

## THE IMPACT OF MANAGERIAL FLEXIBILITY IN DATABASES MAINTENANCE

Constantin Bran<sup>1\*</sup>  
Petronela Cristina Simion<sup>2</sup>  
Bogdan Tiganoaia<sup>3</sup>  
Doina Serban<sup>4</sup>  
Sorin Cristian Ionescu<sup>5</sup>

### ABSTRACT

*In a digital world, a database it's a business itself. In order to ensure success, customers invest considerable amounts in databases that contain rare quality information. A database contains, as the case may be, customized information according to the client's project and objectives. Permanent adaptation of an IT company in the field of databases to the diversified demand of the market shows management and organizational flexibility. To ensure a high standard of quality of the information hosted, database maintenance is a difficult task. This can only be achieved through flexible working procedures appropriate for each project. This study provides the most suitable methods by which an organization demonstrates originality and flexibility in meeting specific needs, offering quality and customer satisfaction.*

**KEYWORDS:** *managerial flexibility, company reorganization, business database, innovation services, organizational flexibility, quality of service, strategic management, information technology, project management.*

### 1. INTRODUCTION

Managerial flexibility can be described as an ability of the management to adapt to unforeseen circumstances, through roles and key decisions [1] [2] that concern carrying

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<sup>1\*</sup> corresponding author, Ph.D Student of the Faculty of Entrepreneurship, Engineering and Business Management – FAIMA, University Polytechnic of Bucharest (UPB), Address: 313, Splaiul Independentei, 6 District, Bucharest, CP 060042, [constantin\\_bran@yahoo.com](mailto:constantin_bran@yahoo.com);

<sup>2</sup> Lecturer Ph.D of the Faculty of Entrepreneurship, Engineering and Business Management – FAIMA, University Polytechnic of Bucharest (UPB), Address: 313, Splaiul Independentei, 6 District, Bucharest, CP 060042 [cristinas\\_upb@yahoo.com](mailto:cristinas_upb@yahoo.com);

<sup>3</sup> Lecturer Ph.D of the Faculty of Entrepreneurship, Engineering and Business Management – FAIMA, University Polytechnic of Bucharest (UPB), Address: 313, Splaiul Independentei, 6 District, Bucharest, CP 060042, [bogdantiganoaia@gmail.com](mailto:bogdantiganoaia@gmail.com);

<sup>4</sup> Associate Professor Ph.D of the Faculty of Entrepreneurship, Engineering and Business Management – FAIMA, University Polytechnic of Bucharest (UPB), Address: 313, Splaiul Independentei, 6 District, Bucharest, CP 060042, [dcserban@gmail.com](mailto:dcserban@gmail.com);

<sup>5</sup> Professor Ph.D of the Faculty of Entrepreneurship, Engineering and Business Management – FAIMA, University Polytechnic of Bucharest (UPB), Address: 313, Splaiul Independentei, 6 District, Bucharest, CP 060042, [sc.ionescu@gmail.com](mailto:sc.ionescu@gmail.com).

out organizational changes to meet the set goals [3] [4]. In fact, managerial flexibility is reflected in actions and specific methods such as adaptability, internal reorganization, improving procedures, upgrading technologies, continuing innovation, timely investments, etc. [5]. Managerial flexibility bears the unique imprint of the organization that has the ability to transform ad hoc to make profit. Well-trained staff capable of innovation are needed to implement managerial flexibility [6][7][8] and also quick adaptation to the needs and intra and extra-organizational pressures. In companies with IT specific that maintain and update databases, managerial flexibility requires good control to verify the operational management of DB - capacity, queries, security, technological flexibility [9][10] - the current performance compared to monthly, quarterly, yearly plan or taking some corrective measures necessary for "balancing" activities [11].

The goal is to have the guarantee that the company reaches its sales, profit and other targets set in the plan respecting commitments aimed at ensuring a certain level of quality.[12] It is also very important that the information provided to the client offers him a certain impact in a particular area of business [13]. Market segments and sales channels are taken into account in determining the profitability of various existing entities in DB for certain business areas.

Managerial flexibility targets a strategic control that involves checking the compatibility of the company's core strategies and opportunities that are offered [14][15]. The implementation plan for managerial flexibility is not possible without a mechanism of reorganization tracking whether the actions and goals have been achieved or not. When goals are not achieved, the manager must show flexibility [16], to make some corrections to change certain actions, strategies or target markets.

## **2. INFORMATION ABOUT THE PAPER**

In this paper, we have researched the impact of management flexibility in a company from the field of maintenance of databases for business (DB) – the main activity of this organization.

For understanding the mechanism of managerial flexibility, direct observation of the activities of the organization has been carried out, namely putting into practice the managerial vision, transforming it from one stage to another in a given unit of time and returning to its original shape.

## **3. PREMISES OF THE RESEARCH**

The research of this paper was conducted from February to September 2016 at the company called KST Ltd. that offers to customers database maintenance and upgrade containing economic data, largely confidential. Since information is a perishable commodity, all this information requires a permanent update and storage, and the effort to bring it to the quality level required by the customer requires a certain type of organization.

The company submitted to research was analysed in particular in the form of implementation of managerial flexibility that, within the limits stipulated by the

management level, has meant a rapid transformation process that entailed a process of internal reorganization in order to capitalize on a profitable demand. This led to the creation of new positions in the new organization chart, to empowering and motivating employees and managers. Technically speaking there were investments in performance database technology (networking, servers, software licenses etc). Consistent improvements were made on working procedures by the Quality Department according to specifications ISO 9001: 2008. All these organizational and managerial changes have not exceeded 24% additional costs, according to the data provided by the Department of Financial Accounting, the margin accepted by the management for the processing costs in this case being no more than 30%. Financial calculations showed that profit that was to be made from the new project was significantly higher than transformation costs. Any remaining surplus resources from the project - servers, computers, headsets, switches, can be easily recovered by sale, the company returning, as it is the case, to the form of its initial organization, the purpose being in this last stage to minimize expenses.

The company said it has a partnership with a US company that provides "obsolete" database which must be updated and maintained in a short period of time. The databases contain profiles of organizations subject to observation (called "entities") that contain information mainly on financial area: banks, investment companies, brokers, etc. These DB include information regarding the names of the companies, their activity, country of origin, the number and importance of shareholders (percentage), information from stock indicators of the profit and loss information on mergers, acquisitions, history of legal managers etc.

In a regular working day, to update the database, the operating analysts must process the daily equivalent of six entities (approx. 600 different fields with unique information) which represents a very high mental concentration effort. At the same time the IT department has to provide specialized technical support for databases, in tandem with the Production Department. Therefore, in order not to increase the dose of effort of operating analysts, but to increase the amount of information entered daily into the database, the management decided it was time to carry out some changes, both at the organizational chart, and in working procedures. Otherwise the customer's request could not be honored as quality or delivery date. In this context, to honor the request, the project has become a goal in itself, and for its realization adequate resources were allocated.

Adapting technology to the needs of working operators to increase the speed of work consisted of planning and securing web and intranet interfaces related to databases necessary for the rapid introduction of new data or query by interested customers. Easily accessible accounts were made available, using a username and password. Of course, the important information presented in the accounts created can be purchases online in the form of consultancy reports. In this way, the organization can provide customers with the necessary technical support (24/7) by offering specialized assistance (multilingual), email support, DB queries through dedicated web interfaces.

#### **4. METHODOLOGY OF RESEARCH**

In conducting the research, for the analysis of the impact of the managerial flexibility, direct observation method was used on a representative sample consisting of 30

employees of the Production Department. The duration was for 5 of the 8 months of the period April-August 2016 which coincided with carrying out the transformations in the project (implementation of flexibility), following the client request. The company chosen for the experiment accepted the provision of a certain set of data, the ones remaining confidential offering support to the research by consolidating the stated point of views. The 30 employees have been observed for the working speed of which was measured according to the quantitative and qualitative methods established by the organization in two distinct periods: before implementing the managerial flexibility, respectively after achieving this objective.

The company announces that a client asks for performing the maintenance and update of a database of 50,000 entities originating from older databases, the condition is to ensure data quality of min. 97%, in only 5 months. It also was noted that for the customer, the delivery of the 50,000 entities is very important, and this DB maintenance project is a strategic priority for their business.

The company analyzed the execution time in the classic organization for such a task and it was estimated routinely to 8 months, but the client wanted achieving the same performance, as it was mention above, in only 5 months. In these conditions, the new project becomes a organizational and technological challenge for the company that comprises initially the following departments:

1. *Audit Quality Department* that checks and ensures the accuracy and truthfulness of the information entered into databases and implements, updates and modifies operating procedures in accordance with customer requirements; ensures quality audits of all project processes.
2. *Production Department* made up of analysts / operators that provide daily database maintenance, processing and analyzing information from various accredited sources.
3. *IT Department* which provides the full technical support.
4. *Marketing and Sales Department* responsible for promotion, sales and relationships with stakeholders.
5. *Financial and Accounting Department* providing specialist support

A considerable advantage in such a project is that the organizational transformations for the IT companies can be achieved with minimal costs, the resources which can be "given" up are some employees and some work equipment.

After completion of the project, the organization can return to its original shape relatively easy because the temporary staff hired during the project will be made redundant.

In the fig. 1 it is illustrated the transformation process through which the organization goes, following the implementation of managerial flexibility, reflected in organizational remodelling.

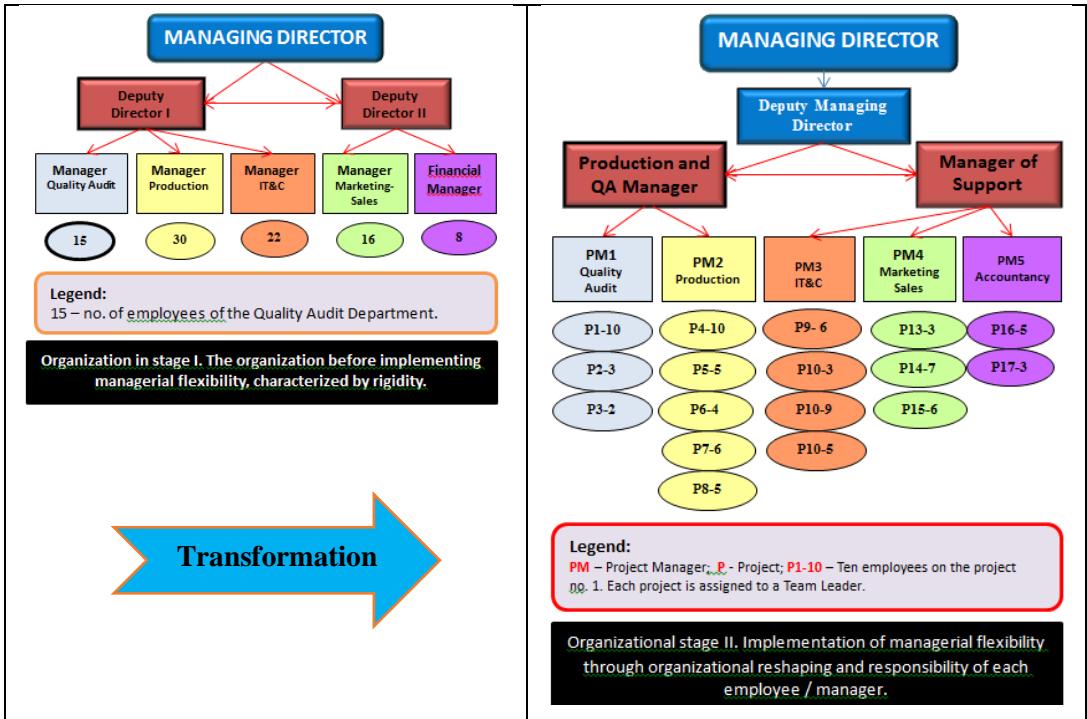
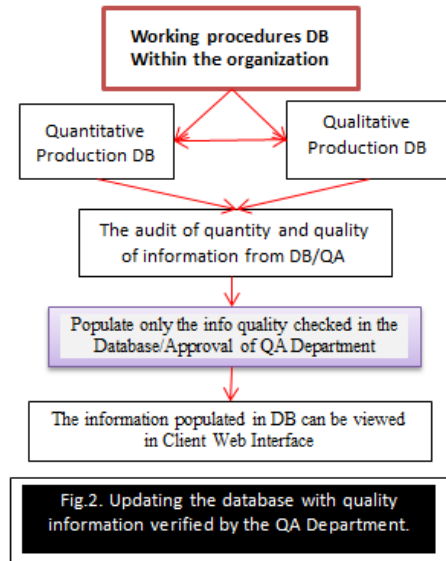


Figure 1. Transforming the organization after implementing managerial flexibility manifested in the foreground through internal reorganization

After transformation, the company has 18 new functions in the organization chart (temporary employees), a total of 117 against 99. For each of these functions the company requires a specific set of activities with responsibilities and corresponding rewards. Each Team Leader (TL) of the 17 has a number of subordinate employees (between 2 and 10), then a project manager for each of the 5 projects that the company manages temporarily. The two operational directors and deputy director oversee the entire process of transformation providing reports to the General Director. To meet the customer order (the project), the company decided to operate the necessary procedural transformations (fig.2), to invest in IT&C technical assistance, purchasing superior technology. The company programmers have customized the web interface to facilitate the work of operators to introduce as quickly as possible and error free the new information in the database.



#### 4.1. Quantitative and qualitative analysis

According to the data provided in terms of quantity, the company databases contain over 300,000 entities, of which between 4,000 and 10,000 are monthly maintained according to contract specifications and customer requirements. Centralized reports are made weekly and monthly, using a very simple algorithm, according to the indicators 1 and 2.

$$\text{Operative indicator} = \text{no. of total processed companies} - \text{no. of companies with errors} \quad (1)$$

$$\text{Quality index} = \text{total no. of entities without errors} / \text{total no. of processed entities} \times 100 \quad (2)$$

In terms of quality, the monthly workload per entity, established by contract, for each analyst, is min. 90%. For the monthly bonus, the company decided to have four quality intervals for each maintained entity in the database, according to Table 1:

- 1) 90-95%
- 2) 95-97,5%
- 3) 97,5% - 99%
- 4) 99%-100%

<b>Table 1. The quality bonus for the information entered into databases</b>		
<b>Crt. No.</b>	<b>Percentage of quality</b>	<b>Bonus (EURO) per entity (Approx. 100 fields)</b>
1	90 - 95%	1.5
2	95 - 97%	2
3	97,5% - 99%	2.1
4	99% - 100%	2.3

For each error from the profile of an analyzed entity, we subtract a percentage ranging between 5 and 100%, depending on the severity of the error. The Quality Audit Department is responsible for checking

the quality of data entered by employees in databases. Approx. 10% of processed entities are randomly audited monthly, and the final quality is communicated as a weekly and monthly report.

#### 4.2. Factors of managerial flexibility

The experiment has highlighted a number of factors of managerial flexibility which are absolutely essential for the actions taken, without which the organization would not be able to adapt in time to the customer request. The main factors that made possible the managerial flexibility in the organization studied are presented in Table 2.

Table 2. Factors of managerial flexibility

<b>Crt. no.</b>	<b>Factors of managerial flexibility</b>	<b>How the implementation of managerial flexibility works at the company level</b>
1	<i>Adaptive organizational culture</i>	Managers and employees cultivate and maintain an organizational culture based on adaptive feedback, conflict resolution, motivation and responsibilities.
2	<i>Vision</i>	All organization plans converge to optimal customer service.
3	<i>Strategy</i>	Managers adopt a flexible and innovative thinking in the activities they coordinate.
4	<i>Organization</i>	The company has adapted to the requirements of the economic environment assuming the risk of the internal reorganization.
5	<i>Motivation</i>	The organization has developed methods and strategies for material and non-financial motivation.
6	<i>Productivity</i>	It is calculated by a qualitative and quantitative algorithm. Based on this, managers and employees calculate their own rewards / bonuses.
7	<i>Quality</i>	It is calculated by a simple algorithm, known to all employees.
8	<i>Communication</i>	Feedback is daily practice at all hierarchical levels.
9	<i>Technology</i>	Managers ensure in due time the necessary investments to develop and implement new technologies.
10	<i>Training</i>	Each new employee benefits from a training with a dedicated trainer. Also, all employees receive the same training sessions to change procedures, which are different from one project to another.

### 4.3. Student Test

To analyze the impact of managerial flexibility on DB, the *Student test on paired samples* was applied. Thus, the 30 analysts in the Production Department were evaluated on the daily amount of processed entities. The total quantity of entities were subjected to observation before and after the implementation of managerial flexibility through the methods agreed by management and presented above. The purpose of the Student t-test is to see whether managerial flexibility had a significant influence on employee productivity. Daily output is expressed quantitatively in Table 3, for each operator, noting relevant differences between the two periods: April-May 2016.

Table 3. Calculation of the quantitative differences (d & d<sup>2</sup>) for each operator before and after implementation of managerial flexibility at intra-organizational level

<b>No. of operators /analysts</b>	<b>The daily amount per operator before implementation, April 2016</b>	<b>The daily amount per operator after implementation August, 2016</b>	<b>d</b>	<b>d<sup>2</sup></b>
1	6,1	6,2	-0,1	0,01
2	6,4	6,5	-0,1	0,01

3	5,9	5,9	0,0	0
4	6,3	6,7	-0,4	0,16
5	6,7	7	-0,3	0,09
6	6,8	6,9	-0,1	0,01
7	6,4	6,3	0,1	0,01
8	6,2	6,5	-0,3	0,09
9	6,5	6,8	-0,3	0,09
10	6,5	7,1	-0,6	0,36
11	6,4	6,9	-0,5	0,25
12	6,7	7,3	-0,6	0,36
13	6,2	6,4	-0,2	0,04
14	6,1	6	0,1	0,01
15	6,6	7,2	-0,6	0,36
16	6,3	6,7	-0,4	0,16
17	6,8	6,9	-0,1	0,01
18	6	6,1	-0,1	0,01
19	6,6	6,9	-0,3	0,09
20	5,9	6,4	-0,5	0,25
21	6,6	6,7	-0,1	0,01
22	6,8	6,8	0,0	0
23	6	6,5	-0,5	0,25
24	6,7	7	-0,3	0,09
25	6,5	6,6	-0,1	0,01
26	6,5	6,9	-0,4	0,16
27	7	7,4	-0,4	0,16
28	6,4	6,5	-0,1	0,01
29	5,8	6,3	-0,5	0,25
30	6,2	6,4	-0,2	0,04
			<b>-7,9</b>	<b>3,35</b>

Calculation of *average* ( $\bar{d}$ ) and *standard deviation* ( $s_d^2$ ) using *Student t-test* (t) for samples with paired data, *formulas 3-6*:

$$\bar{d} = \frac{1}{n} \sum di = \frac{1}{30} (-7,9) = -0,26 \quad (3)$$

$$s_d^2 = \frac{1}{n-1} \sum (di - \bar{d})^2 = \frac{\sum di^2 - (\sum di)^2/n}{n-1} = \frac{3,35 - (-7,9)^2/30}{30-1} = 0,04 \quad (4)$$

$$s_d = \sqrt{0,04} = 0,2 \quad (5)$$

$$t = \frac{\bar{d}}{s_d} \sqrt{n} = -6,89 \quad (6)$$

*Bilateral test* is applied, advancing the following assumptions:

$H_0$  = Restructuring of the department has no influence on employee productivity;

$H_1$  = Restructuring of the department does have influence on employee productivity.



Tabel 4. t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	6,396666667	6,66
Variance	0,095505747	0,141793103
Observations	30	30
Pearson Correlation	0,831471488	
Hypothesized Mean Difference	0	
df	29	
t Stat	- 6,893195628	
P(T<=t) one-tail	7,10535E-08	
t Critical one-tail	1,699126996	
P(T<=t) two-tail	1,42107E-07	
t Critical two-tail	2,045229611	
<i>Version: Excel 2007</i>		

## 5. RESULTS

In this paper the alternative hypothesis  $H_1$  is accepted, which means that managerial flexibility had a significant impact in the qualitative and quantitative dynamics of production, increasing the flexibility of the organization.

We reject the null hypothesis  $H_0$  as  $|t| \geq t_{1 - \alpha/2, v}$ , precisely  $|- 6,89| \geq 2,045$ , the corresponding value of the t distribution from the Student table of values for  $v=29$  degrees of freedom and a threshold of significance  $\alpha = 0,05$ .

## 6. LIMITATIONS

By "management flexibility" in the present paper, we show the perspective of management according to which the implementation of managerial flexibility is found factually in the company reorganization to achieve an ad hoc project for making profit.

To honor this type of demand (ad-hoc project) the management shows flexibility and decides the allocation of resources, modifying / adapting procedures, hiring temporary staff, upgrading IT technology and providing motivations according to accomplishments. Also it was considered that for calculating the impact of managerial flexibility we can use different statistical methods, in this case the chosen model being considered the most appropriate. Some information could not be used in the research as they are confidential, but helped strengthen and expressing the point of views in this paper.

## 7. CONCLUSIONS

The company managed to finish the project in the agreed time frame in terms of quality and quantity required by the customer (50,000 entities at the quality of min 97%, in 5 months). From this point of view, we can say that the research has reached the target. The model presented is original, has practical value and can be used in certain types of organizations, mostly in the services sector, where implementation of managerial flexibility has reduced costs and risks without putting in difficulty the company to return to its initial form.

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