Environmental accounting and the FADN as a basis of model for detecting the material flow cost accounting

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Abstract: The quality of the reported accounting data and the way these data are used are becoming more and more risky aspects of business management. Many instruments are already used to identify the creative accounting and the frauds and new ones are still being searched for. One of the suitable approaches is the use of the database Farm Accountancy Data Network (FAND) and environmental indicators. Monitoring of material balances and wastes in the form of environmental costs and also parts of the material balances can be a basis for the creation of the model for the detection of the material flow cost accounting. The model uses other balance areas as well: financial, energy-related and legislative. The paper presents a proposal of the model and its possible use for the discussion. The proposed model was applied to the real conditions of two real production companies with trading activities. Its strengths and weaknesses are evaluated.

Key words: creative accounting, environmental costs, fraud in accounting, fraud detection models, material flow in cost accounting

Frequent intentions of the management and owners of a business are to gain subsidies or loans, to conceal revenues or to reduce the income tax. This means they attempt to manipulate the economic results of the business and its properties in line with their intentions. The 'manipulations' are often conducted using the creative accounting, often without a larger attention from users of financial statements. Therefore, creative accounting is often called fraudulent, cooking of the accounting books, aggressive, a kind of art, acrobatics, the massage of users and figures, etc. There is no exact definition and the opinions vary. Some authors consider it a common part of the practices, still others see it as deceitful and inappropriate. The particular techniques and practices of the creative accounting are combined, supplemented; they also overlap to some extent. The reported accounting values then differ from the reality (Svoboda 2007). Therefore, we need to look for new and new methods to identify these intentions (Sarbanes-Oxley Act 2012). This can be helped by several information databases that are used for other purposes but which can serve well for ours. These are mainly:

– Material Flow Cost Accounting (MFCA), the method of environmental costs from the environment of production companies. This method monitors the components of the process with focus on the material balance and its financial expression.
– Farm Accountancy Date Network (FADN) – the accounting data network of agricultural companies within the authority of the EU and the associated countries. Among others, the FADN reacts to environmental parameters. By the means of modifying the accounting system – the adaptation of statements – we can determine the volumes of consumption of the monitored substances, which can serve as an indication of the balance breaching and thus a signal for the necessary system check.

The aim of this paper is to react to the development of the creative accounting and its manifestations within the context of the methods of environmental accounting and the FADN by proposing a detection method for the detection of the material flow cost accounting (DMFCA). We consider relevant to submit the proposal of a new method from the group of detection models for discussion and to expand the current group by a model that is usable without any great demands concerning theoretical knowledge or a special software, available for common companies with the production and trading activities. At the same time, we endeavour to find its weaknesses and to find out whether these can be tackled beforehand.

MATERIALS AND METHODS

The initial stage deals with the collection and analysis of identification models and the FADN options. The set of the creative accounting identification models was divided into several groups; we focused in more detail on the identification of fraud and measures for their remedy by the means of mathematical-statistic oriented models. E.g.:

– Identification and measure proposals by the means of computer models and software. Authors Grazioli et al. (2006) created a computer model designed for the diagnostics of the cases of frauds. Its success rate was 85%. By contrast, the auditors proved a high error rate and a high rate of negligence that was marked as fraud with 45% success.
– Bayes method using models focused on the behaviour of accounting and other entities (Bolton and Hand 2002) and the related mathematics oriented models testing variables (Arminger et al. 2007).
– Other models based on the prognosis of the fraudulent financial statements using the data mining technique (Kotsiantis et al. 2007) or the calculation of the possible occurrence and the probability of the unrevealed cases calculation (e.g. Wuerges and Borba 2010).
– Fraud suspicions and automation of procedures to detect frauds. Two case studies should be carried out; one of them fraudulent, the other not (Albrecht and Albrecht 2012).
– Models of the fraud strategic detection, one of them being the mathematical model used for the financial modelling – the Beneish model (2010). It contains eight variables and it is possible to detect the manipulation of accounting data based on the financial statement of the company by calculating the M score.

On the other hand, there are models of the environmental character, based mainly on monitoring of the environmental costs as a method for the environment maintenance and production with the purpose of keeping the environment quality in relation to accounting, e.g. the Environmental Management Accounting (IFAC 2005). Especially the impacts of the costs connected with the environmental aspect in relation to cost savings are explored (Kovanicová et al. 2010). Based on the monitoring of environmental costs and balances, when creating the model usable for the detection of the creative accounting, we consider the environmental accounting a discipline of: the Environmental Management Accounting (EMA) with two subsystems: the Monetary Environmental Management Accounting (MEMA) and the Physical Environmental Management Accounting (PEMA). PEMA is the way of monitoring the environmental aspects in physical units. The method itself is not new, but its application in accounting is new, see the draft of the ISO 14051, integrating into the ISO 14000. In the conditions of the Czech Republic, we must mainly refer to the studies Hyršlová and Böhmová (2004), EMA (2005), Loriaszová (2005) and Hyršlová et al. (2006, 2009). There are also many foreign studies, e.g.: Bennet et al. (2003), Robertson and Swinton (2005) and ISO (2011). The benefits of the method application in the environmental accounting as a new accounting method contribute to the recording and calculations of costs. We can assume that another benefit may also be the possible function of the environmental accounting – the inspection function.

Our proposed model presents new possibilities for the application of the methods of environmental costs for the detection of accounting errors and fraud. The input data are taken from the business records of environmental costs, which also monitor the cost of the environmental protection, including waste in the form of a negative product.

Material flows are expressed in financial terms (in monetary units), including the valuation of waste, or in kind (in physical units). The main benefit of the model is the fact that it extends the use of the method of environmental costs into the area of checking for the accuracy of accounting and reporting in an enterprise. It includes not only assets expressed in the financial terms, but it also monitors particularly the items of the material balance, including waste expressed in kind. Any deviation in the material balance may be a sign of an error or fraud. In order to confirm a discrepancy, a balance expressed in monetary terms is created and at the same time, it is then compared with the material balance.

Another source of information and methods is the agricultural practice, both specifically – the method of good economic practice – and generally – the FADN. It means that in this context, we can also use the theory provided by the established reporting practices of agricultural companies in the EU using the production and environmental quotas (Accounting for Agriculture and Rural Business 2013).

The traditional financial accounting only presents financial data (Sedláček 2010); however, by a modification – an adaptation of the accounting system – using the statements we can determine the volume of consumption of the monitored substances that

can serve as a base for environmental indicators. For example, by the means of the FADN, the data on inputs of agricultural production are gathered and the emissions caused by the production are estimated. These values are mostly determined by some limits, mainly the mentioned quotas. These are for example the consumed types of fertilizers in their chemical expression (the quota of farm fertilizers in nitrates or the consumption of artificial fertilizers P_2O_5 and K_2O in kg per ha), the formulation of the recording of production rights or the number of pigs. These data then serve for the inspection of environment loading by the undesirable substances with the support in accounting.

The FADN serves as a sophisticated statistical method in agriculture and together with the environmental accounting; it forms the basis for the identification of the possible distortions or frauds in business accounting. The essential data are the balances. However, we have to find a compromise between wishes and the possible solutions, mainly as concerns finances and the capacity. Therefore, a great attention is devoted to activities dealing with the data collection in the FADN in the sense of risk minimization; at the same time, there is a cost limit. If all data related to emissions are used for accounting (recording), the collection is cost intensive and it is not easy for farmers to gain the required data (farmers are obliged to have the accounting entries on mineral flows, they pay for the excessive stocks). It is estimated that the costs of the collection of the last 20% of data increase by 80% (Poppe and Meussen 1999). The accounting software allowing for the collection and processing of the data on the use of minerals, pesticides, energies and water has been developed. The data are gained at the level of farms using the statements and allocated to products. A similar software has been used e.g. in the Netherlands at the level of farms or accounting institutions for some time now. The potential risks in accounting are analysed to improve the data quality. Based on the assessed data and the experience with the FADN (applications and publications of Pacioli 2013), the data on inputs have been collected and the emissions caused by this production have been estimated. The volumes of consumption and emissions of the monitored substances can be used for the indicators. These values are usually determined by some limiting quotas. These are followed in the financial statements (kinds and values) and they are subject to audit (Bohušová et al. 2012). The data are considered to be of a high quality and they can be integrated in other systems; they can be used for the applied research. The development and utilization of the software including the presented database is a great deed of the FADN and it is available to every user. If the necessary data are available and the conditions are met, environmental models can be processed based on the FADN data and the results can be used for the national monitoring (computer processing, data on the Internet). Other options consisting in the assessment of the dynamics and profitability of inputs are also mentioned. According to the opinion of the Dutch Research Institute LEI DLO in Haag, this would be appropriate to the process using the Activity Based Costing method.

For our purposes, we tend to use the specific LCA (Life Cycle Assessment) method, using the estimate of balance of the cycle of substances. Two ways of the data collection are being implemented. The data are derived from the data on the environmentally significant costs per product in farms (data on fertilizers, pesticides and energy, sometimes emissions). The consumption of fertilizers and pesticides per plant is known, the flows between farms are also monitored; the term recording the environmental impact was coined for monitoring (the mineral and energetic balance). Further, the balances of minerals, energy, water and pesticides are estimated. The data collection methods are done either in the engineering line, i.e. by monitoring the technical coefficients in the practice for the purposes of orientation or the strategy selection, or in the accounting line, which is more accurate but also more expensive.

The mentioned data collection methods are employed:
(a) within the farm accounting,
(b) within the concept of the engineering approach.

on (a) In some cases, the effect has to be estimated. Environmental models are not available. The accounting approach to the data collection for the LCA is suitable when the data from more than one company need to be monitored.

on (b) The engineering approach is based on technical coefficients of the processes of an average farm in the region. The coefficients are usually gained through experts with a sufficient experience and also through questionnaires from farmers. The advantage is the concentrated effect of the data collection into a form of technical coefficients of the processes as these need to be known, including their changes and development.

Comparing the two methods, we can see that the engineering approach to the data collection for the

LCA leads to complete and relevant data at low costs of processing; however, the accuracy and coherence with other information need not be ensured at all times. We think that they can be provided by the information on the waste disposal and the calculation of balances. The accounting method has the disadvantage that it is costly and it can be subjective. Looking at the data collection as a piece of accounting information about a side product or waste, we can also use the calculation of the limit price. The advantage of the method is that the distribution is available, the data representativeness is proven, the data are checked and the integration with other types of data is facilitated. We are of the opinion that the accounting method itself need not correspond to the requirement of a truthful and faithful picture of accounting if the creative accounting is used. In the case of the FADN, the data are provided especially to the policy creators and researchers. Not only because of this, it is necessary to respect the significant changes in the information and communication technologies, which have more impact on the accounting approach than on the engineering one.

RESULTS AND DISCUSSION

Based on the analyses of models used for the indication of accounting errors and frauds, the analyses of the possible contributions towards this area, we chose the platform of environmental costs, the practice of the FADN agricultural companies. On this basis, the material, financial, energetic and legal balances were processed.

Šoljaková (2009) justly emphasizes a new dimension of the managerial accounting, the implementation of strategic calculations into the tactical and operational level. The effect of behavioural interests, tricks with the budget creation, the failure of calculation systems has been commented on similarly by e.g. Doyle (2002); the purposefulness and possible versions of cost allotting, the characteristics of calculations have been discussed by Ogerová and Fibírová (1998). On the one hand, the significance of the behavioural approach mainly of the company management is emphasized, on the other hand, the MFCA is a method, which besides the mentioned monitoring of environmental aspects including monitoring of the waste disposal duty (e.g. Art. 16 of the Act on Waste – duties of waste generators) monitors the waste costs, the rational consumption of material, energy, and investments. The method can be used in the area of calculations. This method can also be applied to monitoring of the possible leaks of records of the production parts, revenues, or taxes. Concealing the volume of production, the amount of revenues and the like are the risk aspects of the creative and fraudulent accounting; Schiffer (2010) assesses the issue of evaluation of the internal control system level and the possible internal audit in the context of important connections and risks.

We assume that the material and other balances could manifest some imperfections that could be proved. This corresponds to the approaches based on the Data Mining (e.g. Sharma and Panigrahi 2012), focusing on the utilization of the company databases. Naturally, even here we need to take into account the limitations of the information capacity of data.

A simple detection model DMFCA was created and partially applied to the conditions of a selected company. According to the basic law of nature, the mass and energy are conserved; neither the financial sources can disappear – they have to pass through the accounting of the company. The waste has a value as well. The waste as a negative product within the MFCA is not only the waste in a narrow sense of the word – it includes the used energy, materials and other inputs that are not transformed into the positive products and leave the company without use. We can thus create the balances; use the technical standards and the valid legislation for the treatment of specific cases.

Basic balance of an enterprise based on environmental accounting

Based on the above mentioned environmental accounting, the following four basic types of balance by the material, energy and financial metabolism of an enterprise and in compliance with the legal framework can be identified:

– by the on hand material turnover (the time limitation is important): inventory turnover, adjustments, badly saleable goods, loss standard, records of price reduction, machine failures, stealing, processing in other enterprise, off-balance items – records of foreign material;
– by the energy line, the consumption of electric energy;
– by the financial line, the financial balance of purchase and sales, including the reduction of prices;
– by the legal line, in compliance with all standards and regulations.

I. Balance of material

The material balance is focused on the records in natural items. Both products, the desirable and negative (waste and emissions) ones, are produced in each operating division. The main links can be defined as:

– The total material balance stores: (materials and goods, work in process – WIP, defective products, scrap) (1)

– Purchase – sale = store (2)

– Storage = storages of: materials + WIP + products + substandard products to discount + defective products (3)

– Purchase – (storage of materials + WIP + products + substandard products to discount + defective products) – sale = waste (4)

– Balance in the selected units (kg), scaled to the calculation unit

– The total consumption = production + unfinished products incl. + substandard + defective products + waste (5)

By measuring to a similar product or standards, we can express the rate of consumption and the waste rate and losses:

aQ = consumption/consumption of standard similar product (6)

bQ = waste + defective products, fact/waste + defective products, standards, similar product (7)

where:
aQ = consumption rate
bQ = waste rate, loss

The mean and weighted average are sufficient for the calculation of standards (measuring, weighing) for the multiple lines of production. The classic comparison with the standard norms of consumption should be done with a comparable product of a competitor, if possible.

II. Balance of energy

The energy balance is focused on monitoring of the energy consumption and the resources spent. Energy consumption takes place at a time, so the monitoring is based on the reported hours and standard hours. The aim of the energy balance is to identify and evaluate the level of energy consumption.

aE = energy consumption per production volume/ standard, the average of previous years (8)

where:
aE = rate of energy consumption

Important links in the construction of the energy balance are as follows:

– The structure of machines, change inputs, machine hours, hours worked-wages, the reported energy consumption for waste disposal provisions, machine repair, off-balance sheet, loan machines, changing techniques and technologies.
– The energy consumption in unit (department): production, sale, use or waste disposal.
– The resolution of energy production (Ep) and energy waste (Ew).

III. Financial balance

The financial balance monitors the inputs and production including waste financially. The financial balance is based on the equality of costs and revenues without margins. The cost of purchase + processing cost + cost of storage (stock) + cost of sales + energy costs + waste costs – discounts (including discount payment condition) = sales – margin (+ other expenses + profit, the result achieved from the trading)

CB + CP + SC + CS + EC + CW – PD = Sales – TM (9)

where:
CB = cost of buying, purchase
CP = cost of processing
SC = storage costs
CS = cost of sales
CW = costs associated with the of waste management
EC = energy costs, provisions
PD = provided discounts
TM = margins in trade activities

We expect that in the next step, we should consider the following hypothesis to be based on the particular enterprise's financial balance and its assessment:

– It is advisable to construct calculations concerning the positive and negative product balance as well.
– It is useful to analyse the evolution of variable and fixed costs – the hypothesis: The ratio of the reported variable and fixed costs may decrease in the case of the hidden, stolen production.
– The budget of indirect, overhead costs: margin + cost of sold production can be variable; as well as the structure of the schedule allocation basis (cost unit).

– The development of profit margins over time and in comparison to similar enterprises without large fluctuations of external factors should remain similar; the shared control can be with the tax offices.

IV. Legal balance

The legal balance is used to control the strict compliance with the related laws, incl. all paragraphs of the Waste Act (WA) under the obligation to report the methods of the waste disposal. Legal balance contributes to the confrontation of the reported and real values. It aims at the provisions of the WA, e.g. its §12 (General Obligations) and §16 (Obligations of Waste Producers).

The application of the model to a specific enterprise

The method mentioned above has been applied to two enterprises:

(1) a large enterprise, which is engaged in the made-to-order production

(2) a small enterprise with its own production and sales, which is presented for illustration.

The example is based on equations (1) to (5); currently other relationships will be also used in the next stage of research.

Input (purchase) – stores – sale = 0 (10)

Entry data: Purchase of 2000 kg of raw material, 80 CZK/kg, the potential consumption 0.5 kg per a piece (pc), in total 160 000 CZK. Sale of 2800 pcs, standard consumption of the raw material, costing unit 1 pc. Sale price of 1 pc is 60 CZK. The example calculations are using the classical procedure (A) and using the MFCA (B).

I. Material balance

A. Classical procedure: monitoring of the material balance, based on the Equation (10).

purchase	2000 kg	hypothetically for 4000 pcs of product	material consumption 0.5 kg
storage	600 kg	hypothetically stored 1200 pcs	
sale	1400 kg	2800 pcs sold	

The sold pieces are of weight 300 kg, i.e. 600 pcs; material consumption 0.5 kg/1pc.

B. The MFCA method: monitoring of the material balance, the use of analytical records in the case of storage

– purchase	2000 kg
– products	140 kg
– unfinished production	160 kg
– rejects	100 kg
– waste	200 kg
– total in storage	600 kg
– sale of 2800 pcs	1400 kg

Costing unit calculation, 1 pc of product

Purchase of 2000 kg, i.e. hypothetically 4000 pcs, in the storage material for the hypothetical 1200 pcs out of 2400 kg.

Costing unit calculation in kg of material:

– products	0.117
– unfinished production	0.133
– waste	0.083
– rejects	0.167
– material consumption per unit	0.500

The expenses of the negative product are reflected twice: first as the unused raw material, second within the costs of the waste disposal. In the case of rejects, the revenues may cover a part of fixed costs. In this context, it is recommendable to monitor the following:

– the records of sales, stocks in the storage based on analytical accounts (3);
– the calculated and reported volume of waste, incl. the way and costs of its disposal (or whether it exceeds the standards or the comparable values significantly), also the complaint records, discount records, defect records;
– relations to the tax inspection, the natural technological losses.

II. Financial balance

The financial balance is rather of a supportive information character. It may also be the initial motive for the exploration of the material balance or other balances. At this moment, we only base the exploration on the revenues in relation to the material balance. In this sense, it may be a consideration based on finding an unbalanced or lost material, together with other considerations, e.g.:

– Margins in trade activities (TM); the revenues (price) are higher than the common prices (goods without exceptional quality); the difference depends on the volume of sale, i.e. we can estimate a higher margin divided between the supplier and consumer. If the calculation and the TM correspond to the common values, the supplier is probably to blame.

– TM; the revenues (price) are lower (without the recorded discounts or complaints) and the calculated TM per the reported volume of goods or sales is under the average (usual) TM – an indication of the mutually compensated trades or company tunnelling (siphoning money off), we can assume an internal mutual "compensation" trading.

MFCA impact on statements

A. The classical procedure: capturing production in the Profit and Loss Statement

Profit and Loss Statement	CZK	Debit	Credit
Revenues	168 000	311	601
Material consumption	160 000	501	112
Change in state of products	11 200	123	613
Change in state work in progress	12 800	121	611

112 – Material in storage; 121 – Work in progress; 123 – Products; 311 – Receivables from trade relations; 601 – Revenues for company's own products; 611 – Change in state of work in progress; 613 – Change in state of products

Profit and Loss Statement without applying the MFCA (CZK)

Revenues	168 000
Change in state of products and work in progress	24 000
Material consumption	–160 000
Value added from operation	32 000
Profit and loss before taxation	32 000

B. The MFCA method: capturing production in the Profit and Loss Statement; production of rejects – loss in material, waste generation – standard (consumption monitored in a special analytical account).

Profit and Loss Statement	CZK	Debit	Credit
Revenues	168 000	311	601
Material consumption	160 000	501	112
Material depreciation – rejects (losses)	8 000	54X	501
Material consumption – waste (consumption up to standard)	16 000	501AE	501
Change in state of products	11 200	123	613
Change in state of work in progress	12 800	121	611

501 – Material consumption; 501AE – Material consumption in analytical recording; 54X – Deficiencies and losses

Profit and Loss Statement monitoring by the MFCA (CZK)

Revenues	168 000
Change in state of products and work in progress	24 000
Performance consumption	152 000
Value added from operation	40 000
Operational profit and loss result	–8 000
Profit and loss before taxation	32 000

The MFCA application also has an impact on reporting but its extent depends on the specific accounting procedures. These are mainly the definitions of "natural or technological losses", i.e. the consumption up to the standard. In the presented example, the waste is used as a standard consumption and the material used for production of rejects as a loss. The statements created applying the classical approach and the MFCA method differ in the added value.

Weaknesses of the DMFCA model and the possible ways to tackle them

The presented balance relations were used to illustrate the considered procedure usage in the case of production and sale of fabric products of a specific small company and a large company with the customer-made production. Based on the results, so far we can say that the application of the balance model proved to be beneficial. However, it is necessary to devote enough attention to the risk identification related to the information capacity of the model.

The method presumes a detailed monitoring of the production and sale in the form of monitoring the remnants, rejects and waste and releases from storage based on the purpose (sale, liquidation, loss). A responsible management usually requires information about these circumstances. Another important aspect is setting of the standards of consumption and natural losses, which can be checked as well as the waste reporting. The waste should be reported including the way of disposal, the balance should be maintained. Another type of risk that can follow from the DMFCA application is the intentional "accounting" production of rejects, which are then sold at signifi-

cant discounts. However, this is rather dependent on the ethics of the company and it is not a system error like the wrongly set standards of consumption. The frequency of such sales and the identification of customers should not bring problems. The actual accounting in the MFCA has impacts on the financial statements and indicators. If a company accounts for the rejects and the material consumption brought about by the complaints (also fake complaints) as a loss above the standard, it uses the Account 549 – Deficiencies and Losses. Thus these expenses do not enter the performance consumption. Again, the balances should be maintained.

To compare the development between companies in time, we consider e.g. the following traditional approaches recommendable and not difficult:

– the use of regression curves in the area of the material balance, energetic balance, revenues;
– a mutual ratio between the components of the material balance, monitoring the development in time + considering the stock turnover in time,
– the waste disposal in time, including the compliance with legal regulations.

CONCLUSION

When two or three trade elements (supplier, producer and consumer), or more elements of the company management are operating together, it is hardly possible to find and prove the leakage of revenues or material. In this situation, the DMFCA balance model based on the MFCA method, which was originally implemented by legal standards as a support for the environmental accounting, could find its application. At the same time, its application could contribute to more quality in the company management. The system of balances has been established: the material, energetic, financial and legal; if the material balance does not match, it is necessary to perform an analysis of the reported indicators. Users of the accounting, the tax offices as an example of the external ones, would be helped to recognize the overestimation of costs, the evasion of taxes; the internal users profiting from this would be the company management who would gain better information for their use. The model application can contribute to a better quality of the internal inspection mechanisms, e.g. in the field of the stock management, sale inspections, a more accurate view of the performance consumption components, and its more detailed evaluation and analyses.

A separate monitoring of the waste and rejects will also show the company its financial sources related to them. This may cause some pressure on their further use, mainly as concerns the further processing or sale. Another aspect of the separate monitoring of the waste and rejects is the expression of the production efficiency directly in the accounting. Transfers in the analytical accounts of rejects and waste can serve as warning signals indicating the risk aspects of the production process.

We are convinced that this accounting method can be considered as one of the elements used for the risk management and operational decision making. Usage of the DMFCA in accounting provides a more accurate view of the components of the performance consumption and its more detailed analyses. Naturally, this can work provided that also the weaknesses and the possible risks of the method are considered. However, these risks can be usually tackled and the intentional overestimation of the consumption standards including its impact can be determined. The waste should be reported including the way of its disposal; the balances should be maintained. Another type of fraud that is considered for the DMFCA application is an intentional "accounting" production of rejects, which are then sold at a discount. However, this is more a matter of the company ethics and not a system error like the wrongly set standards of consumption. The frequency of such sales and the identification of customers should not pose problems. The accounting in the MFCA has impacts on the financial statements and indicators. If a company accounts for the rejects and material consumption brought about by complaints (also fake complaints) as a loss above the standard, it uses the Account 549. These expenses then do not enter the performance consumption. Again, the balances should be maintained.

The detailed monitoring of the production and sale is administratively demanding, e.g. in the form of monitoring the remnants, rejects and waste and their releases from storage (for sale, liquidation, as loss). However, these types of knowledge belong to a responsible managerial activity: the knowledge of storage stated in physical units, the storage cards. A risky aspect is using of the method: checking by a crown and accounting by B. The difficulty with the DMFCA model can be presented by setting of the consumption standards and the natural technological losses.

We assume that the model, once elaborated, could be used in the conditions of agriculture, mainly in

the field of the assessment of the truthfulness of the collected data, as well as for the trading activities of the companies.

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