qualified Electronic Signatures

A qualified electronic signature is an advanced electronic signature which is additionally:

- created by a qualified signature creation device;
- and is based on a qualified certificate for electronic signatures.

Signature creation devices come in many forms to protect the electronic signature creation data of the signatory, such as smartcards, SIM cards, USB sticks. "Remote signature creation devices" can also be used where the device is not in the physical possession of the signatory, but managed by a provider. Those remote qualified signature solutions offer an improved user experience while maintaining the legal certainty offered by qualified electronic signatures.

7. Intellectual Property

Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

IP is protected in law by, for example, patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create. By striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish.

Types of intellectual property

7.1. Patents

A patent is an exclusive right granted for an invention. Generally speaking, a patent provides the patent owner with the right to decide how - or whether - the invention can be used by others. In exchange for this right, the patent owner makes technical information about the invention publicly available in the published patent document.

7.2. Copyright

Copyright is a legal term used to describe the rights that creators have over their literary and artistic works. Works covered by copyright range from books, music, paintings, sculpture and films, to computer programs, databases, advertisements, maps and technical drawings.

7.3. Trademarks

A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises. Trademarks date back to ancient times when artisans used to put their signature or "mark" on their products.

7.4. Industrial designs

An industrial design constitutes the ornamental or aesthetic aspect of an article. A design may consist of three-dimensional features, such as the shape or surface of an article, or of two-dimensional features, such as patterns, lines or color.

Geographical indications

Geographical indications and appellations of origin are signs used on goods that have a specific geographical origin and possess qualities, a reputation or characteristics that are essentially attributable to that place of origin. Most commonly, a geographical indication includes the name of the place of origin of the goods.

7.5. Trade secrets

Trade secrets are IP rights on confidential information which may be sold or licensed. The unauthorized acquisition, use or disclosure of such secret information in a manner contrary to honest commercial practices by others is regarded as an unfair practice and a violation of the trade secret protection.

II. Strategic Vigilance

1. Concept of Strategic Vigilance

The term 'Veille' originated from the Latin word 'vigilant' which, according to the Encyclopedia, means 'Larousse' to observe, guard, pay attention to something, observe. This term means precisely to remain awake instead of inattentiveness and sleep, that is to be in a state of reception And receiving things. Being ready to discover something can happen without knowing precisely what it is and where? (Sauvannet, 2000).

Aguilar is known as collecting information about events and relationships in the company's external environment, whose knowledge will help senior management in its mission of charting the course of the company's future business (Audet, 2012).

Based on the above definitions, we conclude that strategic vigilance is an integrated monitoring and monitoring process system for searching for information from various parties related to the Organization (commercial, competitive, technological, environmental... And addressing them, which enables the organization to make strategic decisions and achieve long-term excellence.

2. Kinds the Strategic

Vigilance Strategic vigilance is an activity concerned with following up and knowing the variables of the work environment surrounding the activities of the organization, alerting and vigilance, environmental vigilance, as well as marketing vigilance (Kasmi & Djalab, 2021)**:**

- **Competitive vigilance:** It is a discovery method the threats and the opportunities, For the sake of getting information and knowledge and to help towards the decision making and to improve the competitiveness of the enterprise
- **Technological vigilance**: is the activity through which the institution monitors the associated scientific and technical environment, i.e. the various efforts made by the institution and the means used to know the developments and all that is new in the fields of technology and related to the activity of the institution now or in the future
- **Commercial Vigilance:** This activity through which the business organization studies everything related to its relations with processors and customers, new market skills, and market growth rates to collect, processing and disseminate outstanding knowledge to serve its business and achieve the organizational, marketing and strategic development based on optimal business control that brings together a range of research and development activities and the exploitation of information related to the environment and the commercial market, allowing it to anticipate the development of the market and processors. Reduce customer fears and outperform competitors

- **Environmental vigilance** includes the remaining elements in the institution's environment that did not consider the previous types, such as legislative, financial, political, geopolitical vigilance, ecology vigilance, and cultural vigilance.

3. Characteristics of strategic vigilance

Strategic vigilance is characterized by a set of characteristics(Lesca, 1997) :

- **Strategy:** Relates to one-time decisions that do not have any valuable model by experience, taking into account incomplete information but at the same time can reflect decisions that have a very significant impact on the competitiveness and viability of the Organization.
- **Volunteering**: Vigilance is a voluntary process given the expected information with acute attention and all senses' activation. It is not a passive act limited by the simple monitoring and observation of the ocean as a creative goal.
- **Collective intelligence**: A group of individuals observe signs or signals in the ocean and compare them to give them a particular meaning, which is to achieve the group's goal of communication and interaction between its members and under all appropriate forms while respecting the behavioral rules of the work of the group or team.
- **The environment:** The environment of the Organization is not an abstract concept or something statistical, it is a group of factors that influence it, so it will be useful in a practical way, especially when targeting strategic vigilance.
- **Creating creativity**: Includes the interpretation of early warning signals that can be derived from the information obtained and which are linked to the element of the invention, the information does not describe any of the events and works previously carried out, but allows for the formulation of hypotheses for a creative future vision.
- **Expectation:** Information is the search for intuitive features as the Organization must provide clarifications as a light on the future, not just the past or the present.

4. Objectives of Strategic Vigilance

The objectives of strategic vigilance lie in the following elements (Dawood & all, 2017):

- Predicting opportunities and working to improve their exploitation and avoiding threats and their effects.
- Diagnosis and identification of best practices that serve the Organization and its strategies and ensure competitors' superiority in its field.
- We are achieving the overall efficiency of the strategic information system in the field of marketing.
- Analysis of the practical environmental, technical and technological Organization.
- Objective evaluation of its current and future competitive position.

Vigilance allows the Organization to:

- Take strategic decisions safely and confidently, and study what is happening around them

- Proactively monitors, predicts and anticipates events, without surprises in environmental changes from technology and other factors, which detect opportunities and threats
- Objectively evaluate its current and future competitive position compared to its competitors
- Increase its profits by marketing its products better and better
- Introducing and offering new products, entering or positioning in new markets
- Have a good and forward-looking view and vision about the current and future activities of competitors, and anticipate their intentions

III. Strategic Vigilance & Social Media

Social networks are important means for communication, engaging millions of users around the globe. For enterprises in particular, being present and aware of what is discussed on these communication channels about their products and services has become a must. Social media monitoring tools enable enterprises to have access to real customers' opinions, complaints and questions at real time in a highly scalable way. As the number of social monitoring tools has rapidly increased in the last years, enterprises are faced with the difficult tasks of choosing the right tool for their needs.

1. Benefits of Social Media

Social media is best for the following situations (Edosomwan & all, 2011):

- Promote open communication between employees and management.
- Enable employees to share project ideas and work in teams effectively, which helps in sharing knowledge and experiences.
- Social media also promotes better content, such as webcast and videos, than just simple text.
- Helps to communicate collaboratively between current and potential customers, in receiving feedback, product definition, product development, or any forms of customer service and support.
- Encourage members, or part of the company‟s employees, to become members of a wellrecognized community.

- Social media becomes a good venue for discussions and becomes a classic goal of marketing and communications, but the companies must ensure that the employees are adhering to the rules and etiquettes of social media.

2. social media monitoring tools

2.1. Alterian - SM2

Launched in 2007. Alterian1 offers the SM2 tool (http://www.alterian.com/), which is a business intelligence product that provides visibility into social media. In particular, it is a social monitoring and analysis tool which integrates with the other marketing solutions of the Alterian toolkit.

The tool relies on the broad coverage of the social media by using own proprietary crawlers and data aggregator. The user of SM2 has access to a comprehensive set of tools, reports and metrics that allows him/her to track and analyze conversations regarding the topic of his/her interest. Although Alterian is one of the most popular brands on the market, the SM2 product mostly offers standard services only: the dashboard is not easilycustomized by the user (the infographs are basic). Plus, it's an expensive option.

2.2. Brandwatch

Launched in August 2007. Brandwatch2 is a social media monitoring tool which focuses on gathering, "cleaning", analyzing and presenting data (http://www.brandwatch.com/). The application enables users to add their own filters of country, source, type, credibility and sentiment to analyze the data and allow the user to focus on the most relevant insights.

The application monitors social media in four stages: (1) gathering data, (2) cleaning data, (3) analyzing and (4) presenting data.

2.3. Converseon

Converseon4 offers tailor made solutions in the field of social media monitoring. Converseon was founded in 2001 as a social media agency (http://converseon.com/).

The Converseon social media monitoring toolkit utilizes the concepts of listening by mining relevant data from the social media sphere, organizing the social media campaigns of the organization and shaping its strategy in the market. Converseon combines technology with human analysis to obtain highly effective data quality, leading custom reports, and strong functionality .

However, the customized approach hurts long-term strategy, increases overall costs and slows down the pace at which customers can act on social media data.

2.4. Cymfony – Maestro

Cymfony Maestro5 is a third generation social media monitoring tool which gives clients (near) real time access to a comprehensive and custom built archive of traditional and social media (http://www.cymfony.com/solutions/maestro).

The listening and influence platform, Maestro, integrates distinctive technology with input from expert analysts to identify people, issues and trends that may impact a business. The analysis is performed in six steps: (1) gathering data; (2) refine the data to fit the customer; (3) automatic translation to English; (4) filter for spam and duplicates;(5) add value to the data (e.g. impressions, influence); and (6) Natural Language Processing for brand adds sentiment and tags of categories.

2.5. evolve24 - Mirror

Evolve246 offers a social media monitoring tool, called Mirror since 2004 (http://www.maritzresearch.com/solutions/social-intelligence.aspx).

The Mirror uses proprietary algorithms in order to help the user define the best strategies regarding the monitored data from the social networks. It captures data from different sources in near real-time, analyzes it and generates reports. It helps the user recognize complaints, questions and emerging threats due to the sentiment analysis and weighting system that it uses. Its main strength is its text processing data quality.

2.6. Meltwater - Buzz

Meltwater Buzz7 helps businesses manage their social presence and engage with current and prospective customers since 2007 (http://buzz.meltwater.com/).

Meltwater Buzz monitors, track and analyze user-generated content and social media presence.

2.7. NM Incite - My BuzzMetrics

Nielsen & McKinsey launched a joint venture in 2010, the NM Incite. NM Incite offers a leading listening platform (My BuzzMetrics). However, Nielsen is active in the domain of social media monitoring since 1997.

the toolkit of NM Incite provides the user with reporting tools and the opportunity to react with the customers in real time via the social media profiles of the enterprise.

2.8. Radian6

Radian68 delivers one of the most popular social media monitoring tools in the market. Radian6 launched in 2006 and was acquired by SalesForce in 2011 (http://www.radian6.com/).

The Radian6 platform allows the administrator of an enterprise to supervise and orchestrate his/her team by exploiting the features of the workflow management console included in the engagement console.

2.9. Sysomos

Sysomos9 provides tools for monitoring social media conversations and themes (http://www.sysomos.com/), identify key influencers and gather insight and intelligence to help shape the business decisions and strategies of the client's enterprise.

2.10. Visible Technologies - Visible Intelligence

Visible Intelligence10, a product of Visible Technologies, enables users to monitor, analyze and actively engage in social media conversation using a single environment. The product was launched in 2005 (http://www.visibletechnologies.com/).

Visible Intelligence has been designed for marketers, research groups, agencies and any other enterprise department that want to monitor and analyze social media trends to maximize ROI. The tool is designed to handle substantial amounts of information, manage alliances, workflows, assimilate and adjust to the client's processes and systems.

Using free services like the ones shown in Table 2 are a cost-efficient alternative especially when starting exploring this field:

Table 2. Some free social media monitoring tools

Addict-o-matic	www.addictomatic.com
Boardreader	www.boardreader.com
Google Alerts	www.google.com/alerts
HyperAlerts	www.hyperalters.no
Klout	www.klout.com/home
Netvibes	www.netvibes.com
Twazzup	www.twazzup.com
WhosTalkin	www.whostalkin.com
Yahoo Pipes	pipes.yahoo.com

IV. Information systems

1. Information Definition

• **Data**: facts and figures that are not currently being used in a decision process; form of historical records that are recorded and filed without immediate intent to retrieve for decision making.

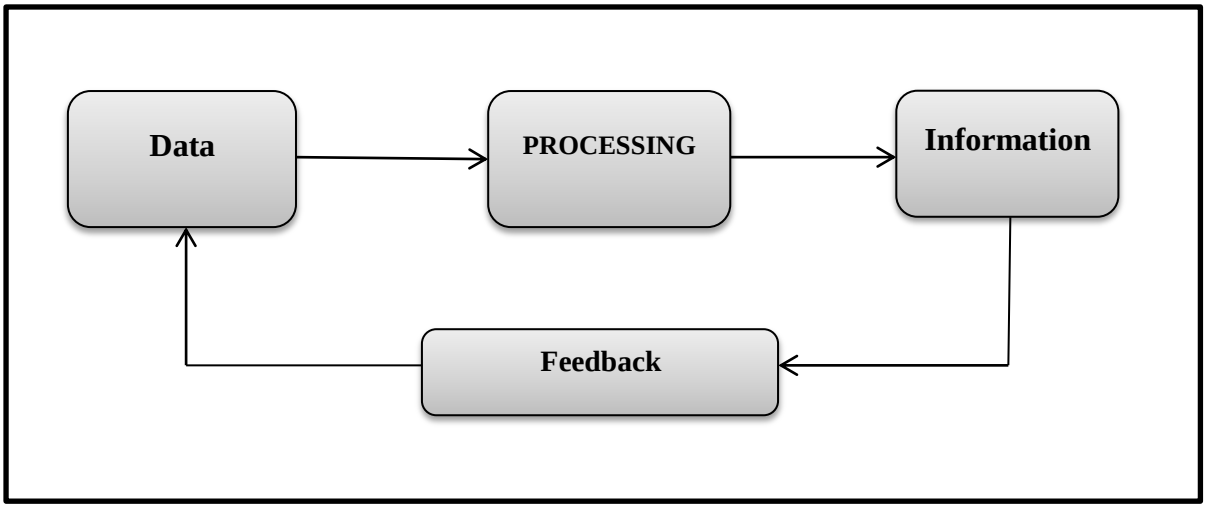
• **Information**: data that has been retrieved, processed, or otherwise used for informative or inference purposes, argument, or as a basis for forecasting or decision-making.

• **Knowledge** can be seen as information combined with experience, context, and interpretation. Knowledge constitutes an additional semantic level derived from information via a process.

2. Information System Definition

An information system (IS) is a set of interrelated components that collect, manipulate, store and disseminate information and provide a feedback mechanism to achieve a goal. The feedback mechanism helps organizations achieve their goals by increasing profits, improving customer service, and supporting decision-making and control in organizations

figure 1. Information System

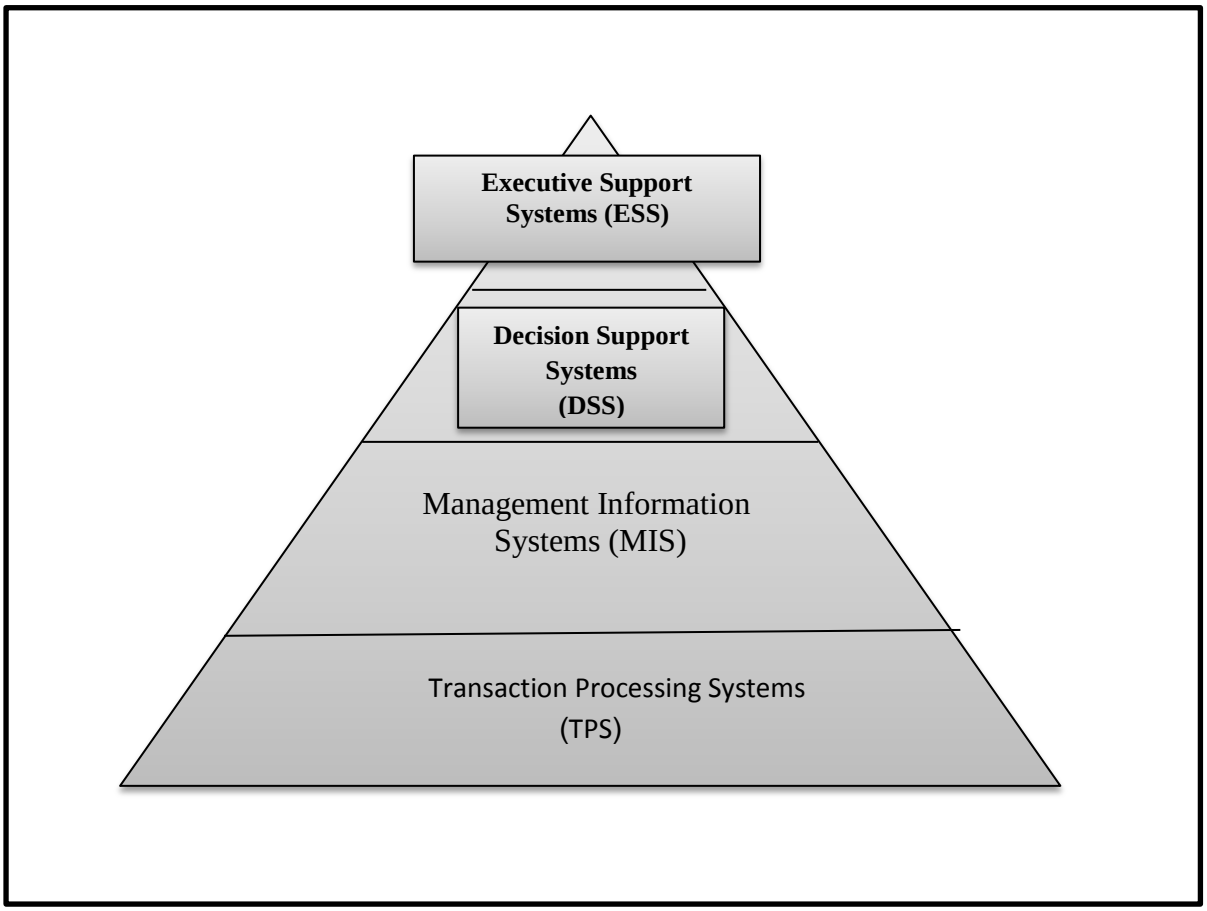


3. Typology of information systems

A company has systems to support the different managerial levels. These systems include transaction processing systems, management information systems, decision support systems, and dedicated business intelligence systems.

Companies use information systems so that accurate and up-to-date information is available when needed. Within the same organization, executives at different hierarchy levels have very different information requirements, and different types of information systems have evolved to meet their needs. A common approach for examining the types of information systems used within organizations is to classify them according to their roles at different organizational structure levels, and this approach is called a vertical approach. Indeed, the organization is considered a management pyramid
at four levels (figure 2):

figure 2. Information Systems Types according to Managerial Level



3.1. The transaction processing system (TPS)

At the operational level, managers need systems that keep track of the organization for necessary activities and operations, such as sales and material flow in a factory. A transaction processing system is a computer system that performs and records the routine (daily) operations necessary for managing affairs, such as keeping employee records, payroll, shipping merchandise, keeping records, accounting and treasury.

3.2. Management Information Systems (MIS)

Middle managers need systems to help with oversight, control, decision making, and administrative activities. The main question that this type of system must answer is: is everything working correctly?

Its role is to summarize and report on essential business operations using data provided by transaction processing systems. Primary transaction data is synthesized and aggregated, and it is usually presented in reports produced regularly.

3.3. Decision Support Systems (DSS)

DSS supports decision-making for unusual and rapidly evolving issues, for which there are no fully predefined procedures. This type of system attempts to answer questions such as: What would impact production schedules if we were to double sales for December? What would the level of Return on investment be if the plant schedule were delayed by more than six months?

3.4. Executive Support System (ESS)

ESS helps top management make decisions. They address exceptional decisions requiring judgment, assessment, and a holistic view of the business situation because there is no procedure to be followed to resolve a given issue at this level.

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- http://www.sysomos.com/
- http://www.visibletechnologies.com/

good luck