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Optimization of Human, Technological, Administrative Resources for Decision-Making in Information Security Governance

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Abstract—Problems for decision-making in information security governance are persistent because there are no adequate models. The objective is to generate a model that optimizes human, technological and administrative resources for decision-making in the governance of Information Security. The deductive method and exploratory research were used. A resource optimization model with 95% reliability generated by Cronbach's Alpha resulted; the mathematical justification of the business, information and application architecture with 96.13%, 95.89% and 95.20% confidence respectively generated by the Pearson correlation; an enterprise architecture context diagram; and an algorithm expressed with flowchart techniques with 98.21% degree of association in its elements generated by the multiple correlation coefficient. It was concluded that with the proposed model, a company's resources can be optimized for information security governance; so that managers have adequate support for making decisions with a mathematical basis with simulations in quantities of components within the architectures; so that the function in business management becomes simpler by applying a general model that can be adapted to various types of companies to achieve success for decision making in security governance of information security.

Keywords-; Enterprise architecture; Information security; Enterprise resources; Governance; Technology administration

I. INTRODUCTION

Governments and companies are open in this digital age, everyone uses digital tools to obtain and distribute information, globally private people and public officials use social networks or computer applications to transmit information[1]. Some resources are in strategic positions of companies, the success of these resources also depends on proactivity, innovations and information[2]. Before the COVID-19 pandemic, people in Italy, the United Kingdom, Germany, France, Spain and the USA had confidence in the information provided by governments, companies and doctors; trust in information is United Kingdom 81%, Germany 83% and in Italy 63%, due to information management and delivery to citizens[3].

Governance in Information Systems (IS) is an option to minimize risks, and IS standards are decisive because they align the design and implementation of a countermeasure; that is, an organization can adopt a global IS standard such as COBIT and ISO-27000 made up of legal entities[4]. Another technique seeks to improve the skill, learning and intrinsic motivation in employees with respect to IS in a non-invasive way in daily activities[5]. While reinforcing the autonomy and competence of people increase the desire to protect information and execute recommended measures, although for this it is necessary to understand the motivation and behavior of people[6]. It is stated that information risks or IS can be outsourced or outsourced to lower costs, optimize management, motivation against risks, improve security, although the analysis of insurance policies in IT is necessary[7]. To optimize human, technological and administrative resources it is necessary to know the concept of Management in Enterprise Architectures (EA); this concept supports an integrated perspective of the organization in the commercial and IT, in addition to its future stage and the path to it[8]. IT governance maintains related structures, methods, and elements to improve information-based decision-making involving senior management, and there is a positive impact on the company's products/services and internal/external information[9]. If the standard and the information system and the guidelines are high then the quality of information is higher[10]. It is stated that in strategic IT training, technological resources must be aligned with productive strategies for companies to achieve good performance[11]. If the goal is to maintain the integrity of the information on any of the platforms and this information serves as a strategic element in business development, then it is necessary to make investments in IT security, the investments can be in architectures or vulnerability awareness or protection incentives[12]. Public and private companies interact through digital platforms to contribute to

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sociocultural, collaborative and socioeconomic development, data exchange, and there are also business processes[13]. In China and India, IT is considered to be an anti-corruption tool that complements other measures, also improves information governance and facilitates transparency; although this depends on cultural, economic and political factors[14]. Other governments such as Bangladesh, India, Indonesia and Thailand use IT to ensure that society has the right to information, and that its inhabitants demand increased transparency and trust; although there are procedural and implementation stumbles[15].

Why is a model of continuous improvement necessary for the governance of information security and the optimization of human, technological and administrative resources?

Because business activities and information are in continuous evolution as a result of technological advances, companies are more independent and others more collaborative in their processes and resources; therefore, a business model must be in accordance with the current change, which supports the management of information and its resources; enterprise environments that manage information must do their job under a model that keeps data traveling through the infrastructure more secure; the models or architectures must be adaptable, configurable and measurable so as not to hinder business during model testing, this so that strategists and decision makers visualize the benefits and approve the implementation of the model; in addition, a model must be measurable according to its components and based on the mathematical sciences to have a more accurate picture.

The general objective is to generate a model that optimizes human, technological and administrative resources for decision-making in governance of Information Security.

Projects in organizations are complex and have some difficulty in achieving success, today organizations seek to standardize the management of resources to compensate for the demands of globalization; it is necessary to minimize conflicts, improve time management, the organization of teams and objectives that maximize information security[16]. Conceptual models maintain knowledge about the domains of a context or environment, are based on theories about the environment, a model is intended to facilitate or optimize resources[17].

A theoretical optimization model is proposed to be an empirical strategy in the optimization of important resources of a private or governmental organization, the model uses concepts such as security governance, a security standard, enterprise architecture and information security, in addition an optimization model raises the feasibility of improving the management of important resources in an organization.

The analytical empirical method, the qualitative approach, the quantitative approach, the observation, the descriptive approach and the deductive reasoning are used.

The results are a model for optimization of Human, Technological and Administrative Resources with 95% reliability generated by Cronbach's Alpha; the mathematical justification of business architecture with 96.13% confidence, information architecture with 95.89% confidence, application architecture with 95.20% confidence, generated by Pearson's Correlation; a context diagram of the enterprise architecture; and an algorithm expressed with flowchart techniques with 98.21% degree of association in its elements generated by the Multiple Correlation Coefficient.

It is concluded that the resources of a company can be optimized with the proposed model because it considers the governance of Information Security, here decision makers have a proposal with mathematical support with simulations in quantities of components within the architectures; the function of business management becomes simpler with a general model that can be adapted to various types of company to achieve success with the same principle of EA.

II. Materials and Methods

2.1. Materials

Enterprise Architecture: An EA proposes professional guidance to generate dynamics in business procedures and applied sciences that reinforce the business with the presence of conceptual models and architectural processes; EA provides a "model of the structure" and behaviors of a company that links various architectural environments[18]. EA helps companies in their strategies and activities, considers IT within the organizational infrastructure, it is necessary for the company to adhere to guidelines of this concept; EA allows you to identify appropriate variations with persistence and flexibility[19]. EA is a project of great relevance, the design and implementation is done in several iterative stages[20]. The domains contained in EA are: business, data, applications and technology of organizations, in addition EA describes the roadmap on the transformation of the current business state towards the future state[21]. Security governance: An IT governance facilitates guidelines, decision rewards and risk management to achieve the objectives of organizations, ensures IT commitment, obtain efficiency, through optimization of processes and resources, in addition IT governance frameworks concentrate components that support organizations[9]. The disclosure of information generates a positive effect on individuals, although at the

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country level disclosure is not similar in any of the localities, but its tangible effect is moderate; the positive externality between an institution and the effects is a merit for trust[22].

The implementation of IT governance is in a set of political activities configured in specific cases and there is a social and systematic combination, it is claimed that power can set precedents in a governance model[23]. Information Security: Users obtain information from any computer application on any device, these contain security signals to sensitize the appropriate use, in addition the applications ensure the legitimacy of the data and its possible risks[24]. Information security standards are necessary due to the growth of the internet and networks, some companies apply it under their initiative and others hire this kind of protection; it is claimed that a security requirement increases well-being and generates revenue, security measures can be distinct as a firewall or implementation of an architecture[25]. Access control: The internal abuses of privacy exceed 40% of incidents, this type of abuse can be malicious and not malicious, among these malicious abuse is the greatest, they also have their own interests[26]. Resources are instruments to translate power into the activities of the company, governments have resources to provide services and interaction with citizens; the focus on resources is measured in the essential characteristics of assets because they are a component of the business structure and their use influences behavior and production[27].

Related works. In a railway company in the United Kingdom, the authors proposed a framework for updating business processes and degree of automation to solve company needs; the model identifies the information elements[28]. The Namibian government uses an enterprise architecture framework and found factors that impact the environment, the framework was implemented in four ministries, in addition the framework is presented as a guide that allows the delivery of services by the government[29]. The implementation of EA in two financial institutions obtained different results; in the first bank the technological configuration requested by the architects is not used, but they applied their own model; in the second bank the implementation is completed by the architects who obtained the commitment and technological configuration, in addition to the project is still underway[30]. In Norwegian Hospital, USA it is a case study in the implementation of EA, here the action between the EA logic and the common logic generated resistance in the decisions of the project; the authors recommend solving the tensions that exist in any project to achieve its full implementation[31]. A U.S. government entity applies a model that integrates information security to verify security requirements and steps to minimize risks; this model proposes the use of cybersecurity, the case study demonstrates the benefit of vulnerability analysis during the implementation of the model[32]. The authors applied EA with other techniques to update a warship, in addition to using diagrams, maps and generating documentation; a lesson learned is the reciprocity of data, use of other methodologies, minimized risks, decision making during the project, among others[33]. The authors conducted studies in 8 different companies and found that EA management does not generate benefits but generates value for the company that has capabilities such as: “modeling, planning, implementation and governance”; for this it is necessary to have the direction to the objectives and implementation of the results, an EA model has value in its use and application to make decisions, usually has great value in companies with large volumes of data[8]. The authors framework for the business strategy for integration of business areas, were based on cases of North American companies; although there is little variation in the strategies of this type of companies, they also affirm that the strategy and value depend on the culture of each country[34]. There are companies that have some dependence on the knowledge of suppliers, it is stated that companies that have a lot of dependence on their activities are also deficient; for this reason it is important to consider Information Technologies in the strategic design, in addition to alliance activities minimize costs in services[35]. The architectures aim to facilitate the correct performance of the work by the officials of the companies, there are companies that manage their resources in a conventional and dynamic way based on skills and strategies[36]. The company is considered a “complex adaptive system” and a framework that adopts EA to progressive analysis is proposed[37]. A human resources framework was created to optimize decision-making on costs/risks, improve times, minimize labor, deliver statistics, verify experience/expenses, level capabilities, predict changes in the company’s personnel[38]. It is known the follow-up of people in an educational institution to make decisions and optimize processes, in addition to knowing the reasons for the rotation of personnel that cause delays in new training[39]. Some factors that impact the adoption of EA in a public sector company are: Technology infrastructure, assistance, communication, guidelines, governance, variation in the company, size of the company[40]. Improved governance is claimed by combining portfolio analysis with the design of an EA, this combination increases the return on investment[41].

2.2. Methods

To propose the design of an optimization model, the analytical empirical method is used to obtain a solution through empirical evidence; the qualitative approach is used for the thorough analysis and characteristics of other models in scientific references; the quantitative approach is used to analyze the correlation in the components of architecture through mathematical formulation; observation in references is used to understand and apply security governance, security standard, enterprise architecture, information security and access control;

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the descriptive approach is applied to explain the optimization model, deductive reasoning is used.

Scope. An enterprise architecture for information security is proposed, its components are presented in a general way, the components of business, information, applications and technological architectures are presented; EA is justified mathematically with Cronbach's Alpha, business/information/application architectures are justified mathematically with Pearson's Correlation; a context diagram is presented and a flowchart is presented that is mathematically justified with Multiple Correlation Coefficient.

To generate the enterprise architecture, components of the scientific references are adopted; to justify the EA, random values are generated on an electronic sheet in a matrix of X components and 25 companies; to justify the architectures, two variables with random values are used for 25 companies, in the different simulations low, medium or high correlations are generated, the scenario with the highest correlation is chosen.

The algorithm that is expressed in a data flow diagram is justified with the multiple correlation formula; for the simulation, random values are generated on an electronic sheet in a matrix of 20 rows (companies) and 7 columns (variables); the Regression function of the Scientific and Financial Data Analysis tool that is in Microsoft Excel is applied.

III. RESULTS

A. Model for Optimization of Human, Technological and Administrative Resources

For a company to work in a coordinated manner inside and outside its field, a general model is proposed with standards so that employees, customers and suppliers have coordinated information, so that the company has security of computer systems, the model has standards and general guidelines, it is a model applicable to any size of company. The model is based on Enterprise Architecture and information industry standards and oriented to policies that allow a company to make efficient, coordinated and optimized use of resources. It serves as a guide for a company to allow it to align itself to a general environment and be a strategic reference for any type or size of company.

Fig. 1 presents the EA model, the company's strategies must be defined to optimize the use of resources, then state policies are applied, the functions, internal policies, guidelines, limitations and risks of the company are defined. The company works with government, customers, internal employees and suppliers, especially the government controls the bidding activities through the tax return, customers / suppliers demand transparency is their activities, in addition customers demand quality in the products or services that the company delivers, it is necessary to know the products or services to analyze their possible economic or social profitability. Next, we proceed to describe the business architecture, information architecture, application architecture and technology architecture. The EA helps in the optimization of Human, Technological, Administrative Resources of the company, also defines the relationships with customers, employees and suppliers. In digital government the company must establish its digital strategies that generate / deliver added value in products and services, here you can take advantage of social networks, Internet of Things and Big Data.

The security element refers to the information security within the company, the model is supported by a layer of infrastructure to ensure that the EA is optimal. It is pointed out that the contribution of this research is the general model for optimization of justified resources in the exact sciences such as mathematics.

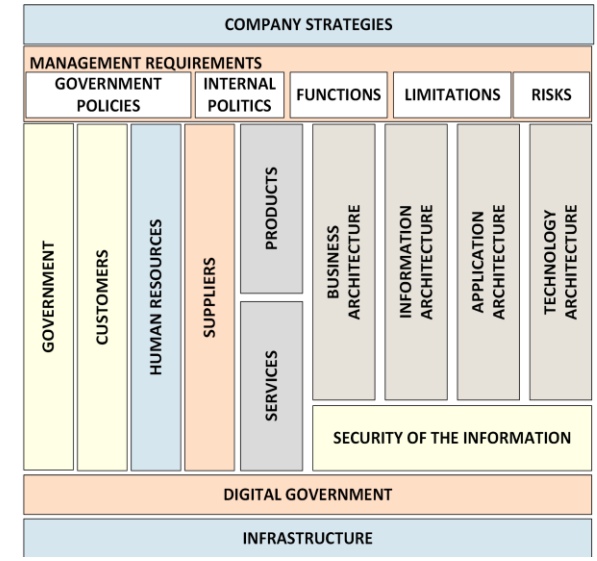

Figure 1. Resource optimization model.

For governance in information security it is suggested to apply COBIT 2019[42] because this standard helps in the specific orientation, the following areas must be considered: The policies and guidelines in Information Security, the specific processes / tasks of Information Security, the business structure of each Information Security entity, the conduct and factors that help the success of governance and management of Information Security, the specific information class of Information Security, the conditions of service to generate Information Security, the particular activities related to the company, the human resource with specific skills for Information Security.

Mathematical justification: To justify Enterprise Architecture in mathematical form it is proposed to use Cronbach's Alpha[43] in Eq. (3.1) to check the internal consistency of the architecture that is made up of 15 elements that make up the model, this is a stratified alpha coefficient used to know the internal consistency.

$$\alpha = \frac{K}{K-1}\left[1-\frac{\sum S_i^2}{S_T^2}\right] \tag{3.1}$$

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Here:
K: Number of items = 15

$\sum_{i=1}^{K} S_i^2$: Sum of item variances = SUM(B27:P27) = 9.414

S_T^2 : Total architecture variance = VARP(Q2:Q26) = 82.746

α: Reliability coefficient= P32/(P32-1)*(1-P33/P34) = 0.95

The simulation is carried out for 25 companies, the electronic sheet contains a matrix of 25x15, the reliability coefficient of the architecture is 0.95, that is, 95% of excellent reliability.

The proposal is based on the 4 layers of EA: Business Architecture, Information Architecture, Application Architecture and Technological Architecture.

Business Architecture: Here the processes of fixed assets, auditing, purchasing, accounting, exports, imports, inventories, people, production, products, role of payments, human resources, taxes, treasury, transportation, sales are defined. In addition, there may be the strategic business plan, corporate guidelines, management traffic lights, mission, vision, objectives. This layer is responsible for optimizing processes according to business strategies, see Figure 2.

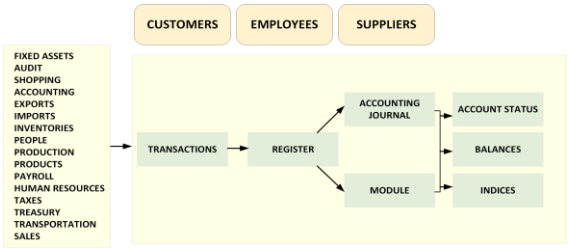
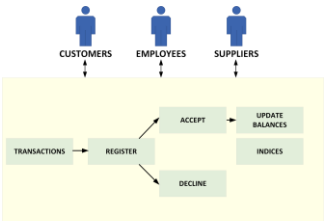


Figure 2. Business Architecture.

Information architecture: The information model that a company supports for customer, supplier, employee and business management is proposed to have the following entities:

Master entities: banks, warehouses, scepters, cities, charges, accounting accounts, contracts, departments, divisions, lines, measures, brands, people, products, points of sale, items, taxes, rates, terms, zones. Transactional entities: accounting entries, advances, checks, credit notes, debit notes, income notes, exit notes, delivery notes, expense notes, sales notes, purchase invoices, sales invoices, shipping guides, export guides, import guides, referral guides, settlements, sales orders, purchase orders, expense orders, withholdings, payment roles, requests, sales tickets, physical takeover. This layer is linked to the business processes, here the information resource contains the data assets of the entire company, see Figure 3.



Application architecture: The objects that manage data and deliver information to the business architecture, see Figure 4; these objects are used by all web applications or mobile applications.

- Client objects: Engines, Invoke Transaction.
- Server objects: InsertItem, UpdateItem, GetItem, GetRecord, SeekRecord, DeleteItem

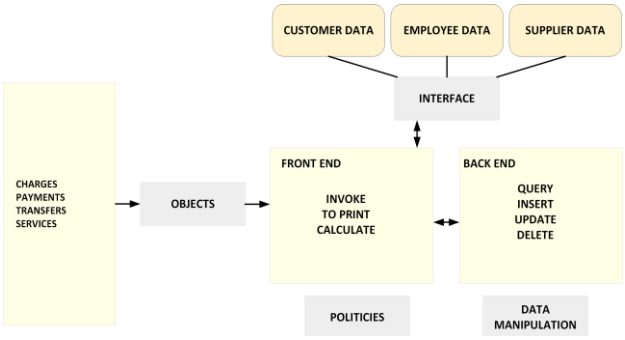


Figure 4. Application Architecture.

Technological architecture: The recommended technologies for this layer are:

- Data storage: Database.
- Data network: LAN network with UTP category 6 wiring, wireless network 802.11ax 2.4 Gbps.
- Data processing centers: State-of-the-art servers.
- External connection: Internet connection with at least 20Megas.

Mathematical justification: To mathematically justify the architectures of business, information and applications, Pearson's Correlation is used[44] in Eq. (3.2). The level of significance supports the correlation coefficient because the correlation between the two variables is generated by accidental factors; the hypothesis testing mechanism is adopted: if the original Hypothesis is equal to zero then there is no linear correlation; if the alternative hypothesis is nonzero then there is a linear correlation. The default threshold is 5%. For the simulation of the business architecture, the number of both variables was randomly generated for 25 companies.

$$r = \frac{cov(x, y)}{S_x S_y} \tag{3.2}$$

Here:

- r : Pearson's correlation coefficient
- $cov(x,y)$: Covariance between X and Y

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- *Sx*: Standard deviation of X
- *Sy*: Standard deviation of Y

In business architecture there are two variables: the number of processes and the number of transactions generated by the processes; it is considered that companies can have different amounts of processes and transactions according to their size, we performed a simulation on the architecture based on the Pearson's Correlation to determine if there is any association or correlation between these two quantities.

According to Fig. 5 if the number of modules increases in a company, then the number of transactions increases, there is a HIGH association, the relationship is linear, there is a positive or direct relationship, in other words: The greater the value for the variable Module supposes or is associated greater values for the variable Transactions.

Here:

- *cov(x,y)* = COVARIANZA.M(C5:C29;D5:D29)= 195.593333
- *Sx* = DESVEST.M(C5:C29) = 7.043436661
- *Sy* = DESVEST.M(D5:D29) = 28.88759826
- *r* = 0.961297912

The application of Pearson's Correlation formula generates 0.961297912; this value is considered to be a VERY STRONG correlation between the number of modules and the number of transactions, and it can be said that there is 96.13% confidence.

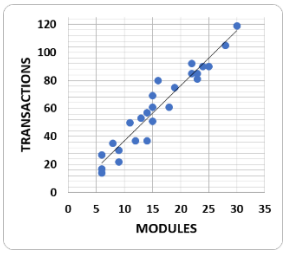

Figure 5. Pearson's correlation in business architecture.

Here the test statistic was 16.733 and the critical value was 2.06865761, this significance value is less than 5%, this means that the alternative hypothesis is accepted i.e. there is a significant linear correlation between modules and transactions.

In the information architecture is considered the data repository or database, here are the variables: the number of master tables and the number of transactional tables. According to Fig. 6 if the number of master tables increases in an information system then the number of transactional tables increases, here there is a VERY STRONG association, the relationship is linear, there is a positive relationship.

Here:

- *cov(x,y)* = COVARIANZA.M(C5:C29;D5:D29)= 106.625000
- *Sx* = DESVEST.M(C5:C29) = 6.651315659
- *Sy* = DESVEST.M(D5:D29) = 16.7182535
- *r* = 0.9588719

The application of Pearson's Correlation formula generates 0.9588719; this value is considered a VERY STRONG Correlation between the amount of Master Data and the amount of Transactional Data, and it can be said that there is 95.89% confidence.

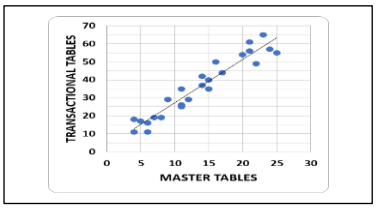

Figure 6. Pearson's correlation in information architecture.

Here the test statistic was 16.201 and the critical value was 2.068, this significance value is less than 5%, this means that the alternative hypothesis is accepted i.e. there is a VERY STRONG linear correlation between the master tables and the transactional tables.

In the application architecture the objects that work on the data are considered, here the variables are: the number of client-side objects and the number of server-side objects. According to Fig. 7 if the number of objects in the front-end increases then the number of objects in the back-end increases, here there is a VERY STRONG association, the relationship is linear, there is a positive relationship.

Here:

- *cov(x,y)* = COVARIANZA.M(C5:C29;D5:D29)= 42.501667
- *Sx* = DESVEST.M(C5:C29) = 2.739829678
- *Sy* = DESVEST.M(D5:D29) = 16.29386388
- *r* = 0.95204683

The application of Pearson's Correlation formula generates 0.95204683; this value is considered a VERY STRONG Correlation between the number of Client Objects and the number of Server Objects, and it can be said that there is 95.20% confidence.

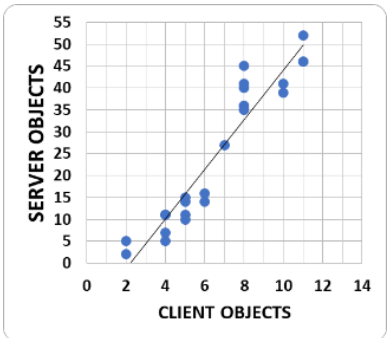

Figure 7. Pearson's correlation in application architecture.

B. Context diagram

For business analysis a context diagram is presented, this helps to understand the details and limits of the enterprise architecture proposed in this document; the flow of information within the diagram starts with the company's infrastructure,

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business architectures, information, applications and technology support communication and maintain information; the management of the company is carried out by human resources with the support of administrative guidelines and use of technological resources offered by products and / or services to customers, suppliers deliver products and / or services to the company, employees can be consumers of the company, the government intervenes in the regulation of the local market. All data flow within the company must apply information security to maintain reliability, integrity and availability, see Figure 8.

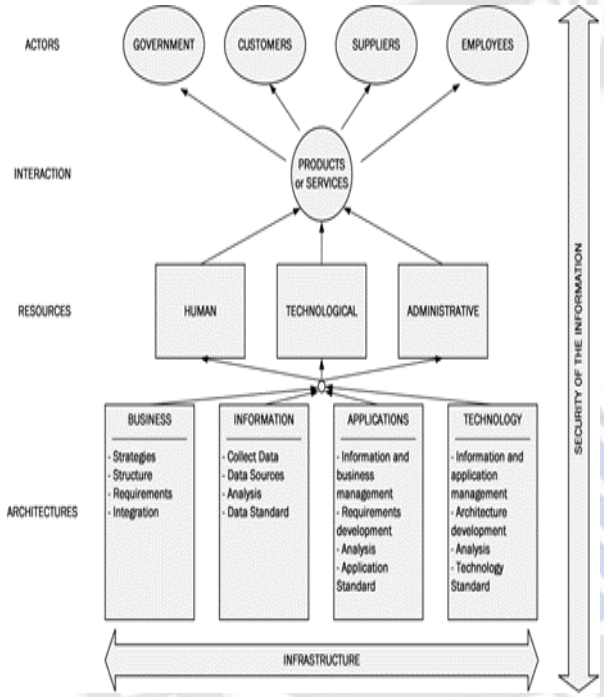

Figure 8. Context for resource optimization.

C. Algorithm on the flow of information

To express the passage of data to become useful information for decision making, an algorithm expressed in flowchart techniques is used. The actor can be a customer or employee or supplier generates the data for the company, this actor receives or delivers the product / service according to its type; human, technological and administrative resources manage all transaction data; then the business architectures, information, applications and technology are responsible for moving the data through the company; these data must be validated for their correct saving in the data warehouses that belong to the company, in case they are not validated they must be verified again and saved; this data is analyzed and visualized for correct and timely decision making, see Figure 9.

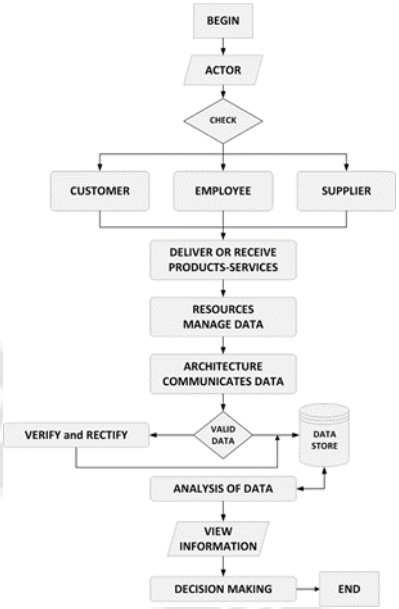

Figure 9. Algorithm on information flow.

The mathematical justification is based on the multiple regression analysis formula in Eq. (3.3) to verify the relationship of the dependent variable Enterprise Architecture EA with the independent variable's customers, employees, suppliers, business architecture, information architecture and application architecture:

$$y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + ... + b_k x_k \quad (3.3)$$

Here:

- An array of 20 rows and 7 columns is made, the rows represent the simulation for 20 companies, the 7 columns are:
- y = Estimated value of the dependent variable, EA is the percentage of enterprise architecture
- a = intersection
- $x_1, x_2, x_3 ... x_k$ = NC, NE, NS, BA, IA, AA independent variables
- $b_1, b_2, b_3 ... b_k$ = coefficients of independent variables
- NC: Number of customers
- NE: Number of employees
- NS: Number of providers
- BA: Percentage of business architecture
- IA: Percentage of information architecture
- AA: Percentage of application architecture

In the simulation the Regression function of the Scientific and Financial Data Analysis tool that is in the Microsoft Excel electronic sheet is applied, the results of the regression statistics are:

- Multiple correlation coefficient = 0.98206799, that is, there is 98.21% which is a high degree of association between the business architecture and the quantities / percentages, here the enterprise architecture depends on customers, human talent, suppliers, business architecture/information/applications.

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- Coefficient of determination R^2 = 0.96445754, that is, the algorithm has greater adjustment of the model to the variable Enterprise Architecture, it is very reliable, the algorithm is explained in 96.44% to the enterprise architecture.
- Adjusted R^2 = 0.94668631, that is, the data in the algorithm is adjusted by 94.66%, this implies that the Enterprise Architecture can manifest the variation in customers, human talent, suppliers, business architecture / information / applications.

Figure 10 shows data from the simulation and represents that the numerical data comes from a normal distribution, this gives it a high degree of correlation.

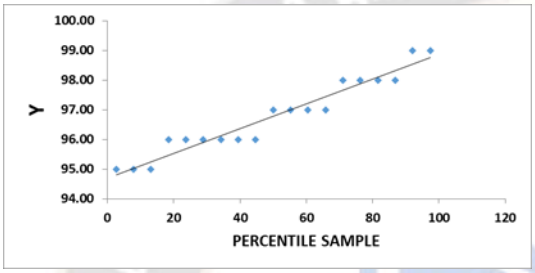

Figure 10. Normal probability.

IV. Discussion

Our result is justified with the use of correlation indices to check the internal consistency of architectures for companies, to justify enterprise architecture Cronbach's Alpha is used, and for internal architectures such as business, information and applications Pearson's Correlation is used, and in both correlations, it is applied for 25 companies. It is considered that the Technological Architecture is difficult to correlate because the technologies used in companies are very different or heterogeneous, for example types of connection, types of central servers, types of software, among others.

The proposals that propose a model and do not use mathematical support are: Reference[30], the authors confirm the creation of effective connections between stakeholders and strong level of competition; the authors[31], created an operational model of EA and its theoretical implications[32], security is inserted into an EA to minimize risks and vulnerabilities, the authors[33], recommend different models and architectures for decision-making in companies; the authors of [34], affirm with their work that there is a diversity of business models and the selection of a model depends on the strategies of the company; the framework of reference[37], use an evaluation method; the framework for certified personnel [38] and the infrastructure for optimizing academic performance indicators[39].

The proposals that propose a model and use mathematical support are: Ref. [35], uses the least squares equation to relate companies' observations to their suppliers[40], uses Cronbach's alpha to identify factors in adopting an EA; the method proposed in reference[41] uses an indicator for an EA.

The contribution of this research is the way to measure the correlation of the elements of an EA, that serves other models to verify the consistency of the architecture; the result is quantitative and delivers a clear level of correlation; the EA has 95% excellent reliability, the business architecture has 96.13% confidence, the information architecture has 95.89% confidence, the application architecture has 95.20% confidence, the algorithm has 98.21% Multiple Correlation Coefficient.

In our proposal, new future challenges arise such as: verifying the applicability of the EA, optimizing the extraction of data, optimizing the performance of the areas in a company.

It is not explained in detail about COBIT 2019 because it is an open standard, it is only proposed to be used as a guide to good practices in the strategic alignment of ICT and business management.

The values of the simulations can vary and generate lower correlations, from several simulations the highest correlations were selected.

V. Conclusion

It was concluded that the resources of a company can be optimized with the proposed model because it considers the governance of Information Security, here decision makers have a proposal with mathematical support with simulations in quantities of components within the architectures; the function of business management becomes simpler with a general model that can be adapted to various types of company to achieve success with the same principle of EA.

Conflicts of Interest

The authors state that they have no conflicts of interest.

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