Varazdin Development and Entrepreneurship Agency and **University North**
in cooperation with
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
Polytechnic of Medimurje in Cakovec

Economic and Social Development

49th International Scientific Conference on Economic and Social Development Development – "Building Resilient Society"

Book of Proceedings

Editors:
Darko Dukic, Tomasz Studzieniecki, Jasmina Grzinic

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CONTENTS

DEMI MODELS` APPLICATION IN VARIANCE ANALYSIS

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ABSTRACT
Variance analysis is a key task of controlling. The quality of this analysis is a key precondition for the manager to make decisions. The task of the controller is to produce analytical reviews of the variances in timely manners. Demi models, which perform variance analysis, are being developed and applied for such reviews. It is important to understand that the Demi model is an analytical comparison of two sets of the same structure. The synergic effects of the partnership between managers and controllers mostly depend on the quality of diagnosis provided by these models. In this paper, we will present two of the most important and complex models of classical deviation analysis: analysis of sales variance and direct material variance analysis. Business result distributions are a plan and a realization. On the basis of such diagnostics, the determination of therapy, which is expressed in the form of a corrective action plan, follows.
Keywords: *diagnose, target, variance*

1. INTRODUCTION

In the Mission of Control (ICV, 2013) it is emphasized that analyzing often means also the breakdown of individual deviations into their parts, eg review of deviation values (variables and deviation parameters). In doing so, the reporting rules that controlled for this segment of the control business were the following:

- Controllers give feedback on results achieved compared to planned values, past accomplishments, business "benchmarks".
- It allows data analysis and is a prerequisite for corrective action.
- Controllers inform in a decision- and problem-oriented manner.
- The manager should quickly get the essential information, identify and understand what the task and problem is, how to fix some discrepancy.
- Controllers provide recipients with relevant and corresponding fact information and factors:
  - which may be affected upon or
  - which can be held responsible for or
  - for which goals have been defined and agreed.
- Controllers create reports for managers (not against or about them).

Analyzing deviations, which includes determining the value of variance of individual factors and causes, in the process of controlling belongs to the stage of Diagnosis, that is, the group of controller jobs - Deviations. In practice, the analysis of the discrepancy between the achieved and the target, ie planned, dominates. Of course, in practice there are many other combinations whose application depends on the type of analysis. Deviation analysis uses models we have called Demi models.

2. DEFINITION OF VARIANCE ANALYSIS

The results of applying the Demi model in the deviation analysis are analytical reviews of the values of the deviation variables of the two distributions of the unified structure. They are mathematically expressed both in absolute amounts and in relative (as a rule, percentage) values. These values are not only mathematical results or even numerical figures. They tell managers which are good, less good or bad positions. The Indian writer Rabindranath Tagore (the first non-European Nobel laureate in literature) said in wisdom: "You will only be able to remove a thorn if you know where it is." There is a positive correlation between the development and application of model analysis of deviations in the efficiency and effectiveness of business systems. The more sophisticated analysis models are and the more they are applied in life, the more established, diagnosed factors and variables are, the better the possibilities for effective therapeutic measures and interventions. With quality and timely analysis of deviations, the manager can make better decisions. And that leads to faster and better healing, ie better health and boosting immunity. The importance of applying the Demi model in the analysis of deviations is particularly great, but not so much in the historical dimension, but in the proactive (pro futuro) dimension (action plan, correction plans, improvement plans). Of course, controlling must also respect the principles of efficiency and economy of operations. In order to achieve this, controlling in its business is based on a quality information system (ITS). Informatics is the key to controlling success. Without quality ITS, there is no "real" controlling. That is why the controller must be the initiator, catalyst, co-creator, chief business analyst, moderator of system solutions in the IT system, which is based primarily on the philosophy and techniques of basic access and business intelligence. The analysis of variance models should be developed and applied within the framework of analysis of deviations in managerial, and preferably in financial reports. This paper presents examples of some of the most important Demi models (analysis of variance in sales and cost of materials), as part of the application of the Contribution calculation format in the Income Statement, which Deyhle calls MRA - Management Result Account (Blazek, Deyhle, Eiselmayer, 2011). This format corresponds to another of the options "offered" in paragraph 103 of International Financial Reporting Standards (IFRS, NN 136/2009), according to which in the statement of comprehensive income, expenses are calculated according to their cost function or "cost of sales method".

3. CLASSIFICATION OF DEVIATION ANALYSIS IN DEMI MODELS

In the analysis of distribution deviations, four groups of individual variance analyses are most important:

1. Contribution margin variance analyses
   a) Analysis of the variance in sales revenue
   b) Analysis of direct material cost variance
   c) Variance analysis of direct energy costs
   d) Analysis of direct labor cost variance
   e) Product variance cost analysis
   f) Sales variance analysis of sales bonuses
2. Variance analyses of other net income positions
   a) Analyses of the variance of operating margin positions I (production)
   b) Analysis of the variance of operating margin positions (other operating income and expenses)
   c) Analysis of variance in the position of the development margin
   d) Analysis of the variance of the net financial result
3. Analysis of variance in balance sheet items
   a) Asset variance analyses
   b) Analysis of capital variance

c) Commitment variance analyzes
4. Analysis of cash flow variance

The syntheses and combinations of individual variance analyses create complex deviation analyses that can provide managers with excellent complete bases for good business decisions and thus better management of goals.
Typical examples of these complex variance analyses are:
- Analysis of variance in total revenues
- Contribution margin variance analysis
- Operating margin variance analysis
- Analysis of employee variance and labor costs
- Analysis of asset variance and cost of assets

In this paper, we will present two of the most important and complex models of classical deviation analysis:
- Analysis of variance in sales revenue
- Direct material variance analysis

Business result distributions are a plan and a realization.

3.1. Analysis of variance in sales revenue

Sales revenue means operating income of the core business, in this case revenue from the sale of products. The quality of the variance analysis (analysis of variance) is essentially determined by the level (depth) of the sales data structure. In this case, the variance analysis model recommends applying a sales-level deviation analysis. In order to meet such level (depth) of analysis, there must be an appropriate data structure for each sales ident that provides such analytical elaboration of the deviation with respect to:
- structure of the sales price that correlates with the structure of the profit and loss account (MRA concept): the selling price of production, the parts of the total selling price for: sold development, financing a specific investment, bonuses to customers based on labor productivity…);
- a statement of the sale price in the original currency in which the delivery is invoiced;
- local currency exchange rates against the original currencies (daily exchange rates);
- data on quantities of sales ids in comparative distributions (plans, forecasts, achievements, simulations).

Analysis of variance in sales revenue has three main factors (elements) of deviation:
- sales volume
- selling prices
- foreign exchange rates

3.1.1. Impact value of sales volume

The impact value of the sales volume is determined as the sum of the multiplications of the differences of the quantities of individual sales ids of the basic selling prices:

$$Qv = \sum[(qi1 - qi0)x\ pi0]$$

Where it stands that:
Qv - the value of the impact of deviations in sales volume
qi1 - the amount of idents n sales in period 1 (e.g., realized)
qi0 - quantity of idents n sales in period 0 (eg planned)
pi0 - sale price of idents n in period 0 (example: when we determine deviation achieved with the planned, as a rule, we use the planned sales as a weightprice.

3.1.2. The value of the impact of changes in selling prices
The value of the effect of changes in selling prices is determined as the sum of the multiplications of the quantities of period 1 and the difference in prices in the original currencies weighted at the base of exchange rate 0.

$$Psv = \sum \{qi1\ x\ [(pi1 - pi0) x\ fo]\}$$

Where it stands that:
Psv - the value of the effect of a deviation of selling prices on sales revenues
qi1 - amount of idents sales in period 1 (e.g., realized)
pi1 - selling price of the ident i in period 1
pi0 - selling price of ident i in period 0
fo - foreign exchange rate for period 0 (eg exchange rate)

For the purposes of deeper analysis of variance analysis, calculations of deviations by major elements of the sales price structure are used. The algorithm is identical, only the values of the individual elements of the selling prices are applied instead of the values of the total selling prices. In this way, we can determine what impact the change in net selling price had, and what effect the change in part of the development price or some other part (element) of the sales price had.

3.1.3. The value of the impact of foreign exchange rates
The value of the impact of foreign exchange rates is determined as the sum of the differences in the multiplication of quantities sold in period 1 by the prices of period 1 weighted by the exchange rates of period 1 and period 0.

$$Fsv = \sum_{i=1}^{n} \{(qi1\ x\ pi1\ x\ f1) - (qi1\ x\ pi1\ x\ f0)$$

Where it stands that:
Fsv - the value of the effect of changes in foreign exchange rates on sales revenues
qi1 - amount of ident sales in period 1 (e.g., realized)
pi1 - selling price of idents k in period 1
f1 - foreign exchange rate of period 1 for each change (eg realized)
fo - foreign exchange rate for period 0 (eg exchange rate)

The sum of the values of these three factors gives the value of the total difference in sales revenue over two periods:

$$\boldsymbol{Bp = Qv + Psv + Fsv = S1 - S0}$$

Where it stands that:
S1 - Total revenue from the sale of period 1 (eg, realized)
S0 - Total revenue from the sale of period 0 (eg planned)

Table 1: Example of spreadsheet analysis of sales variance (program / product)

ID Sales program ID Product	Planned S_0	Realized S_1	Difference S_1-S_0	Sales Bridge S_1 vs S_0 (in kkn)			
				Quant.	Price	Currency	Total
a	b	c	d=b-c=Bv	Q	P	F	Bv
Program 1	77,041	71,273	-5,768	-4,078	-721	-969	-5,768
Product 0101	22,342	20,224	-2,118	-1,583	-271	-264	-2,118
Product 0102	18,490	17,496	-994	-721	-153	-120	-994
Product 0103	26,964	23,869	-3,095	-2,351	-352	-392	-3,095
Product 0104	9,245	9,684	439	577	55	-192	439
Total (*)	**256,270**	**244,569**	**-11,701**	**-6,618**	**-1,796**	**-3,287**	**-11,701**

Source: authors` work

The quality and precision of analysis of the variance of the sales model depends on whether we apply an analytical or synthetic approach. In the analytical approach, the analysis of variance with the use of model variance analysis the calculation is based on the elements or factors of deviation by individual sales idents. Such an analytical approach, with the development of master data matrices (master data) ensures the highest quality diagnostics of any master data that is associated with the sales ident directly and indirectly. For example, we can determine how much a business result is affected by changes in the prices of individual products for a particular customer, and thus the sales manager for that customer. This creates arguments for negotiating with customers, but for realistically evaluating the achievement of individual goals (key performance indicators). The calculation with the use of aggregate quantities results in insufficiently precise diagnostics and gives an approximation of the influence values of individual variables in the analysis of variance. Namely, at the level of a group of sales ids (eg sales programs), we only have average values of the factors (variables) of a particular distribution. The problem is that there is almost always a different distribution structure, that is, a different weighting value (the amount of sales ids of a different structure).

3.2. Direct material cost variance analysis

This analysis of variance falls into the category of very demanding models, both methodologically and data-wise. The minimum requirements for a quality analysis of the variance of direct material and energy costs per sales are:

- The master data system, the most important of which are: norms, classifications, pricing structures and organization;
- Tactical plans (as a rule, annually and operationally), which provide a deep analytical structure and dynamic dimension (as a rule at the calendar month level);
- Application of work orders in the production management and monitoring system;
- A system of material goods business that provides all data on each input and output ident, and according to each work order, ie cost carrier;
- Up-to-date, orderly, accurate and credible postings in analytical (material) bookkeeping and financial accounting.

Direct material cost items are the most important part of the contribution margin. Since this is the position of the contribution margin, the calculation of the value impact using the relative values is methodologically determined.

The value statement of the impact of a change in the share of material is determined as the product of the difference between the share of direct material (dm%) and the realized sales revenue. Material cost share (dm%) is the ratio expressed in% between direct material cost (Dmv) and sales revenue (S):

$$dm\% = \frac{Dmv}{S}$$

Algorithm for determining the total value impact of direct material (value of total direct material cost variance analysis):

$$Bdv = (dm\%_1 - dm\%_0)\ x\ \ S1$$

Where it stands that:
Bdv - Value impact of change in direct material participation
dm% 1 - share of direct material cost in the sale of period 1
dm% 0 - share of direct material expense in the sales revenue of period 0
S1 - income from the sale of period 1

The analysis of the variance of direct material costs is an analytical review of the deviations of two or more distributions, which, as a rule, represent specific periods. Most of the time, we make an analysis of the discrepancy between the realized and the planned or forecasted. However, it is often applied in the context of horizontal analysis and analysis of deviations of two or more periods in history (eg current period compared to the same period of the previous year).It is important to do these analysis always, even when the total direct material participation in the two periods is the same or similar. The reason is very simple. The same percentage of participation may result from a different combination of factors. For example, the assortment factor of sales can bring 2% positive effect, and on the other hand increased rejects and unfulfilled production savings can cause 2% negative effect. With a diagnosis like this one cannot and should not be calm, because the economy of production brings 2% pp of lost profits! The controller produces deeper analysis and is the main partner to the manager for adopting an action plan with elements of crisis management. And without applying the model of variance analysis, everything would look right.The structure of direct material cost variance analysis contains a number of factors that can, in different business combinations, affect the realization of discrepancies:

Table following on the next page

Table 2: Factors influencing the realization of deviations

Group	***Factors (variance analysis elements)***
Sales	Assortment of sale
	Selling prices
	Sales price production
	Sales price of financing development
	Sales price of financing investment
Financial	Impact of exchange rates on sales
	Impact of the course on procurement
Production and technology	Installation of regenerates
	Rejects in production
	Production savings
Purchase	Purchasing prices-suppliers
	Purchasing prices-logistics
	Purchase savings
	Purchase savings-prices
	Purchase savings-quantity bonuses
	Purchase savings-logistics
	New inputs
Other	Change of stock
	Mathematical gap
	Unknown

Source: authors` work

3.2.1. Direct material variance analysis - Impact of sales assortment

The sales assortment represents the composition (combination) of different sales ids (products) in the total sales. Often the term "sales mix" is used in business jargon. It is very unlikely that in two or more sales distributions they may have the same combination of sales ids. As not all sales idents have the same price structure, then as a rule differences in the structure of the contribution margin appear. For example, higher sales of products with above-average materials input result in a lower contribution margin. And vice versa. The value of the impact of the sales assortment is determined as the difference between the multiplications of the weighted mean of two or more distributions (product combinations) and the distribution sales revenue 1 (periods1).

Algorithm:

$$Bdmv = \left\{\left[\frac{[\sum_{i=1}^{n} s1i \ x \ dm\%1i]}{[\sum_{i=1}^{n} s1i]}\right] - \left[\frac{[\sum_{i=1}^{n} s0i \ x \ dm\%0i]}{[\sum_{i=1}^{n} s0i]}\right]\right\} x \ S1$$

$$Bdm\% = \frac{Bdmv}{S1}$$

Where it stands that:

Bdmv - the value impact of the sales assortment on the participation of direct material
s1i -sale of ident sales i in period 1 (sub-totals 1)
s0i -sale of ident sales i in period 0 (subtotals 0)
dm% 1i - share of direct material cost (%) of period 1 for the product i
dm% 0i - direct material cost share (%) of period 0 for product i
S1 - income from the sale of period 1
Bdm% - relative impact of sales assortment changes on material participation

Table 3: Example of calculating the impact of the assortment of sales on material costs

Assortment of Sales	% mat.	Month 06 gg							Period S1gg						
		Plan 06ggpl	**m06p %**	**Realiz. 06gg**	**m06r%**	**gap06 %pp**	**Bridge 06gg**	**gap sales 06 gg**	**Plan S1ggpl**	**ms1p%**	**Realiz. S1gg**	**ms1r%**	**gap s1%pp**	**gap sales**	**Bridge S1gg**
a	m%	c	d=bxc	e	f=exb	g=f-d	h	i=e-c	s0	m0%	s1	m1%	Δm%	s1-s0	Bmav
Program 01	42.9%	**14,812**	13.5%	**12,214**	12.9%	0.6%	**(206)**	**(2,598)**	**77,041**	12.9%	**71,273**	12.5%	0.4%	**(5,768)**	**(1,234)**
Program 02	43.6%	**10,897**	10.1%	**8,259**	8.9%	1.2%	**(209)**	**(2,638)**	**57,859**	9.8%	**50,114**	8.9%	0.9%	**(7,745)**	**(1,657)**
Program 03	78.5%	**5,501**	9.2%	**6,109**	11.8%	(2.7%)	**48**	**607**	**34,579**	10.6%	**36,974**	11.9%	(1.3%)	**2,395**	**512**
Program 04	42.8%	**3,982**	3.6%	**3,583**	3.8%	(0.2%)	**(32)**	**(399)**	**20,162**	3.4%	**20,546**	3.6%	(0.2%)	**385**	**82**
Program 05	42.3%	**3,472**	3.1%	**2,718**	2.8%	0.3%	**(60)**	**(754)**	**18,554**	3.1%	**15,959**	2.8%	0.3%	**(2,595)**	**(555)**
Program 06	46.2%	**2,411**	2.4%	**2,400**	2.7%	(0.4%)	**(1)**	**(11)**	**15,602**	2.8%	**15,168**	2.9%	(0.1%)	**(434)**	**(93)**
Program 07	75.0%	**2,363**	3.8%	**1,720**	3.2%	0.6%	**(51)**	**(643)**	**12,111**	3.5%	**11,978**	3.7%	(0.1%)	**(133)**	**(28)**
Program 08	67.4%	**1,344**	1.9%	**1,192**	2.0%	(0.1%)	**(12)**	**(152)**	**7,289**	1.9%	**7,213**	2.0%	(0.1%)	**(77)**	**(16)**
Program 09	66.5%	**790**	1.1%	**654**	1.1%	0.0%	**(11)**	**(136)**	**5,449**	1.4%	**5,642**	1.5%	(0.1%)	**193**	**41**
Program 10	66.9%	**467**	0.7%	**307**	0.5%	0.2%	**(13)**	**(160)**	**2,478**	0.6%	**2,440**	0.7%	(0.0%)	**(38)**	**(8)**
Program 11	76.7%	**424**	0.7%	**583**	1.1%	(0.4%)	**13**	**159**	**2,544**	0.8%	**4,025**	1.3%	(0.5%)	**1,481**	**317**
Program 12	64.5%	**184**	0.3%	**700**	1.1%	(0.9%)	**41**	**516**	**998**	0.3%	**2,382**	0.6%	(0.4%)	**1,384**	**296**
Program 13	60.1%	**286**	0.4%	**23**	0.0%	0.3%	**(21)**	**(264)**	**286**	0.1%	**73**	0.0%	0.0%	**(214)**	**(46)**
Program 14	49.3%	**88**	0.1%	**37**	0.0%	0.0%	**(4)**	**(51)**	**485**	0.1%	**131**	0.0%	0.1%	**(355)**	**(76)**
Program 15	49.6%	**81**	0.1%	**61**	0.1%	0.0%	**(2)**	**(21)**	**472**	0.1%	**481**	0.1%	(0.0%)	**9**	**2**
Program 16	45.0%	**34**	0.0%	**19**	0.0%	0.0%	**(1)**	**(15)**	**194**	0.0%	**129**	0.0%	0.0%	**(65)**	**(14)**
Program 17	49.9%	**32**	0.0%	**13**	0.0%	0.0%	**(1)**	**(18)**	**165**	0.0%	**41**	0.0%	0.0%	**(124)**	**(27)**
Total	**50.8%**	**47,170**	**50.8%**	**40,593**	**52.1%**	**-1.3%**	**(521)**	**(6,576)**	**256,270**	**51.4%**	######	**52.4%**	**(1.0%)**	**(11,701)**	**(2,504)**

incurred
Source:authors` work

Interpreting individual columns:
% mat. - participation of materials in the planned selling price
m0%, m1% - unit (weighted) percentages of the planned share of materials by products whose sum gives the average material consumption
gap% pp (g, n) - difference of unit percentages realized and planned in percentage points
Bmav - the value of the impact of a change in the sales assortment on the share of materials
sales gap - variance of realized and planned sales in absolute terms
S1 - first semester

3.2.2. Direct material variance analysis - Impact of changes in foreign exchange rates
The value of the effect of changes in foreign exchange rates is the sum of the values of the effects of changes in foreign exchange rates on sales revenues and the effect of changes in foreign exchange rates on the cost of direct material (exchange differences in purchases).

$$Bdfv = Bdfsv + Bdfnv$$

The value of the effect of changes in foreign exchange rates on sales revenues on the share of direct material costs It is determined as the product of the value of the impact of changes in sales prices (Pv) and the planned share of direct material cost corrected for the percentage of assortment impact. Algorithm:

$$Bdfsv = Fv\ x\ (dm\%0 + Bdm\%)$$

Where it stands that:
Bdfsv - effect of foreign currency exchange rate changes in sales revenue on share of direct material cost
Fv - Impact value of the impact of changes in foreign exchange rates on sales revenues
dm% 0 - direct material cost share (%) of period 0
Bdm% - relative impact of sales assortment changes on direct material cost share

The value of the impact of changes in foreign exchange rates on direct material costs (foreign exchange differences in purchases). It is determined by multiplying the amount of consumption of direct material ids and multiplying the difference in the purchase prices of distributions 1 and 0 (eg realized - planned) at original prices (eg in €) and the exchange rate of foreign currencies in distribution 0 (eg plan).
Algorithm:

$$Bdfnv = \sum_{i=1}^{n} \{Qni\ x\ pn1i)x\ (f1 - fo]\}$$

Where it stands that:
Bdfnv - the value of the impact of changes in purchase prices on material participation
i - unit ident k
Qn - quantity of purchase
pn1 - purchase price of direct distribution material 1 (period 1) in original currency
f1 - foreign exchange rate for period 1 (eg realized exchange rate for direct material consumption)
fo - foreign exchange rate of period 0 (eg exchange rate)

3.2.3. Direct material variance analysis - other impacts
For other influences (o): Installation of regenerates, Rejects in production, Production savings, Purchase savings, Purchase savings-prices, Purchase savings-quantity bonuses, Purchase savings-logistics, New inputs a unique algorithm is applied. The impact on the cost of direct material is the product of the difference between the relative values of the distributions (share in% of individual impact in relation to sales revenues) and realized sales revenues.
Algorithm:

$$Bdmoi = \sum_{i=1}^{n} (\frac{Ui1}{S1} - \frac{Ui0}{So})\ x\ S1$$

Where it stands that:
Bdmoi - Value of other impacts on direct material cost share
Ui1 - Impact value i in distribution (period 1)
S1 - Sales revenue in distribution 1 (period 1)
Ui0 - Impact value i in distribution 0 (period 0)
S0 - Sales revenue in distribution 0 (period 0)

3.2.4. Analysis of direct material variance - specific effects of changes in production inventories
The effect of the budget change of inventories of work in progress and finished goods (production inventories) on the share of direct material costs exists when the structural model of the calculation of inventories change is not applied.

The impact of the calculation of the change in production inventories on the cost of direct material is the multiplication of the difference between the relative values of the distributions (share in% of individual impact in relation to sales revenues) and realized sales revenues.
Algorithm:

$$Bdpz = \sum_{i=1}^{n} \{[(\frac{zdi1}{Zi1} - zds)\ x\ \frac{Zi1}{Si1}]\ x\ S1\}$$

Where it stands that:
Bdpz - the value of the impact of production inventory change
zdi1 - share of direct material value in the value of product inventories i in distribution 1 (period 1)
Zi1 - value of product inventories i in distribution 1 (period 1)
zds -standard amount of direct material value share in product inventory value
S1 - Distribution revenue 1 (Period 1)
Si1 - Product sales and distribution revenues 1 (Period 1)

The incorrect statement of contribution margins will occur, as a rule, if we report a change in the value of inventories by function expenses based on some standard parameters.
For example, when 60% of the cost of direct material in the cost of inventory is predefined, and 65% of the cost of direct material is realized, the effect of 5% pp will be erroneous. This part may be mistakenly "shifted" to eg indirect labor costs. Therefore, it is recommended to work with a structural model of the calculation of the value of production inventories.

3.2.4.1. Mathematical gap
This influence should be determined, as changes in material participation can also occur when all other impacts are "at zero". Namely, changing (+/-) the dividend and divisor for the same nominal amount, without any other changes, the quotient changes. For example, if the sales price from 100 is increased to 101, and for the same amount the purchase price is increased from 50 to 51, then the share of materials is no longer 50% but 50.5%.

3.2.5. Unknown
As a rule, the sum of individual impacts will not produce 100% impact, and in that case we classify the difference as unknown. Of course, this number should not be
significant (not more than ± 0.1%).

Table following on the next page

Table 4: Example of recapitulation of material cost variance analyses

Code	Variance elements (bridge) Realized vs. Planned	Absolute (kkn)		Relative (%)	
		06 gg	S1gg	06 gg	S1gg
B1	**Assortment of sales**	**(521)**	**(2,504)**	**(1.3%)**	**(1.0%)**
B2	**Net price affect**	**(281)**	**(460)**	**(0.7%)**	**(0.2%)**
12	Sales prices	(562)	(920)	(1.4%)	(0.4%)
21	Purchasing price-suppliers	406	585	1.0%	0.2%
22	Purchasing price-logistics	(125)	(125)	(0.3%)	(0.1%)
B3	**Currency effect (fx)**	**(121)**	**(505)**	**(0.3%)**	**(0.2%)**
13	Currency effect on sales	(403)	(1,684)	(1.0%)	(0.7%)
23	Currency effect on procurement	282	1,178	0.7%	0.5%
B4	**Economic**	**404**	**(235)**	**1.0%**	**(0.1%)**
24	Procurement savings	82	(478)	0.2%	(0.2%)
31	New materials	(125)	(125)	(0.3%)	(0.1%)
32	Installation of regenerates	198	468	0.5%	0.2%
41	Scarce in production	75	(588)	0.2%	(0.2%)
42	Production savings	174	488	0.4%	0.2%
B9	**Other**	**0**	**0**	**0.0%**	**0.0%**
91	Mathematical gap	0	0	0.0%	0.0%
92	Change stock-gap	0	0	0.0%	0.0%
∑	**Variance total**	**(519)**	**(3,704)**	**(1.3%)**	**(1.5%)**

06 gg – June next year
S1 gg – first semester of current year
kkn - in thousands of kn
Source: authors` work

On the basis of such diagnostics, the determination of therapy is outlined, which is expressed in the form of a plan of corrective measures, that is, a flax of continuous improvement, ie an Action plan (see the example below).

Table 5: Example of Action Plan (Control tower)

Ordinal number	Task	Responsible person1	Deadline	First KT	Last KT	Deadline	Progress	Notes	Status
ct 0201	Negotiations with Program buyers 01.02.05 (with a more favorable sales contribution margin) to cover the negative effect by the end of the year. Develop a report and action plan.	Sales Manager	31.07.gg	15.07.gg	22.07.gg	31.07.gg		Conversations done. The report is expected in due time.	☺
ct 0202	Analyze the realized inventory turnover, identify weaknesses in procurement and logistics, and establish an action plan for measures that will amortize the negative variations in S1gg. Develop a report with an action plan.	Logistics Manager	15.08.gg	01.08.gg	08.08.gg	15.08.gg		Operational responsibility of the holder of responsibility and development of an action plan in progress.	😐
ct 0203	Analyze the acquisitions of procurement savings, identify the "weak points" in the implementation of the procurement savings plan and develop an action plan that will amortize the negative deviations in S1gg. Develop a report with an action plan.	Procurement Manager	31.07.gg	15.07.gg	22.07.gg	31.07.gg		Activity started but not of good quality. Interviewed with the Procurement Director, who requested that the activities be accelerated.	☹
ct 0204	Analyze the failure of the implementation of replacement materials in 06gg to adopt an action plan to ensure the installation of these replacement materials. Develop a report with an action plan.	Production Manager 2	15.09.gg	15.08.gg	01.09.gg	15.09.gg		Majority of the analysis done, a higher number of activities defined. An acceleration of activity is sought.	😐
ct 0205	Develop a production action plan to ensure continued write-offs decrease. The minimum goal is to cover the negative effect in Q1gg.	Production Manager 1	31.08.gg	15.08.gg	22.08.gg	31.08.gg		Measures initiated, more activities defined. It is expected to be completed on time and in good quality. Possible effect from the set goal.	☺

Source: authors` work

4. CONCLUSION

Applying quality analysis of model variance in deviation analyses is of great importance in the process of managing and making decisions aimed at achieving the set goals. The lack of quality analysis of deviations results in poor diagnostics, which consequently results in poor therapy, that is, a poor action plan of corrective and improvement measures. And without proper therapy, the achievement of goals becomes only uncertainty and coincidence.The quality of model variance analysis in deviation analysis depends on IT solutions, and in particular on the quality of the database structure, as well as an orderly and up-to-date system of cost accounting, financial and managerial accounting. This is why controlling, as part of its process of continuous improvement, must:

- constantly develop its ability and skill in business diagnostics and concentrate creatively in developing and applying model variance analyses;
- be the moderator and catalyst for the development and implementation of orderly processes based on modern IT solutions with the use of a basic approach;
- be an accounting partner in the development of models and solutions in managerial, financial and cost accounting.

The excellent partnership of controlling, accounting and informatics creates the conditions for timely and quality diagnostics, which is crucial in maintaining and improving the company`s health bulletin.

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