

ELABORATION AND IMPLEMENTATION OF TRACEABILITY ASSURANCE SYSTEMS SUNFLOWER

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Abstract

The proposed work is to reveal the technical, economic and administrative systems development to ensure traceability chain sunflower. Components involved in these processes are to ensure traceability system design, adaptive management information requirements traceability, design and implement procedures for withdrawal of products, improving the system to ensure traceability of external verification and accreditation system to ensure traceability and ensuring economic efficiency specific traceability. Research methodology is centered on case study in SC Ulerom S.A. the city Vaslui unit that analyzed the implementation of the traceability system and economics effects of it. The results obtained show that traceability system implemented by the unit is functional but it costs is not justified in economic results achieved in the short term.

Key words: food safety, traceability, return

Traceability provides customers with traceability of a product road map to obtain raw materials to finished result product. It is the direct consequence of increasing consumer confidence in food purchased and therefore long term, the economic efficiency. Also, check the route through traceability of food products with a significant impact for end users to legislative bodies and for manufacturers of food processing (Mencinicopschi Gh., 2005).

The main objective of traceability is to ensure total control over the products through individual and group identification, to intervene if the process of manufacture or market links with non-compliance is found or disadvantages of the product (Motoiu, R., 1994).

In the food industry, traceability becomes particularly important because recordings are essential both legally and ethically. Traceability is important for producers and consumers. This is a solution for consumer protection and a means of control and responsibility for determining the product chain actors (Ioancea, L., Kathrein, I., 1989).

To ensure order and control over production achieved in the organization should implement a system of identification and traceability. It is intended to provide information about where the causes of nonconformities and will help reduce the cost of remediation, when appropriate (Banu C., 2008).

MATERIAL AND METHOD

The main objective of this paper is to highlight technical, economic and administrative development of systems to ensure traceability chain sunflower.

Research methods used include: documenting scientific ground on ways to implement the SC system Ulerom SA case study on how to ensure traceability system unit, systematic analysis on the design and implementation of system components to ensure traceability and economic analysis focused on key indicators of economic efficiency.

The information used was obtained from the unit's internal documents and documents published on the official website of the Ministry of Finance.

Dissemination of research presented in this work was done by a dissertation project co-authors of this paper.

RESULTS AND DISCUSSIONS

Implementation of internal traceability About the unit Ulerom S.A. was done using codes, documents and records, data management tools and procedures for withdrawal of products. Since the company has no obligation to use only one system of traceability, but also to provide evidence that doing so is essential that the system is documented.

Traceability system elements in the SC unit Ulerom S.A. are operative as part of the company of other procedures such as procurement, quality assurance, etc.. The first step in establishing a traceability system is to analyze current procedures and operations to determine what factors are

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already present and identify shortcomings in the transfer of information needed for traceability.

Involved in producing components for ensuring traceability system are: ensuring traceability system design, adaptive management information requirements traceability, design and implement procedures for withdrawal of products, improving the system to ensure traceability of external verification and accreditation system to ensure specific traceability and traceability ensuring economic efficiency.

A. Plan development and implementation system to ensure traceability of the company includes the following steps:

1. Establishing an administrative team has designated role, establishing authority and responsibility for operation of the system to ensure traceability. It has a technological and an administrative component. Designated by the unit team S.C. Ulerom S.A. to ensure traceability is represented by an engineering technologist and administrative manager.

2. Achieving flow diagram - flow diagram provides information on technological transformations that drive the product suffers from

purchasing raw materials to finished product delivery.

3. Identify existing procedures existing procedures will be adapted and supplemented with specific procedures to ensure traceability. Existing procedures may include the procurement, quality monitoring mode, batch coding procedures etc.;

4. Identification of existing records is the stage which is to identify current records and how they are produced in association with operations and products. This information is encrypted and written to provide the necessary documentation tracking system. Procedures and records include the name of the document and its location in reference to company records.

5. Confirmation in situ confirmation that all information is intended to be found in some books or records that are kept in the manufacturing departments or offices.

Structure of unit operations S.C. Ulerom S.A. is registered as a process diagram or a written record in a table that has the advantage of introducing references to specific written procedures or records.

Table 1

Review existing procedures and records

Operation	Procedures	Records
purchase	Purchase and transport conditions of the particular product	Receiving bills and notes
reception	The quality Assigning a code number for the consignment	Laboratory reports or records
storage (if applicable)	stock register	records storage
processing	Processing procedure	Records of the processing
packing	Packing procedure	Records of packaging product labels
distribution	Transport of commercial units	Roadmap

All documents required to ensure traceability of the process are dated and signed by the person carrying out the operations specified in the protocol procedure. Nature of the information contained in these documents will be approved by the administrative team in accordance with the law.

B. Information Management

In general and in particular the unit investigated traceability is primarily related to information management. When a product undergoes a transformation operation, information that relates to that product undergoes a change so that the link between product and store information. Changes may change the information are: the transfer, the addition, unification, division.

1. The transfer is one of the most simple information processing operation. In this case, the product identification codes are transferred to the product while browsing the installation.

2. Addition information is required during the process when new components are added technology or product is subject to operations that change the product composition of chemically or microbiologically. In this situation, continues to use the product identification code which is, however, unique process but records are filled with ingredients identification codes used or the operation performed.

3. Unification of information occurs when a process step of combining several batches, each with its own identification code. In this case, the new group obtained shall be a new identification code, and records indicate the identification code of the components.

4. Division information is used when the group is divided according to the requirements of the technological process or structure of the company product offerings. In this case, for each unit divided resulting assigned new identification

codes. Basically, the new code is assigned to the next stage of processing.

For continuing operations, record the date and time separate consignment enters and exits the process. Labels do not contain all information needed to ensure traceability but links to documents providing this information. This condition is usually satisfied by using individual and unique batch codes that are links to full records.

Basically, this objective is achieved by adapting existing registration systems modernization using bar code identification labels on radio frequencies, scanners and computer systems, etc..

C. Procedure for withdrawal of products

Ultimately, the realization of a traceability system which aimed at creating the possibility of withdrawal of one or more lots of products that proved it could endanger the safety of consumers. For this, it is necessary to ensure operability procedures for the withdrawal of products as part of the traceability system.

An effective model to provide such a procedure is provided by the Canadian Food Inspection Agency. This system includes nine steps and is implemented in the unit studied.

1. Management team meeting. In the documentation to withdraw products are specified identity and how to contact each member of team management responsibilities in this proceeding and appointed substitutes. The team includes members of senior management in departments such as production, quality management, distribution, public relations, etc., Such as operations managers, lawyers and media experts.

2. Keeping records of complaints (complaints file). This documentation includes a formal specification for recording complaints and noncompliance, so that the nature of complaints to be recorded with the actions taken by the company to investigate the causes and prevent recurrence of such events.

3. Listing of contacts for product recalls. Information on individuals and organizations to be contacted in case of withdrawal of a product should be stored in a file that will be periodically reviewed and updated as needed. This information includes:

a. competent authority to be informed, as required by law, the incident requiring the withdrawal of a product;

b. customers - to locate product along the food chain and information that next tier of channels;

c. suppliers - for information on any product that does not conform to specifications, to initiate appropriate measures;

d. media - if the product was distributed in the market and will be necessary to inform consumers about product details and the potential generated by its use.

4. Tracking and tracing of products based documents including traceability procedures implemented by the company.

5. Making records to supply and distribution records to ensure traceability, the firm should be able to determine that the product provider and where raw materials were distributed products were obtained from the same batch of raw materials. It also identified the person responsible for recording these documents.

6. Setting the procedure for withdrawal is part of this procedure are defined various levels of response to non-compliance. This can range from reimbursement or replacement of poor quality product to withdraw the full amount of product on the market, if an incident is a serious risk to consumer health. If withdrawal of a product is important to set a clear scenario of events covered. For each sequence there is a written procedure detailing to be done, how and by whom.

7. Registration withdrawn products. For reasons of accountability, records are kept of products withdrawn so as to ensure that all products have been withdrawn from the food chain and to measure the effectiveness of the withdrawal plan. Records include details about the product, the amount withdrawn, the date of withdrawal and removal product in the food chain and details on what to do with the product.

8. Assessing the effectiveness of the withdrawal procedure. A good management practice, to achieve the withdrawal procedure, requires to evaluate and efficiency and improvement.

9. Testing withdrawal plan if necessary to withdraw a product is late discovery that the system fails. It is therefore important that the withdrawal procedure is tested regularly. This is part of traceability or verification procedure can be done regularly.

D. External Traceability

External traceability allows product tracking throughout the food chain, ie from the raw material to consumer. To achieve this it is necessary that information held by an individual company to be shared and other participants in the food chain. This exchange of information takes place in parallel with product movement in the food chain.

Administrative manager responsible for ensuring the traceability of the unit Ulerom SA, is

the person in charge of gathering information from other participants of traceability.

Development of systems for ensuring effective external traceability must overcome some obstacles such as:

- commercial confidentiality because information about the product is regarded as a good and companies are reluctant to provide information about it;

- Identify information required to be transferred along the food chain - because the amount of information about a product should be determined what is necessary to ensure traceability.

- Compatibility information with individual internal traceability systems.

- Differences between legal provisions for a different product markets and therefore in different countries.

External traceability is achieved by ensuring traceability systems alone and embedded.

A traceability system is achieved where independent companies take responsibility for obtaining the information necessary to trace their suppliers and their transmission to its customers. All unit, so Ulerom S.A. both suppliers and customers realize their traceability systems, taking into account the information provided by other units of the chain. This transfer of information meets the minimum legal requirement of European legislation. This system is called "closed system". In such a system, a company with the object of processing of raw materials supply, ensure that it provided all information necessary to identify the supplier and product identification code. Usually, this means that receives information about the product as a delivery note with the product label attached.

E. Verification and certification of traceability systems

Traceability systems are criticized because the food chain information is not detailed and consistent. Therefore, implementation of such systems involve a high degree of responsibility for the economic actors involved in the food chain. We believe that a traceability system is effective only if the physical and security measures they prevent fraud. The audits, security systems are evaluated on the basis of performance and speed of providing information.

Produce not randomly selected for testing must be identifiable throughout the production process for the removal operation to be quick and efficient.

Traceability systems are checked to see if they fulfill many purposes such as:

- Obtaining evidence of traceability in the upstream and downstream of the check.

- Establish a clear transparency of manufacturing production continues.

- Include all materials and ingredients.

- Provide a response within a relatively short time.

- Provide clear and readable information for client or customer.

Assessing the effectiveness of a system to ensure traceability is achieved through auditing, similar to checking the effectiveness of other systems, that the quality management, food safety, work safety and the environment.

Auditing is an action of making an audit, systematic, independent and documented evidence of obtaining an objective measure to determine the extent to which audit criteria are met. The audit is the main way by which a company can obtain evidence that the system has implemented or not.

The audit can be achieved by several types:

- Internal Audit (first part) - that made by the representatives of a company's own needs or representatives of a unit qualified to perform this activity.

- second-audit is conducted by customers of a company or their representatives.

- Audit of tertiary services requires use of specialized external audit firms, such as certification companies.

The audit is done in several stages: planning and preparation of audit, management audit, analysis results, establish corrective actions, verification of the corrective actions.

Ensuring traceability systems are regarded as part of quality assurance management system. The traceability is considered to interact with HACCP system, but can be seen as a separate operating system, mainly related to the control system. The inspection and certification of food is based on the same objectives and same effect as the traceability system. Thus we must consider:

- Inspection consists of examining foods or food control systems, raw materials, manufacturing and distribution process, semifinished and finished products testing for compliance with applicable standards.

- Certification is the procedure by which the certification takes the responsibility that food and food control systems conform to standards. Certification of food inspection activities based on the flow, audit quality assurance system and examination of finished products.

- Equivalence is the capability of different inspection and certification systems to have the same objectives.

Minimum information to be included on the label refers to:

- provider name,
- product description,
- the provider product codes,
- date of manufacture.

Transfer information through a written record is considered inefficient in some cases because the information must be entered into the information system of each company making up its chain. External traceability system efficiency is greatly enhanced when information transfer is done

electronically in a format approved by all participants and the food chain.

An easy way to solve this potential problem is the use of standardized bar codes database company. This involves an integrated approach to traceability, which can benefit the entire food chain.

F. Economic efficiency of traceability

Evaluation of economic efficiency through a system of indicators is a lot of information with regard to investment activity and production efforts quantifying the effects and their behavior

Table 2

Specific economic indicators S.C. Ulerom S.A. the lack of process conditions to ensure traceability

Indicators / year	2007	2008	2009	2010
net turnover (thousands lei)	64.529	96.886	108.618	126.493
total income (thousands lei)	71.358	118.808	140.381	130.699
total expenditure (thousands lei)	70.100	116.778	138.168	129.238
gross profit (thousands lei)	1.258	2.029	2.212	1.223
net profit (thousands lei)	1.072	1.725	1.913	1.223
number of employees	185	183	183	177
labor productivity (thousands lei/man)	386	649	767	738
profit rate (%)	1,79	1,73	1,6	0,94

Turnover was calculated as total revenue business operations conducted by the firm, namely the sale of goods and products in a period of time. Turnover of the unit Ulerom S.A. is increasing, from 2007 until 2010, it evolved to 61.964 thousand, ie by 95%.

The value of turnover was registered in 2010 - value: 126.493 thousand, and the lowest turnover was achieved in 2007 - value: 64.529

thousand. In the last balance sheet, in 2010, the turnover of the unit Ulerom SA, increased by 17.874 thousand, ie 8.59%.

Total revenues were recorded increases in economic benefits during the accounting period as inputs or decreases of liabilities, which resulted in increases or equity other than those resulting from contributions of the shareholders.

Table 3

Economic indicators Ulerom unit S.A. insurance under the traceability process

Indicators / year	2007	2008	2009	2010
net turnover (thousands lei)	64.529	96.886	108.618	126.493
total income (thousands lei)	71.358	118.808	140.381	130.699
total expenditure (thousands lei)	70.863	117.184	138.562	129.652
gross profit (thousands lei)	495	1.624	1.819	1.046
net profit (thousands lei)	416	1.364	1.528	879
number of employees	185	183	183	177
labor productivity (thousands lei/man)	386	649	767	738
profit rate (%)	0,69	1,38	1,31	0,8

The average income in the years 2007-2010 was 115.311 thousand. Revenues are recorded and they increased in 2007-2009 by about 50.8%, but the same can be said for the year 2010 when revenues fell by 9.3%.

Costs represented amounts or amounts paid or payable for: consumption, work performed and services provided by third parties, personnel compensation, legal or contractual obligations to discharge the property or unit, provisioning and depreciation, exceptional consumption.

In the period 2007-2010 was spent approximately one thousand four hundred thousand every year to implement it. Although

implementation of the traceability system costs are not covered and no profit is made from them, the advantage of this system will be noticed in time, when consumers will be informed far more specific about the route that follows the product before it is consumed .

Unit Ulerom S.A. achieved profit increases in all years take into account, less in 2010 when profit was a decrease of 989.483 thousand the previous year. Unit profit increased by 59,3% between 2007-2009. According balance declared Ulerom S.A. no losses in any year.

After implementation of the traceability both gross profit and the net income derived unit

suffered declines, which will be recovered in the near future. In all four years consider profit decreased on average by 8,25% in 2008-2010. The largest decrease occurring in the first year the system was implemented respectively in 2007, the unit profit decreased by 39.5%.

Labor productivity measures the efficiency of work in a while.

Average labor productivity is 635 lei / person, this average was exceeded in 2008-2010, the most effective productivity in 2009 was 767.000 lei / person exceeds approximately 100% productivity in 2007 which was only 386.000 lei / person.

Rate of return - the ability of firms to get the work they carry out a profit in terms of mobilizing the resources available. This, before establishing traceability in all four years taken into account is 1,51% to 1,04% as profit rate after the implementation of traceability. Differences were recorded in 2007 and 2010 the rate of profit fell 1,79% to 0,94%, it happened during the tracking system did not apply.

CONCLUSIONS

Implement system to ensure traceability lead to improved business entities with control processes.

Economically, the design and implementation to ensure traceability economically not improve results but to reduce the economic efficiency of this. The case study in S.C. Ulerom S.A. implementation of this system has reduced profitability from 1,5% to 1,0%.

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