

Business process modeling. Using Unified Modeling Language to streamline the design of the TO-BE system within a company

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Abstract. *The UML modeling language is a set of methods that describe the dynamic and structural properties and is used to evaluate the structure of a systems architecture. This modeling language presents several types of predefined diagrams that have the role of synthesizing in visual form the most eloquent information necessary to characterize a system or to understand a process. In this research, we will use UML to propose the improvement of an existing application within Adobe, the purpose of which is to send promotional offers through multiple channels to members of the Adobe community. We will also approach at a theoretical level the description of the basic notions and analyzes used in modeling business processes and necessary for the diagnosis of business systems.*

Keywords: business analysis, UML, PESTELE analysis.

JEL Classification: C63, L21, M21, O22, O3.

1. Introduction

Business analysis is a set of activities that coordinate change in an organizational context by defining needs and proposing solutions that bring value to the business. This value is determined by achieving benefits, reducing costs and identifying new opportunities within the organization.

We chose to approach this field in this research because we consider that business analysis has a significant impact on the evolution of companies. Thus, we want to actively participate in the change for the better of the current state (AS-IS), based on the uninterrupted action of feedback processes.

In this research, we will highlight the importance of business analysis within an IT company. This will be achieved both through process-oriented methods, widely used by business analysts, and through a systemic, cybernetics type approach that highlights the appearance of the enterprise's complex adaptive system.

A business process is a set of structured and interconnected activities that can be performed by people or equipment and serve a specific business purpose, when performed in a certain order. It can often be viewed as a flowchart of a sequence of activities with interleaved decision nodes or as a matrix consisting of series of activities with relevance rules based on the data involved in the flow. The benefits of using business processes include improved customer satisfaction and increased agility in responding to sudden market changes. Organizations that adopt process-oriented approaches break down the barriers of classical structuring by departments and try to avoid the emergence of subsystems isolated from the rest of the functional ensemble.

The premise of a business process is the achievement of objectives set for the realization of a project or the understanding of a system, and the conclusion is the satisfaction of the objective of having a result that brings value to the client. The person responsible for the execution of the process throughout the life of the process without interrupting it is the process owner. He is represented by a person who has in-depth knowledge in this field and the skills required for this position. Its attributions include defining the mission, vision and objectives of the process, respectively satisfying the key performance indicators. They evaluate the success of an organization, a particular activity (such as projects, programs, products, and other initiatives) or a particular individual.

In general, business processes can be classified into three types, in von Rosling's view:

- Operational: They are the core of the business and create the main value stream (for example, taking orders from customers, opening an account or producing components).
- Management processes: They have the role of supervising the operational ones, such as corporate governance, budgetary supervision or employees.
- Support processes: They support the core of operational processes (i.e. accounting, recruitment, customer relations, job security).

It is possible to break down a complex process into several sub-processes, each with its own specific list of attributes, but which, at the same time, contributes to the overall purpose of the business. Their analysis includes the mapping or modeling of them at a general level, but also of the subprocesses at the level of individual activity.

2. Software support systems for business processes

Lucidchart⁽¹⁾ is a web platform that facilitates user access to contribute, review and share various charts and diagrams.

Process modeling is the main goal of the Lucidchart application. To this end, it offers the possibility to optimize the workspace with the help of custom settings and templates, creating interactive layers of threads, as well as making recommendations within them. Also, the documentation can be easily made and stored in applications such as Confluence and Jira, which facilitate project management and collaboration between team members. The forms of visualization are extremely varied and can be presented to stakeholders in a professional manner and easily adapted to the approach.

ProcessMaker BPM is a web application that allows users to create and edit process diagrams using the BPMN 2.0 standard. Dynamic shapes (Dynaforms) in ProcessMaker are based on the intuitive drag-and-drop interface. Users have a wide variety of options, including creating custom templates, integrating with variables and external files. Although no programming experience is required, developers can work directly in JavaScript if they wish. Processmaker BPM also provides multiple ways to view dashboards. Dashboards are tools that give decision-makers full visibility into processes and employees. ProcessMaker has the following key performance indicators (KPIs):

- **Process Efficiency Index (PEI):** This index “learns” from the behavior of processes over time and establishes optimal levels of performance based on several factors, such as standard deviations, resource costs and other statistics.
- **Employee Efficiency Index (EEI):** Similar to PEI, this index measures the efficiency of each employee over time and makes rankings based on efficiency and cost reductions for the organization.

Another modeling and design tool used in business processes, which offers much more complex techniques, is **Sparx Systems Enterprise Architect**⁽²⁾. It uses visual design techniques that are based on the UML Object Management Group. Enterprise Architect is a software that is used by many enterprises in order to design and model the architecture of business systems but also to implement certain models that will be processed throughout the development life cycle.

Microsoft Visio⁽³⁾ is a desktop application used to create a wide variety of diagrams. These include flow charts, flow charts, process charts, 3D maps and more. Microsoft Visio also provides comprehensive sets of templates and shapes for making diagrams.

For IT companies, Visio provides the ability to make data flow diagrams (DFDs). These can be a software development-focused approach, which involves thorough research before moving on to the actual programming part. Business analysts use DFDs to evaluate existing systems. The representation of the process may reveal steps that might otherwise be omitted or misunderstood. Regarding the business part, the modeling of the processes according to the BPMN standard is performed for the other participants, respectively stakeholders in a business process in order to fully understand it in a visual and easily deducible way of the stages. From a slightly deeper perspective, it is intended for the people who will handle the implementation of the process, providing an appropriate number of details for a successful execution.

3. Important notions in the analysis of business processes

Business analysis: According to BABOK® (A Guide to the Business Analysis Body of Knowledge – Babok Guide, 3rd edition), is the practice of **enabling change** in an enterprise/organization by **defining needs** and **recommending solutions** that provide **value** to stakeholders.

Business analysis is a relatively new economic discipline that promises to provide great benefits to organizations, ensuring that business requirements are aligned with the business change solutions implemented. Many of these solutions will include new or improved IT systems, and others may have a broader purpose, incorporating changes in areas such as business processes and employee roles.

Issues that arise: Organizations have introduced Business Analysis to ensure that business requirements are met when new information technology (IT) systems are introduced. However, recognizing their importance is in principle easier if one considers how they can be achieved. Some business analysts are experienced as systems analysts and are less accustomed to considering business requirements and types of potential solutions when meeting such requirements. Many business analysts come from the business environment and have a limited understanding of IT and how computing systems have developed. While business knowledge is important to these business analysts, problems can arise when IT is part of the solution and the analyst has an insufficient understanding of IT. This leads to difficulties in communicating with developers and can lead to mistakes in formulating an integrated solution from both a business and IT perspective. Some business analysts, even if they have experience and knowledge, have failed to provide beneficial advice to their organizations and, as a result, have a misunderstanding of their role in organizations, which has led organizations to refuse to apply the solutions they propose. The activity of business analysts today is well defined on the basis of technical standards that have been established for many years. In fact, some of these techniques were used even before the role of the business analyst became clear in the existence of organizations.

Design: Viable representation of a solution. It focuses on how the value will be delivered through the solution, if realized. The nature of the representation can be a document (or a set of documents) and can vary significantly depending on the circumstances.

Plan: Proposal to do or accomplish something. The plans describe a set of events, the relationships between the events, the program, the expected results, the necessary resources and the stakeholders involved.

Requirement: Viable representation of a need. The requirements focus on understanding the value that can be achieved if a requirement is met. The nature of the representation can be a document (or a set of documents) and can vary significantly depending on the circumstances.

Risk: The effect of uncertainty about the value of a change or solution. Business analysts work with other stakeholders to identify, assess and prioritize risks, applying risk management methods: mitigating consequences, eliminating the source of risk, avoiding starting a risky business, sharing risk, accepting or even assuming an even greater threat, if a suitable opportunity arises.

Classification of requirements: According to the BABOK® Guide, requirements are classified under the following categories:

- **Business requirements:** Expresses objectives and results that describe why a change was initiated. They can be valid for the whole enterprise, a certain department or a certain project.
- **Usage requirements:** Describe the needs of stakeholders that must be met in order for business requirements to be met. They can serve as a bridge between business requirements and solution-specific requirements.
- **Solution requirements:** Describe the characteristics of a solution that meets the requirements of stakeholders. They provide an appropriate level of detail so that the solution can be developed and implemented. These can be divided into two subcategories:
 - functional requirements – describe the characteristics that a solution should have in terms of its behavior (mode of operation);
 - non-functional requirements – are not directly related to the operation of the solution, but refer to the situations in which the solution must remain effective, respectively to the qualities that the solution will have to have.
 - Transition/implementation requirements: Presents the specifications that a solution must have, but also its conditions of efficient operation to facilitate the transition from the current state (**AS-IS**) to a future state (**TO-BE**), but which they are no longer needed as soon as the change has taken place. They differ from other types of requirements in that they are temporary in nature and often refer to areas such as data conversion, employee training or the implementation of a different management approach.

Stakeholders: Each task includes a list of stakeholders who will participate in or be affected by it. A stakeholder is an individual with whom a business analyst will interact directly or indirectly during the ongoing task. Any stakeholder can be a source of requirements, assumptions or constraints.

Some of the stakeholders involved in a business initiative can be found in the following list, which is not exhaustive and can vary depending on requirements.

- *Business analyst:* Inherently a stakeholder in all activities specific to business analysis. According to BABOK, he is responsible and accountable for these activities.
- *Customer:* Uses products or services provided by the company and may have contractual or moral obligations that the company undertakes to fulfill.
- *Expert in the field (business):* Has detailed knowledge about a specific topic relevant to the business need or scope of the solution. Here you can find people such as managers or consultants.
- *End user:* Interacts directly with the solution. Here you can find all those who participate in a business process or use the proposed solution.
- *Expert in the field (implementation):* Has extensive knowledge regarding the implementation of one or more components of the solution. Some of the people who can fulfill this role are: developer, solution architect, database administrator, change manager.

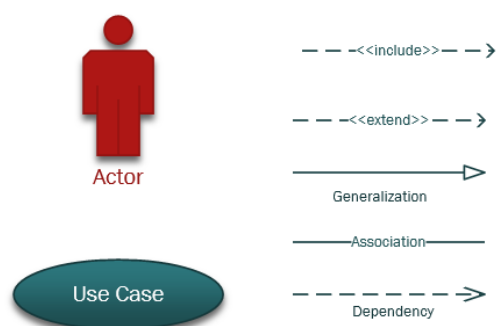
- *Operational support*: Responsible for the regular maintenance of a system or solution. It can be provided by: operations analysts, technicians, launch managers.
- *Project manager*: It manages the activities necessary to deliver a solution that meets a specific business need and the achievement of project objectives, taking into account factors such as scope, budget, program, resources, quality and risk.
- *Supervisory authority*: Responsible for defining and imposing standards. Standards can be imposed on the solution through legislation, corporate governance methodologies or auditing. These include: the government, public regulators and auditors.
- *Sponsor*: Responsible for initiating the effort in defining a business need and developing a solution that meets that need. They authorize the efforts to be made and control the budget and the scope of the initiative.
- *Supplier*: Stakeholder who is outside the boundaries of a particular organization or business area. It provides the company with products or services in accordance with contractual or moral obligations to be fulfilled. These include: consultants, vendors, providers.
- *Tester*: Responsible both for verifying how the solution meets the requirements defined by the business analyst, and for directing the verification process. They also ensure that the solution meets quality standards and that the risk of gaps is well determined and minimized. An alternative role is that of Quality Assurance analyst.

Collaboration between stakeholders involves frequent and two-way communication. Collaborative relationships help maintain the free flow of information when obstacles arise and promote a common effort to solve problems and achieve the desired results.

3.1. UML Notations

A **Use Case** represents a collection of possible scenarios, regarding the communication between the system and the external actors, characterized by certain purposes. These scenarios are different in the sequence of steps to which lower-level use cases may correspond. Use cases show **WHAT THE SYSTEM SHOULD DO** and **NOT HOW**.

Actor – The notation of actor is used as a behavioral classifier that has a role that plays in the interaction with the initiative proposed in the analysis. The actor can represent an internal or external entity that interacts with the subject to analysis, the use case. It can be a human user of the carefully designed system, it can be another system that interacts with the attentive system or even a hardware device that uses the services of the analyzed system.

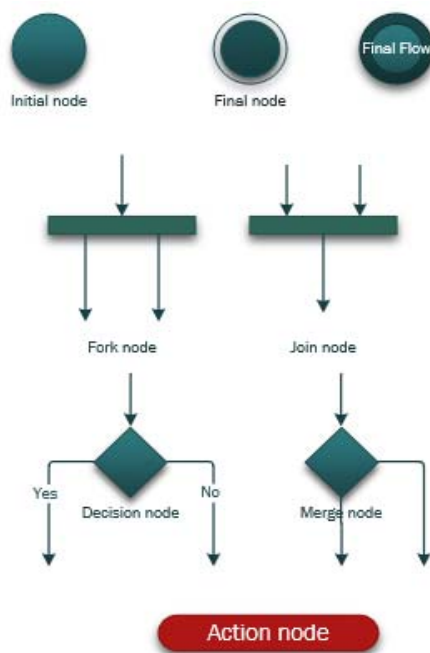


The identification is made by answering the following questions: Who is interested in the information in the system? Who changes data? Who interacts with the system? Use cases are represented in the form of an ellipse inside which the name of the Use case is written. The noun usually begins with a verb. **The association** is used to indicate the connection

between an actor and a use case, in the sense that that actor participates in some way in that use case. There may be a **generalizing relationship** between the actors. If an actor inherits another actor, then he can communicate with the same use cases of the system as the parent. When a use case includes the behavior of another use case, the **include relationship** is formed. “Included” use cases cannot be used independently, but only as part of the use cases that include them. The inclusion relationship is used to avoid repeatedly describing the same stream of events.

When a use case is inserted in another, but only under certain conditions, the **extended relationship** is formed. The extend relation (and implicitly the use extension cases) are used when modeling an optional or exceptional behavior, which does not condition the finality of the basic use case. When a UML element depends on other elements for implementation, the **dependency relationship** is created, which is a directed relationship.

The activity diagram models sequences of actions executed by elements of the system and shows the business and the flow of activities.



Action represents the elementary unit of behavior (calling behavior/operation). **Node** is a branch point of a stream. The **initial state** represents the point of entry into the activity in attention. This node is unique and from it always starts a single transition. **The final state** represents the point of exit from the activity. This can be the end point when the goal in focus is achieved or a node that concludes a flow of attention activity. The **decision node** is used when modeling a point in the flow of attention where a choice must be made based on a particular branch of the flow. The notation of the decision node is made in the geometric shape of a rhombus. The same notation is used if flows are reunited after a previous decision, in which case no more conditions are required. This node is

called the **merge node**. When two other actions are performed simultaneously from one action, the **fork node** is used. When we have the situation in which two simultaneous actions are performed on which the next action depends, the **join node is used**.

4. PESTELE Analysis

The management of the environment in which the actions of a company are carried out is a main factor of efficient development that includes planning, protection, monitoring, evaluation, research, education, conservation and sustainable use of resources.

PESTLE analysis is the most common approach for considering the external business environment. It is a political, economic, social, technological, legal and environmental analysis and describes a framework of macroeconomic environmental factors used in strategic management. If in the case of SWOT analysis the assessment of the four components is made both to the internal environment of the organization and to the external environment, the basis of the PESTLE analysis starts from the fact that the company must react to changes in the external environment and adapt.

Another very important factor that we must consider in the existing society is the ethical factor. Thus, an optimized method of PESTLE analysis is PESTELE analysis which also includes analysis from an ethical perspective.

Political changes could include general changes in the internal political climate, the effects of European integration and the subsequent effects of the collapse of the Soviet Union, the change of government, changes in world power, as well as those specific to legislation and regulations. All these are examples related to the political analysis within PESTELE.

Examples of *economic changes* can be the effects of business cycles, world trade patterns, changes in the exchange rate, commodity prices, changes in capital markets, and economic effects on suppliers and particular groups of customers.

Social change includes the effects of categories, demographic habits and environmental concerns and sustainable development. Behavior patterns of individuals and certain groups of agents reflect their attitudes, beliefs, and values. The social environment includes the attitudes and values of society, as well as the behavior, which is motivated by these values.

Technological changes cover the effects that take place on products, processes and distribution channels. The technological factor includes the innovations with which the technology is developed and impacts in a favorable or unfavorable way all the processes of the organization or even the market operations.

The legal component of the PESTELE analysis refers to the fact that all legal processes such as taxes, quotas, labor, imports, etc. will be taken into account. Depending on the country in which it operates, an organization may be influenced by certain policies, restrictions, laws, for example, consumer law or labor rules.

Environmental factors represent the last component of the PESTELE analysis and include all the parameters that impact the business environment.

In the literature, ethics (a term derived from the Greek “ethos” – usually, character) is “the philosophical discipline that studies the theoretical and practical problems of morality”; in everyday speech, the term ethics is often used in the sense of morality. Thus, on the one hand, “ethics is the science that studies moral principles, their origin, nature, essence, development and content”, and, on the other hand, “ethics represents the set of moral rules, values and norms that regulate human behavior in the company and/or determines their obligations, in general, or in a certain field of activity, in particular”. Practically, all the factors mentioned above from the PESTLE analysis must be analyzed from an ethical perspective.

PESTELE analysis is performed in general, which makes it difficult to define clear rules on how best to apply it in different circumstances. Globally dispersed businesses will need

to perform separate PESETLE analyzes for different regions, as trends occur at different frequencies in different locations. The value of PESTELE is directly related to the quality of the effort made and to the correctness and documentation of possible influences of external changes on the analyzed enterprise and industry.

PESTELE analysis is a useful tool for understanding the growth or decline of the market and the position, potential and direction of a business. Such an analysis is a useful tool for measuring business.

5. Study case: Business process modeling in Adobe Company

Adobe Inc. is an international software company that aims to provide the tools and solutions needed to create, design and deliver the best digital experience for its customers. With a turnover of over \$ 11 billion (2019) and over 20,000 employees globally (2020), Adobe is one of the leading players in the software industry. As users become more aware and technical-oriented, and technologies such as virtual reality and artificial intelligence become more common, Adobe has begun to face challenges in maintaining market dominance, a need to renew business strategies. In order to produce reliable strategic recommendations, it was necessary to analyze Adobe's history and current market position. Any business analyst, before performing the analysis for an initiative, must know the analyzed organization and understand the processes that impact the analyzed initiative.

Adobe Inc. (formerly Adobe Systems Inc.) was founded in 1982 by John Warnock and Charles Geschke in Mountain View, California. The founders decided to start this company to bring the PostScript language to market because their previous employer, Xerox, did not want to do so. Steve Jobs wanted to buy Adobe, but the founders turned down the option. However, Jobs managed to buy 19% of the company's shares at a price 5 times the actual valuation and a 5-year, pre-paid PostScript license. Thus, Adobe became the first company in the Silicon Valley area to make a profit in its first year of operation. PostScript was later used in laser printing and dominated the market in the publishing industry. The company was listed on the US NASDAQ in 1986 and launched the PDF document format in 1993. In 1996, the company moved its headquarters to San Jose, California. Over the years, Adobe has distributed creative software either developed in-house or taken over through the acquisition of certain companies. Many of these software products are famous, such as Acrobat Reader, Photoshop and Creative Cloud. The company currently has offices in more than 25 countries, more than 20,000 employees globally and a turnover of more than \$ 11 billion in 2019 alone.

Adobe operates in three sectors: Digital Media, Digital Experience and Publishing. The first two of these are part of the company's long-term growth and represent the areas in which it aims to attract investment and create solutions for the market.

5.1. Study case: PESTELE Analysis in Adobe Company

It is a political, economic, social, technological, legal and environmental analysis and describes a framework of macroeconomic environmental factors used in strategic management. The PESTELE analysis describes how the company should react to the changes in each of the mediated sectors. All the factors described below were analyzed taking into account the ethical factor.

Political factors

- The impact of the Trump administration's policies: Because of the new US government, there are more regulations regarding employment rules in this country, so organizations like Adobe could be forced to update their employment policies and employ fewer foreigners. This could affect the overall quality of the products and services provided by Adobe. Political ambiguity has also forced more immigrants to drop out of the United States and choose other countries to pursue higher education. Since a large proportion of Adobe employees are immigrants, these policies have adverse effects on the company.
- Promoting digitalization in emerging economies by governments: Emerging economies such as India, China, Brazil and other countries in Asia and South America are focusing on the digitalization process, in which they are investing heavily. The annual growth rates of the software industry in Asia and Africa are 11% and 10%, respectively, according to the CIO, which results in a significant increase in revenues in these regions. A new initiative has been taken by the Government of India, namely the digitization of public services. Thus, several start-up companies have appeared on the market that offer digitization services in this regard. Most of these platforms are designed based on Adobe products and enjoy a consistent demand. The government itself supports digitalization by setting up development centers for day-to-day operations in public institutions. Such an initiative in developing countries is good for Adobe. Brazil has publicly discussed its digitization strategy and is actively pursuing its implementation, and Mexico has launched its National Digital Strategy, which is aggressively pursuing various avenues of digitization.

Economic factors

- Growth in emerging markets: Emerging markets are responsible for more than half of global GDP growth and about 40% of total global GDP, according to Barakaat Consulting. By 2030, Asia will have the largest share of global GDP at 40%. Investments in cloud infrastructure and associated technologies and applications will contribute to the growth of emerging economies at a significantly faster rate than developed economies. Sectors such as e-commerce, cloud health services, payment and banking ecosystems will be the main growth channels for emerging economies, such as India, part of Africa and the Middle East. Hiring more people in the software fields and encouraging the adoption of online technologies by consumers will significantly contribute to the growth of the company. Thus, emerging markets represent real opportunities for Adobe.
- Foreign currency fluctuations: Users of Adobe products and services are present all over the world, and currency fluctuations pose a serious threat to Adobe's profitability. Revenues outside the United States were also affected by fluctuations in foreign currencies. At the end of fiscal 2018, Adobe lost approximately \$ 8.3 million due to currency fluctuations. The increase in crude oil prices together with the increase in revenues in the APAC region (Asia-Pacific) can also have a considerable impact on Adobe's profitability.

Social factors

- The explosion of the mobile application market: Awareness of the importance of using a mobile platform for the day-to-day sales activities has grown exponentially since the

advent of e-commerce platforms. Multinational companies have realized the importance of providing mobile services to customers, and this has set the standard for a suite of cloud service providers such as Adobe. Currently, according to a Digital Future in Focus report, this point has been far exceeded in countries such as India, Mexico and Indonesia, with a 4: 1 ratio of the number of smartphone users versus desktops. According to PwC, 51% of online advertising budgets went to smartphones. This aspect is also supported by the company Smart Insights, which certifies that 80% of Internet users will own a smartphone in the near future. This growth is expected to continue for at least another ten years and is clearly beneficial to Adobe.

- Concerns about privacy and data security policies: Poor data protection is a major concern in the software industry, and Adobe is no exception. In the past, there have been security breaches within Adobe, and these incidents have had the effect of misinforming some of its customers. In October 2013, a group of hackers managed to steal the data of 38 million Adobe users, and later found out that they were very poorly encrypted. Norton recently announced that it has not found any vulnerabilities in the widely distributed Adobe Flash Player program.

Technological factors

- Evolution of SaaS (Software as a Service) and IaaS (Infrastructure as a Service) platforms: The evolution of SaaS and IaaS platforms has reduced the exorbitant installation and maintenance costs in terms of online presence. As a result, more and more companies want to establish an online presence to reach customers more easily. This evolution laid the foundations of Adobe SaaS platforms.
- The evolution of cloud technology: Cloud technology is considered one of the main vectors of digital transformation, and Adobe is at the center of them through solutions such as Creative Cloud, Marketing Cloud and Document cloud, which serve customers through the most advanced technologies available on the market. The innovation brought by Adobe attracts many new customers in the use of cloud solutions. Also, the evolution of cloud technology has resulted in the implementation of the subscription-based business model, generating massive profits for Adobe.
- Fast mobile networks in developing countries: The speed of mobile internet from 2G, 3G, 4G to 5G has gradually increased in developing countries, and people in these areas have access to cutting-edge technologies from anywhere in the world, and this is beneficial for Adobe by increasing the overall number of customers.

Legal factors

- Compliance with legal regulations for the use of electronic signatures.

The main market for digital signatures is North America, governed by associated laws and rules, giving rise to a significant number of legal companies in countries such as the USA and Canada. Directive 1999/93/EC on electronic signatures was adopted by the European Parliament in 1999. The adoption of the digital signature in the Asia-Pacific region has enjoyed a significant boost due to the growth of the banking, financial services and insurance sector and the initiatives taken by the governments of countries such as China and India to promote the use of digital technologies. The global digital signature market is facing challenges from alternative technologies such as vein biometrics, voice and

keystrokes. Digital signatures are the most advanced and secure type of electronic signature, used for credit applications, healthcare, the emergence of new drugs and other business processes that are strictly regulated due to the specificity of high risk and high value. In the European Union, digital signatures are the only form of electronic signature with a legal status equivalent to a handwritten signature. To ensure compliance with government and industry-specific regulations, organizations use digital identities from trusted providers found on certain official lists. Some of these are the European Union Trusted Lists (EUTL) and the Adobe Approved Trust List (AATL).

- **Criminal prosecution of damages caused by security breaches:** Security breaches are the ghosts that haunt the software industry. Adobe is no exception to this, and as a result of these recent breaches, the US government is preparing to implement a legal framework through which customers can sue the service provider in the event of a security breach. As Adobe has suffered greatly from these shortcomings in the past, it will need to act appropriately to minimize these incidents in the future.
- **Data protection requirements:** With the misuse of customer data during the scandal involving Facebook and Cambridge Analytica, keeping this data safe has become the main goal of every business. The European Union's General Data Protection Regulation (GDPR) entered into force on 25 May 2018. With the help of these rules, businesses will need to focus on building brand loyalty and prioritizing customer security. The GDPR is the latest European Union law addressing data protection requirements. These rules have a wide applicability and have an impact on any business that collects personal data of EU citizens. Adobe hopes to make a drastic contribution to the GDPR's transition to many businesses. Adobe Experience Cloud will support brands (“data controllers”), technology providers (“data processors”), and areas where processors could partner with controllers through a variety of tools, processes, and documentation. Alisa Bergman, director of security at Adobe, says that “Adobe is at the forefront of brand support to become an experienced business, and GDPR brings the perfect opportunity for companies to position their core customer base, gain trust through transparency and improving the customer experience with security in mind”.

Environmental factors

- **Services for electronic documents:** Electronic document services have drastically reduced paper consumption. Adobe Acrobat is the main vector of this transformation, and books in electronic format have become the new rule, those in physical format becoming obsolete. Thus, a major market was born, and Adobe has a monopoly within it.
- **Adopting sustainability in the way we work:** At Adobe, sustainability is embedded in the work of every employee. Each Adobe project is monitored for this purpose and approved only when it is considered to be environmentally viable. In addition, Adobe invokes strict waste and water management policies.
- **Corporate social responsibility initiatives:** As part of its corporate social responsibility policy, Adobe has several initiatives to make its offices more environmentally friendly. For example, the Adobe office in Bangalore is powered by solar energy. Adobe's plan is to supply 100% of its energy by 2035. Adobe has received the Dow Jones Gold Standard for Corporate Social Responsibility for two years in a row, a testament to Adobe's contributions to the environment.

5.2. UML modeling within the implementation of a system for sending promotional offers on several channels

In this section, we will suggest improving an existing application within Adobe, which aims to send promotional offers through multiple channels to members of the Adobe community⁽⁴⁾.

Description of the actors:

- **Marketing representative:** Is the person who logs into Adobe Experience Cloud to access the members database and uses the Adobe Campaign platform to send them promotional offers to those who have provided their phone number and email address and who, depending on their response, will send a reminder to the member either by email (if the email was not read) or by SMS (if the email was read but the promotional link was not accessed) or will update the members database, reviewing audience groups in case success (email has been opened and the promotional link has been accessed).
- **Member:** This is the person who receives the promotional email and first decides whether to read the email and secondly, if he will read it, will have to decide whether to access the promotional link or not. If you do not read this email, after three days you will receive another informative email about the same offer. If, instead, he reads the email but does not access the offer, he will receive an SMS with the same purpose.
- **Adobe Campaign:** The two actors described above are joined by the actor “System”, the Adobe Campaign platform being its first instance. Through this platform, the marketing representative will log in to his email account and access it in order to perform flow-specific activities.
- **Adobe Experience Cloud:** This is the second component of the “System” actor. Within this cloud is the database of members in which the marketing representative will initially authenticate. After accessing the email using the Adobe Campaign platform, the representative will use the Adobe Experience Cloud to enter the members database.

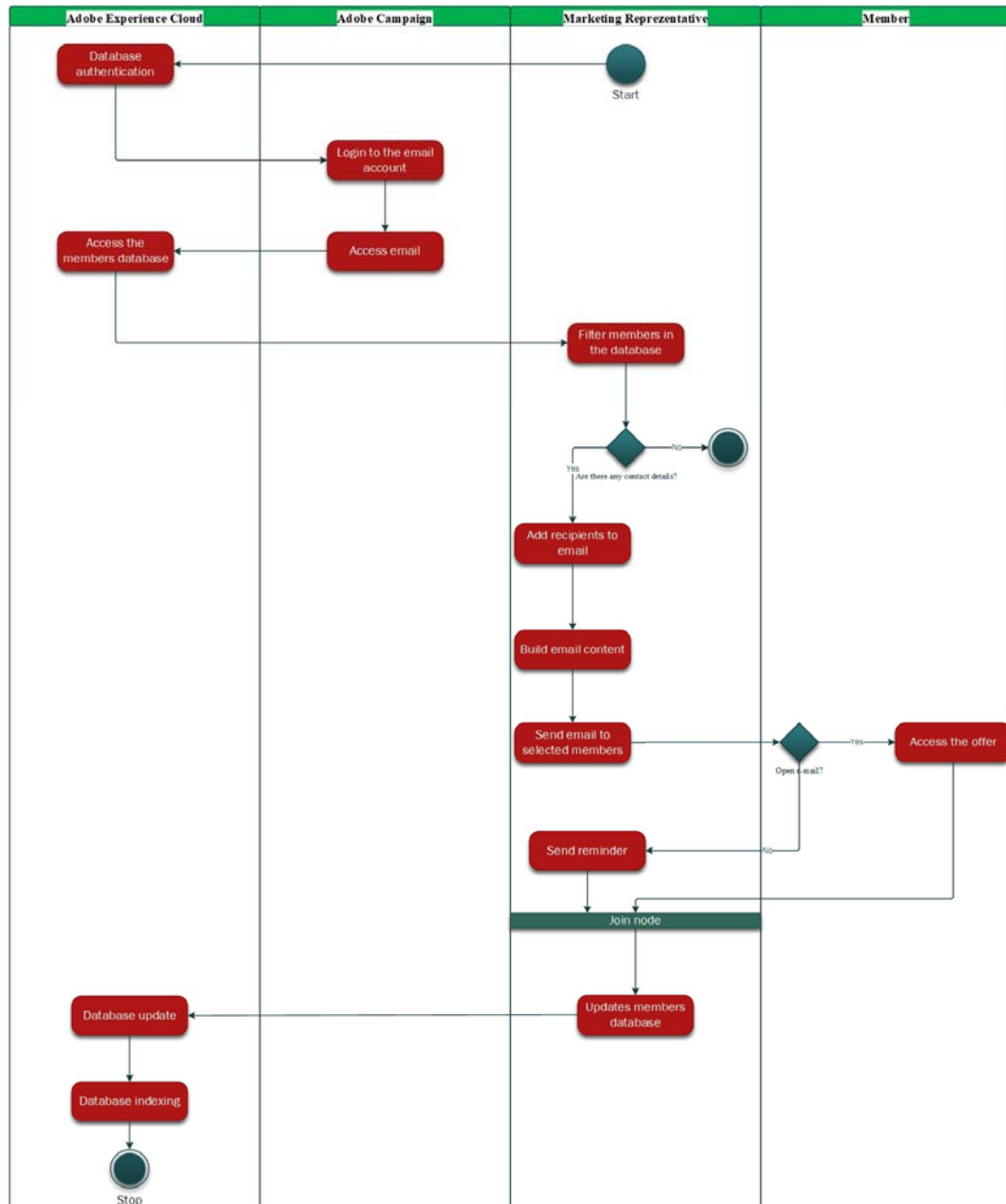
AS-IS Situation:

Currently, there is a management flow of the activity of sending promotional offers. In the first phase, this involves authentication by the marketing representative in the database of members of the Adobe community, found in Adobe Experience Cloud. After that, the representative logs in to the email account and accesses it in order to be able to add the recipients in the email according to the members found in the database. Only members who have provided both their phone number and email address become recipients of the email. Then, the marketing representative will compose the email message, along with which he will attach the link to the promotional offer and will send the email to the eligible members. Recipients will be given 3 days to open the email with the promotional offer. After that, the following actions will be performed depending on the effects produced by the previously sent email:

- Another email will be sent as a reminder of the offer to the people who did not open the email, they will receive it, and the flow is over;
- An SMS with the same purpose will be sent to the people who opened the email, but did not access the link to the offer, they will receive the SMS and the flow is over;

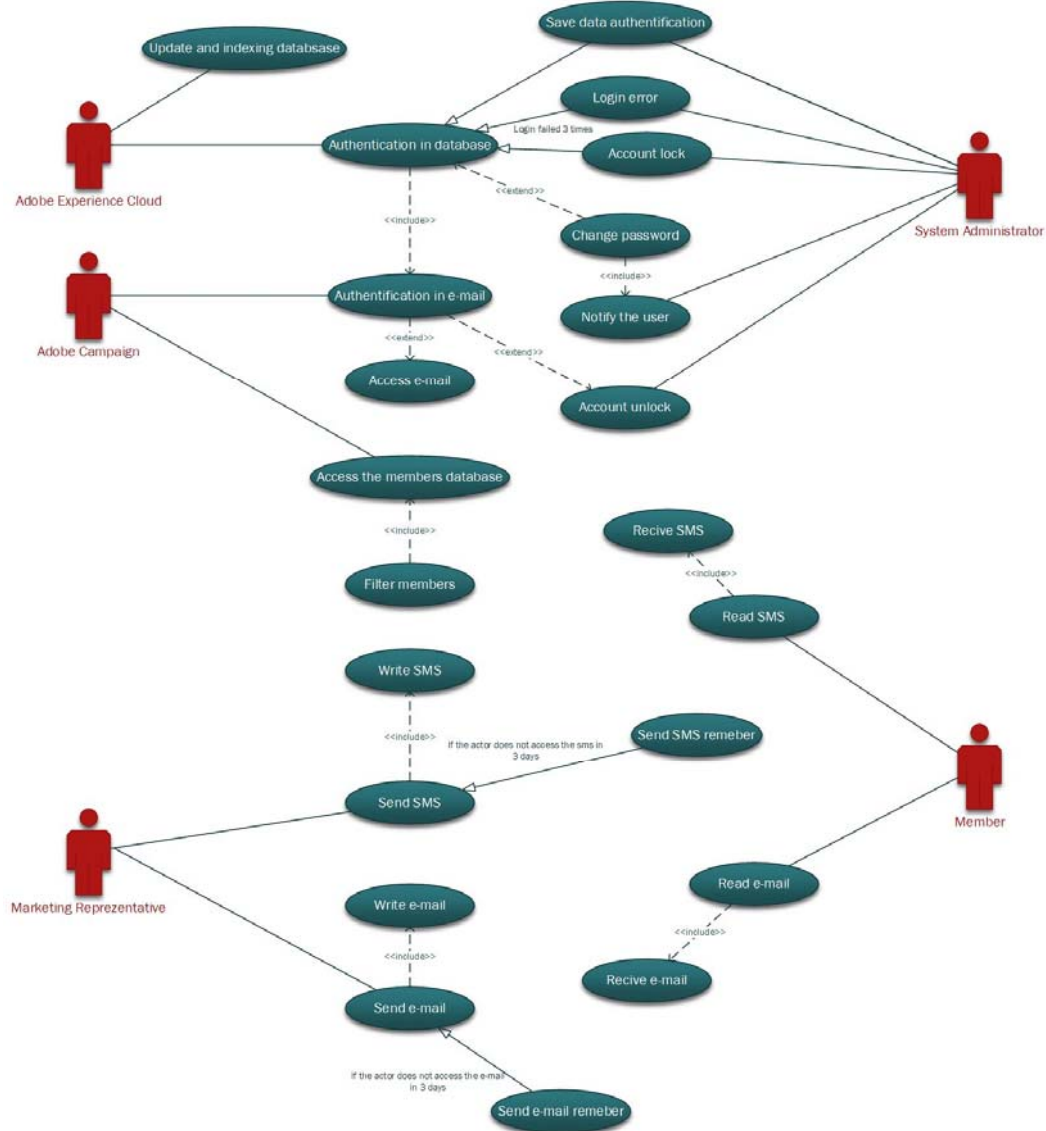
- The database will be updated in Adobe Experience Cloud, in the case of people who opened the email and accessed the promotional offer.

Figure 1. AS-IS activity diagram of the bidding process based on email and SMS channels



Source: The design is done by the authors.

Figure 2. TO-BE use case diagram of the bidding process based on email and SMS channels



Source: The design is done by the authors.

In the new form, the application involves a new actor, represented by the system administrator. It provides extra control and security over the business by automatically blocking the Adobe Experience Cloud and Adobe Campaign accounts of the marketing representative. These accounts will be unlocked after successfully verifying the user's identity. Otherwise, the flow ends if the marketer fails to identify himself.

From the point of view of carrying out the activity, the verification will no longer be conditional on the availability of the email address and telephone number of the members.

These will take place in two separate and parallel sub-streams, based on checking the email address and phone number, respectively. The waiting time of 3 days is kept between the email, respectively the initial SMS and the one for the purpose of reminder, but, unlike the AS-IS variant, these days will coincide and the waiting time is shortened, because they will no longer produce successively (SMS by email).

The use-case diagram of the desired state, presented above, suggestively expresses the interaction of each of the actors presented (marketing representative, member, Adobe Experience Cloud, Adobe Campaign and system administrator) in the process of sending promotional offers.

As a result of the transformation of the process, Adobe will gain added value in its multi-channel marketing. The added value is increased security from the involvement of a system administrator if database and email authentications are unsuccessful. In addition, the fact that in the new state the flows of sending offers by email, respectively SMS take place in parallel (simultaneously) and not successively, the execution time of the whole process decreases from 6 days to 3 days, so there is a halving of the actual time, working time that can be used to more effectively target potential customers, which would result in an increased conversion rate.

6. Conclusions

Business analysis is vital for the company as it capitalizes on the internal potential, but also the components of the external environment, in order to gain a favorable position in the market. Following the presentation of the concepts and methods in the previous sections, the complexity of the field of business analysis and the fact that this area is in perpetual development, as the companies themselves have a continuous evolution.

In the first part we presented the general concepts related to the analysis of business processes and we highlighted the importance of modeling them. We also presented some software support systems used for efficient process management.

In the second part we highlighted the methodologies used for business processes (UML modeling and BPMN modeling). Moreover, the PESTLE and PESTELE analysis, respectively, proved to be useful to understand the factors from the external environment that impact the organization in attention. Organizational modeling must be done from a cybernetic perspective and this means, compared to the traditional approach, to understand the processes in the external environment that influence the organization, giving a complete view of the company and the enterprise ecosystem. Cybernetics is the science of communication and control and, from this point of view, an understanding of systems as cybernetic systems facilitates modeling and this proposes optimal solutions to remedy some identified deficiencies. The case study was approached in the last part of the research, constituting a complex research in order to model the business processes within the Adobe Company. Regarding the activity of the marketing department of Adobe, for the process of sending offers based on SMS and email channels, a topic that comes to the attention of the research analysis, improvements have been proposed compared to its current state.

Therefore, if the flows of sending offers by email and SMS will take place simultaneously, the duration of the process will be halved (from 6 to 3 days), and the time saved can be used to streamline the segmentation of potential customers. The modeling of business processes comes to the attention of today's specialists and the techniques in this field offer a precision and a clear understanding of the system so as to propose the optimal solutions for achieving the value that the proposed change in the enterprise must bring. For the next research we will approach the Agile framework and its importance in optimizing business initiatives.

Notes

- (1) The Lucidchart modeling program can be accessed from the following available address: <https://www.lucidchart.com>
- (2) The Enterprise Architect modeling program can be accessed from the following available address: <https://sparxsystems.com/>
- (3) The activity diagram and the use case diagram were represented using the Microsoft Visio tool.
- (4) For recommendations, suggestions and observations, you can contact the authors Ionuț Nica (ionut.nica@esie.ase.ro) or Ștefan Ionescu (stefion09@gmail.com).

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