

Certification Project

Financial Analysis through Systemic Methodologies

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Implementation of Systemic Methodologies to Address Common Problems in Businesses

Intend to

- Analyze
- Calculate
- Estimate
- Suggest improvements to the company's decision-making.

Systemic Methodologies to be studied :

1. CAUSAL LOOP DIAGRAMS

Causal link – Study causal relationships-Cause causation relationships.

2. DCSYM – Design and Control Systemic Methodology

A great deal of data and complex relationships between data -communications and control.

3. VSM-Viable System Model

Sustainable Model - Sustainability and Operation Assessment -Management of Actions - Capability of the Company to Achieve Its Purposes.

4. VENSIM PLE

Simulation Models – Computational - Numerical Outcomes.

1.CAUSAL LOOP DIAGRAMS

What's the influence? We look at what influence one factor brings to each other. Dependency relationships.

> Variables to be studied. Dependency relationships in the market and business world.

- *i.* New customers
- *ii. Time variable for the execution of a project*
- *iii.* Consumer Need
- iv. Price
- v. Competitors.



i.<u>Causal loop diagram – New customers</u>

The market share of the business grows, increasing the recognition and identity of the business. New customers increase and affect existing customers.



ii.<u>Causal loop diagram - Time variable for the execution of a</u> <i>project.

Remaining time affects the execution of a project. Remaining time affects productivity and desire for achievement and delivery. As the remaining time decreases, the pressure increases. As the pressure for the process increases, productivity increases (we assume that when the delivery time of a project decreases, we become more productive).

2. DCSYM – Design and Control Systemic Methodology

> Represents complex system structures in simplified communication systems.

Distinct system stakeholders.

> Clarifies the actual control and what areas it affects.

> Separates external factors from its system environment.

Organization chart through DCSYM Representation Present Structure



Present Structure problems

- Multiple communications and functions.
- > Multiple procedures with internal & external environment.
- Repeated communication and procedures for processing tasks.
- Information to the General Manager of each department separately for a total project. Non-functional operation.

Organization chart through DCSYM Representation New Structure



Solutions In The New Structure

- Changing the structure of the business. Two new roles are defined: Admin 3 and o Data Base Administration 3. 1 new job o Financial Controller 3.
- Changing communication between stakeholders and their departments. Improving communication with the definition of the Data Base Administrator as a "communication facilitator" between the three departments.
- Separate responsibilities in the Administration Department in Admin 1, 2, 3.

Organization chart through DCSYM Representation Control Present Structure





3. VSM Methodology–Viable System Model

- Focus on sustainability.
- > Ability to evolve and adapt to change.
- > Organizationally structured model.
- ➤ Address and adapt change.
- Distinct system stakeholders.
- Managing actions and functions.

<u>Consists of</u>

Subsystem S1:

Implementation Subsystem. Functional units of an organization.

- ➢ SALES (CRM, CSD, DM, CCI, CONSULTING) − products.
- > IT (SOFTWARE ENGINEERS, TECHNICAL) producing products.
- DATA COLLECTION the department that collects the information and communicates with the RESEARCH department and feeds it with data.
- DATA BASE- introduces the information into the data.
- RESEARCH producing research / communicate to S4 and provide data.

Subsystem S2:

Coordination Subsystem. Take actions to coordinate the functional units of an organization.

ADMIN functional processes.

Subsystem S3:

Control Subsystem. The actions and resources to improve each functional unit.

Internal / external feedback .

- > Admin
- ➢ Finance



Subsystem S3*:

Sporadic Audit Subsystem. It communicates with the S1-Functional Units and (obtaining information / audits / analyze).

Admin

➢ Finance

Subsystem S4:

Development Subsystem. It represents the business environment, the actions and resources- future strategy implementations. (Design, Development, Collection of information).

General Manager- self-referencing to S5.

Subsystem S5:

Policy Subsystem. It represents the rules and principles applicable to the business (business identity, moral values, operating rules).

General Manager.



Conclusions according to VSM Methodology.

Need for support in Admin and Finance departments, as well as administrate control, audit functions and operational tasks.

- ➢Need to support and control communication between the information collected from the external environment and the parts of the S4. Information is essential as it represents the "products" for the subsystem S1.
- ➢The communication problem and the need for new working roles came to be clear from the DCSYM methodology. It is important that methodologies have reached a common understanding and identified weaknesses.

4. Methodology VENSIM – Simulation Models.

> Mathematical expressions and relationships.

- > Numerical models-lead to optimal decision making.
- Data exchange case studies assessment of various situations adaption factors-possibility of evaluation of results.
- Investigate current behavior estimate future behavior.
- > Weaknesses in the representation of complexity.

✤ Useful and reliable conclusions.

Money worth-Model 2α



Money worth-Model 2b

Ηροσδωκομ.Αποτελ.

<Outcome>



Money worth – Model 2a-2b



Exported outcomes per month for one year period - Two comparable models 2a and 2b :

Time (Year)	"Money worth"		
	Model b	Model a	
Current	2028	2028	
1	1949.9	1985.8	
2	1871.8	1943.6	
3	1793.7	1901.4	
4	1715.6	1859.2	
5	1637.5	1817	
6	1559.4	1774.8	
7	1481.3	1732.6	
8	1403.2	1690.4	
9	1325.1	1648.2	
10	1247	1606	
11	1168.9	1563.8	
12	1090.8	1521.6	

Money worth-Model 2c



Income statement-Model 3a



Depending on the goals and the predictions, we are able to adapt the model to any change. In this case-model, we predict for the next year:

- increase in sales of services to 0.001
- decrease of sales of goods to 0.05
- increase in transportation expenses to 0.05
- increase in advertising expenses to 0.02
- decrease of office maintenance expenses to 0.05
- decrease of car rental expenses to 0.10
- *increase in insurance building expenses to 0.04*
- increase in repair expenses to 0.02
- *increase in other third payment expenses to 0.03*

Then, in model 3a, we will proceed first with the average method and then with the exponential smoothing method.

Comparable Model Outcomes

	Initially outcome- Model 3a	Forecast 1 –Model 3b	Forecast 2-Model 3c	Forecast 3-Model 3d-exponential smoothing method
"70.00 Sales of goods"	507.332	481.965	436.719	457.197
"73.00 Sales of services"	3.980.180,00	4.000.080,00	5.208.870,00	4.950.850,00
"64.01 Transport.exp."	10.274,60	10.788,3	15.110,30	14.626,00
"64.02Advertis.exp."	17.016,70	17.357	17.606,30	17.488,00
"64.07 Office maint.exp."	2.078,33	1.974,41	2.113,67	2.109,50
"62.05 Insurance for build.exp."	10.048,60	10.450,5	11.830,30	11.473,60
"62.07 Repair.exp."	7.105,9	7.248,02	6.760,45	6.829,00
"62.25 Car rental exp."	34.351,5	30.916,3	34.390,80	34.386,10
"62.98 Other third payment expenses"	3.098.360,00	3.000.541,00	4.208.380,00	3.986,380,00
Outcome	202.600	292.226	243.726	229.077

Comparable Model Outcomes



CONCLUSIONS

- In the present study, systemic methodologies were applied in the business world. The overall objective was to produce efficient, predictable and controlled results, so as to limit, as far as possible, the uncertainty in the decision making. Primary purpose of a business is to achieve their objectives. Through Systemic Methodologies, it becomes possible.
- The estimation of risks and variables is extremely difficult to identify, the uncertainties vary, the market and the business world are volatile, but if the calculation is frequent and the perception properly structured, then the executed results are promising for the company's security and viability.