QUALITY

AND PROCESSES IMPROVEMENT

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Częstochowa 2012

Chapter 2

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IMPLEMENTATION OF THE FOOD SAFETY MANAGEMENT SYSTEM IN ENTERPRISES PRODUCING PACKAGING MATERIALS ON THE EXAMPLE OF A PRINTING HOUSE FOR SELF-ADHESIVE LABELS

Abstract: Participation in the food chain obliges all enterprises belonging to it to meet the requirements of the ISO 22000 norm; in particular, this concerns the duty of traceability newly introduced for the Food Business Operators (FBOs). Although traceability does not guarantee the safety of a food product, it remains a tool for the food hazards management. Food safety requirements apply also to the stage of packages production which have to meet the standards of adequate Regulations, in particular the Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food. It concerns also enterprises such as the one discussed in the present study – companies producing labels for food products (PN EN ISO 22000: 2006, TURLEJSKA H. I IN. 2010).

Key words: label, food, process, quality.

2.1. Introduction

Enterprises functioning within the food chain which aim at enhancing their standing in the industry have to be able to efficiently manage the quality and safety of the goods they produce. To achieve this, it is essential that they resort

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to up-to-date and professional tools such as the implementation of the Food Safety Management Systems, consistent with the requirements of the ISO 22000:2005 Norm. Getting to know the standards required by the norm, and their further skilful implementation, makes it possible to assure the clients that the final products are safe for the particular consumer, and always of top quality. This applies invariably to the entire food chain, also for the stage of food labels manufacturing (PN EN ISO 22000: 2006, TURLEJSKA H. I IN. 2010).

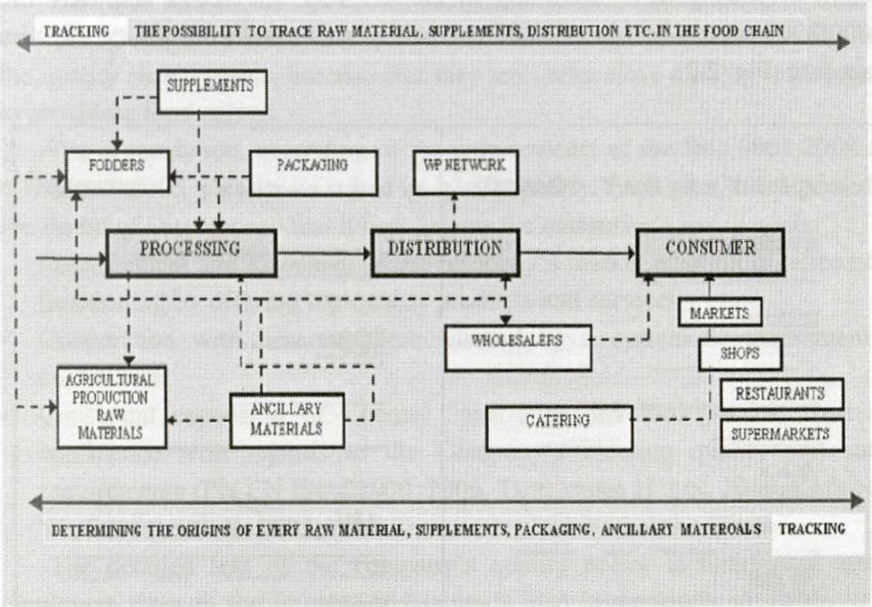

Fig. 2.1. Rules of traceability.

Source: CZARNECKI J. 2004, SIKORA T., KOŁOŻYN-KRAJEWSKA D.2010.

2.2. General information on the producer

The limited liability company discussed in the present article is part of an international group "Watershed," along with printing houses such as Watershed Label Centre in Dublin and Label Print Services in London. The inter-company exchange of experiences has enabled it to expand its own potential as a member

of this renowned group, while at the same time allowing it to retain its hitherto flexibility of functioning and responding to clients' recent needs.

In 2006, the enterprise's Board of Directors has decided to officially confirm its management policy which assumes that the manufactured product fulfils all legal requirements in terms of quality and food safety, attested by proper certification of the existent technological system.

The decision resulted in the creation and implementation of an Integrated System of Management according to the EN ISO 9001/2008 and DIN ISO 22000/2005 norms. In March 2007 an entitled unit conducted the certification procedure (Fig. 2.2).

Fig. 2.2. Current certificates for the ISO 9001:2008 and ISO 22000:2005 Management Systems.

Source: the Company's documentation.

Over 60% of the company's contractors are consumers of the food market which is why it is so important to ensure that the self-adhesive labels produced

by the company meet all the criteria of providing food safety (Regulation on Labels).

The Integrated System of Management implemented in the enterprise embraces the entire scope of the printing house's functioning, and meets the requirements of ISO 9001: 2008, ISO 22000:2005, Codex Alimentarium, as well as the expectations of individual clients (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The main aim of the System of Management based on the ISO 9001:2008 and ISO 22000:2005 norms is to prove that the delivered products not only fulfil the quality requirements, but also that they are under close scrutiny with regards to providing food safety.

The organization, according to the requirements of the ISO 9001:2008 and ISO 22000:2005, clearly described its quality policy. Each year, it is updated by the Board of Directors so that it best depicts the enterprise's major goals:

- Enhancement and extension of the company's market position in terms of its functioning by offering top-quality products and services;
- Cooperation with best suppliers ensured by a systematic assessment of contractors;
- Consistent expansion of Clients' and other involved parties' trust and confidence with regards to the Company's meeting quality and safety requirements (PN EN ISO 22000: 2006, TURLEJSKA H. I IN. 2010, ŁADOŃSKI W., SZOŁTYSEK K. 2005).

The detailed text of the company's quality policy is distributed among employers through the internet and is made also immediately available in the form of posters hanging in common rooms in the plant, as well as in spaces allotted for this purpose among organizations and institutions cooperating with the Subject (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The Integrated System of Management implemented in the enterprise is also described in the Book of the Integrated System of Management. Particular processes have their specific process cards which clearly delineate information essential for their effective management, providing also the data for the owners of these processes (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

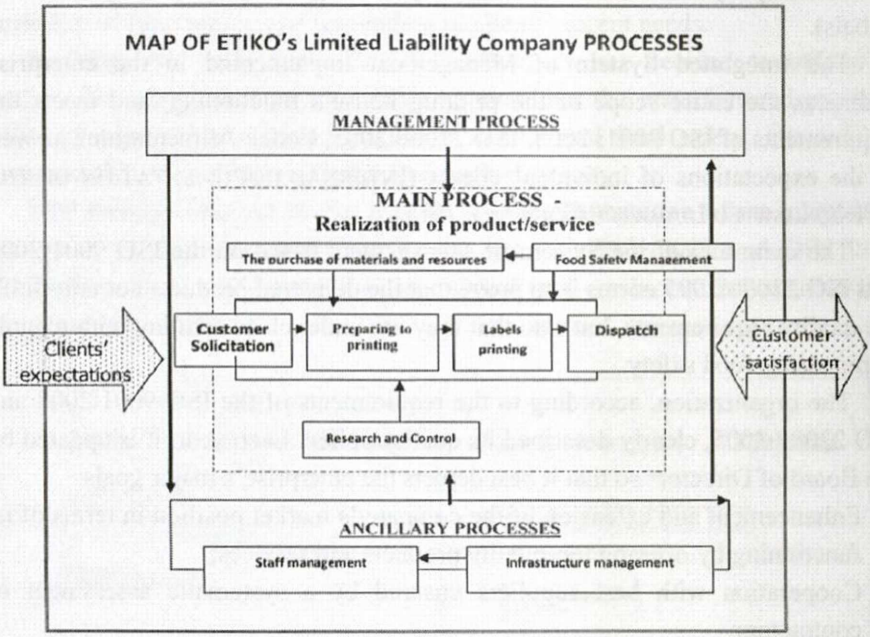

Fig. 2.3. Map of processes in the investigated enterprise.

Source: the Company's documentation.

Process owner is responsible for:

- Monitoring of the results,
- Reporting in the functioning of the process,
- Solving current problems, initiating improvement prospects and coordinating efforts devoted to further development of the process;
- Participating in the preparation of rules and regulations of a given process;
- Evaluating motions for modifications in the course and functioning of the process (PN EN ISO 22000: 2006, TURLEJSKA H. I IN. 2010, ŁADOŃSKI W., SZOŁTYSEK K. 2005).

Process owner, on the basis of the analysis of progress in the realization of goals, regularly monitors the realization of the goals of the particular process,

solving on the spot any arising issues, and identifies possibilities for further improvements (ŁADOŃSKI W., SZOŁTYSEK K. 2005).

When necessary, evaluation of timeliness of strategies is conducted, in the process of which vital means and goals for the development of a particular strategy are determined. The agreed upon strategic goals are matched by operational goals, highly important for the overall realization of the strategy, as well as particular factors for individual processes. Management survey helps evaluate the outcomes of the processes, verify their course, and assess the potential for their further improvement (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The food safety management system implemented in the company takes account of all aspects which may influence the safety of produced labels for the marking of food articles packages. While preparing the system, the Board of Directors acknowledged real and potential biological, chemical and physical dangers having an impact on the safety of manufactured goods. The system embraces all stages of food safety management, from the moment of the delivery of basic and assisting resources and package materials to the Plant, to the moment of the stockroom's receipt of final products ready for dispatch. The analysed risks derive from the nature of the processed raw material and from the applied production processes, as well as from the environment in which the processes take place, that is the sanitary conditions of production and the accepted norms of conduct. Subject responsible for the proper functioning of the system of quality safety management is The Board's Procurator for the Integrated System of Management (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

In order to ensure that all documentation of the integrated system of quality management be up-to-date and available to employees performing the tasks covered by the system, rules of creation, verification, approval, and distribution of documents of the Integrated system have been created.

The collected documents and records are subject to close scrutiny owing to their archival category and/or the content of confidential information. This is achieved by means of proper marking of the documents, assigning them a confidentiality classification, storing them for an agreed period of time, as well as of determining the rules of their availability. The supervision of documents

and records is realized within the framework of the accepted procedures (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

2.3. Planning and Conducting the Production of Self-Adhesive Labels

All processes for the realization of the items produced by the company are planned and implemented so that safety is guaranteed on every stage of the process. To facilitate this, the Guide to the Initial Program has been prepared. It deals with the requirements of good production practice and good sanitary practice in the production of labels for marking packages, designed for contact with food articles. The Guide covers the activities essential for providing the safety of labels designed for contact with packages of food articles through a proper sanitary quality of items produced in the investigated enterprise (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The Norm demands the Board of Directors to appoint a Leader of a Team for HACCP, who then has to appoint the members of the Team on the basis of qualifications so that The Team would be able to perform their duties of securing the safety of the product on every production stage (PN EN ISO 22000: 2006, TURLEJSKA H. I IN. 2010).

For the position of the HACCP Team the Procurator for the Integrated System of Management has been appointed who on June 6, 2006 appointed the members of the HACCP Team. The Team is an open group consisting of the employees of particular departments. All members have been instructed on the methods of providing safety of products for marking packages with food articles as offered by the company, as well as in the scope of the Food Safety Management System in Critical Control Points – HACCP. The Procurator is directly responsible for the functioning of the Team. The Team has access to all documents of the Company and is entitled to conduct surveys and internal audits with regards to the rules of the good production practice, including sanitary

practice (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The HACCP Team has devised the particular parts of the HACCP Plan, prepared the proper documents. The Procurator monitors the realization of the System and makes intervention decisions within the framework of the System, including the decision to abort production and withdraw the product from market circulation (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The labels produced by the Company meet the standards required of materials and products for marking the external surfaces of food articles packages, according to the applicable legal regulations. The labels do not constitute sources of the pollution of food articles as they are produced, transported and delivered to the consumers in conditions which eliminate the risk of pollution. The storing of products in the Plant ensures the elimination of the risk of exposure to pollution, in particular contamination from the stockroom's environment, cleansers, and pests (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

Labels introduced to market circulation do not cause migration of substances from the materials to the marked food articles in amounts that could be hazardous for the health of the life of consumers, nor do they cause changes in the composition of food articles or deteriorations in their organoleptic qualities (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The producer possesses documentation confirming that the materials and products meet the requirements determined in the Act.

In the production process, only those raw materials are used which have the certificate of approval to contact with food (paper, self-adhesive foil) or the certificate of approval to marking the external surfaces of food articles packages (printing inks) (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

Aiming at food safety of the labels produced by the Company, the HACCP Team has meticulously outlined the production process, accounting for the entire cycle of production, beginning from receipt of raw materials, through subsequent technological processes, up until the distribution of the process.

Team verifies scheme of technological processes, evaluating its compatibility with the actual course of the cycle in the rooms in which particular stages of the cycle are performed. In case of a discrepancy between the scheme and the actual state, the scheme is corrected . the verification of the scheme takes place before every complex inspection, as well as in all cases when a discrepancy in the technological process occurs (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

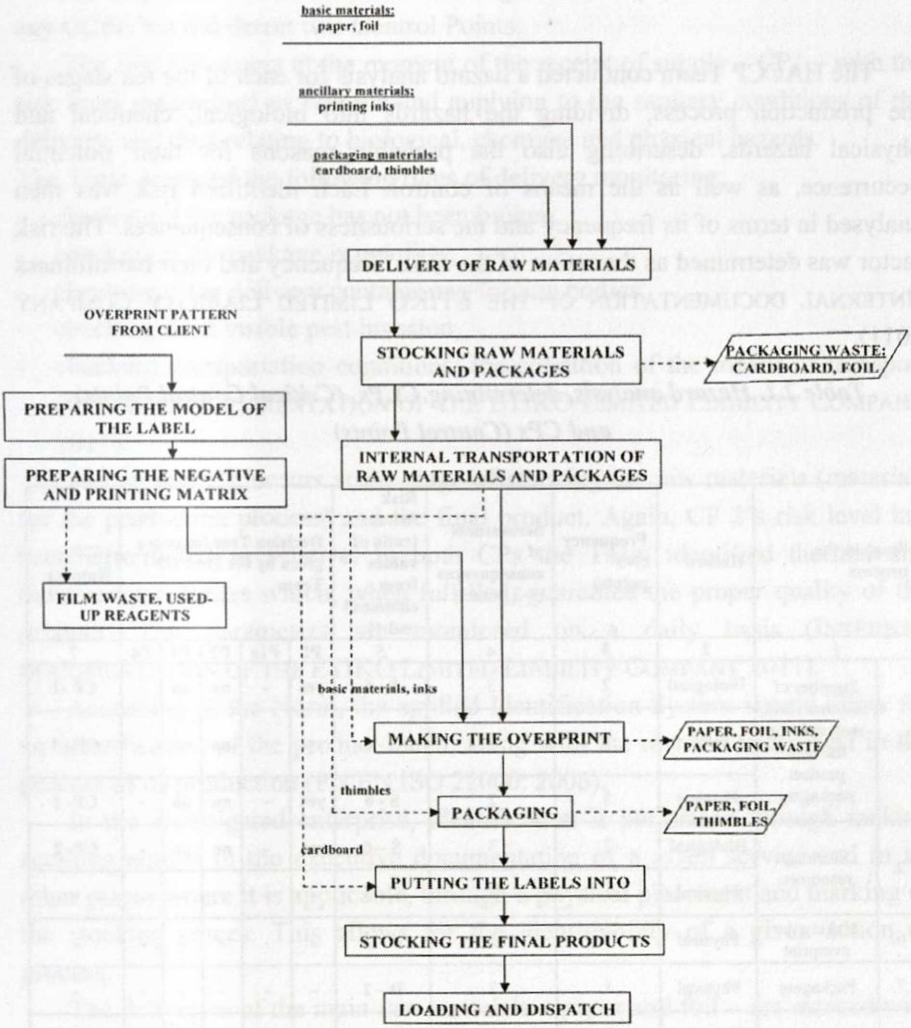

Fig. 2.4. Block scheme of the production process.

Source: Internal documentation of the ETIKO Limited Liability Company.

2.4. Hazard Analysis

The HACCP Team conducted a hazard analysis for each of the ten stages of the production process, dividing the hazards into biological, chemical and physical hazards, describing also the probable reasons for their potential occurrence, as well as the means of control. Each identified risk was then analysed in terms of its frequency and the seriousness of consequences. The risk factor was determined as the ration of the risks' frequency and their harmfulness (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

Table 2.1. Hazard analysis, determining CCPs (Critical Control Points) and CPs (Control Points)

Stage in the process		Hazard	Frequency (1-3 points)	Seriousness of consequences (1-3 points)	Risk factor (ratio of values from columns3 and 4)	Decision Tree (answers given by the HACCP Team					CCP Number
1		2	3	4	5	P1	P1a	P2	P3	P4	7
1.	Supplies of resources and materials for the final product packaging	Biological	2	3	Ś - 6	yes	-	no	no	-	CP -1
		Chemical	2	3	Ś - 6	yes	-	no	no	-	CP - 1
		Physical	3	2	Ś - 6	yes	-	no	no	-	CP- 1
2.	Stocking resources	Biological	2	3	Ś – 6	yes	-	no	no	-	CP- 2
		Physical	1	3	Ś – 3	-	-	-	-	-	-
6.	Making the overprint	Physical	1	2	D – 2	-	-	-	-	-	-
7.	Packaging	Physical	1	2	D – 2	-	-	-	-	-	-
9.	Stocking the final product	Biological	2	3	Ś – 6	yes	-	no	no	-	CP- 2
		Physical	1	3	Ś – 3	-	-	-	-	-	-
10.	Loading and dispatch	Physical	1	2	D - 2	-	-	-	-	-	-

Source: the Company's internal documentation.

In the process of labels manufacturing the HACCP Team did not identify any CCPs, but did detect two Control Points.

The first CP occurs at the moment of the receipt of supply – CP1 – with the risk level determined as relative and applying to the sanitary conditions of the delivery, and thus relating to biological, chemical and physical hazards.

The Team prepared the following rules of delivery monitoring:

- checking if the package has not been broken,
- checking if the package is not dirty,
- checking if the delivery contains any foreign bodies,
- checking for a visible pest invasion,
- checking transportation conditions: the condition of the means of transport (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

The second CP occurs at the stage of stocking the raw materials (materials for the production process) and the final product. Again, CP 2's risk level has been determined as relative. In both CPs the Team identified thermal and moisture parameters which, when fulfilled, guarantee the proper quality of the product. The parameters are monitored on a daily basis (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

According to the Norm, the applied Identification System should allow for an identification of the product batch, along with the raw materials used in the process of its production (PN EN ISO 22000: 2006).

In the investigated enterprise, identification is performed through making accurate entries in the executive documentation of a given service and in all other places where it is applicable, through a physical placement and marking of the stocking places. This allows for the identifiability of a given action or process.

The deliveries of the main raw materials – paper and foil – are marked with special labels by the supplier and are entered into the database. The label contains data referring exclusively to this particular raw material which, following the delivery, enters the stockroom. After completing the commission on the basis of the given raw material, the label is then sticked at the reverse of the Production Commission. It contains also the batch number of the used inks, which is read from the ink's container.

The final product is marked with a production code/number by the scroller. The production code/number assumes the following form – AABBCD – in which the letters denote:

AA – production week

BB – type of the used material

C – type of glue

D – number of the scroller

The code is also given in the form of the production commission. The filled in form of the production commission is then transferred to the Accounts Department and is entered into the system, the commission is assigned its individual number, and the print-out version of the production commission is stored according to the regulations.

The rules of marking ensure that identification is conducted from the moment of the raw material's delivery, up to the final product. They also enable the withdrawal of produced items should such a necessity arise, and in case of complaints they enable the retracking of the entire production process.

Items produced at the excess of critical values or in the conditions of loss of control over supervision means are potentially dangerous and have to evaluated before they can enter market circulation.

In the case of a justified suspicion of the occurrence of defects, Production Manager with the HACCP Team Leader and, if necessary, with adequate members of the team, evaluate the risk related to the product's presence on the market on the basis of the following classification:

Class 1: the defect is a potential life threat and might cause serious injury.

Class 2: the defect might cause an illness, but does not belong to Class 1.

Class 3: the defect does not pose a major threat to the consumer's health.

Depending on how a defect is classified the Team decides to withdraw the product either in emergency mode or in standard mode.

Regardless of the urgency of the action, each withdrawal of a product consists of two phases:

- freezing the circulation: informing the consumers of the ban on circulation and sale of the faulty product
- bringing the unused product back to the Company

Freezing circulation is performed through formally contacting direct consumers by the Sales Director who is responsible for maintaining a contact database of consumers (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

Withdrawn products are placed in an isolated and specially marked room in the stocking spaces of the stockroom, where they await the decision on their further fate of proper sanitary authorities. If necessary, their physical destruction falls into the responsibilities of the Company's President.

In the case of withdrawing labels for reasons of their posing a threat to the safety of food articles and, respectively, of the consumer, President and/or Director contact proper sanitary authorities.

The withdrawal of labels failing to meet the requirements under the direct control of the investigated Company does not result in the obligation to contact proper sanitary authorities.

In the investigated Company a situation in which the final product would threaten food safety has not occurred; nevertheless, each year the HACCP Team conducts a simulation aimed at confirming the efficiency of the withdrawal procedures, as well as of the identifiability of products and raw materials (INTERNAL DOCUMENTATION OF THE ETIKO LIMITED LIABILITY COMPANY 2011).

2.5. Conclusions

In conclusion, it is vital to stress the advantages, both internal and external, that a company gains through implementing the ISO 22000:2005 norm.

External advantages:

- meeting the expectations of the market for safe products of high quality,
- decreasing risk related to producing a final product which is incompatible with the requirements of sanitary authorities and, by extension, decreasing the risk of resultant legal and financial liability,
- confirming the company's market standing as an enterprise actively engaged in the problematics of safe foods,

- increasing competitiveness of the company among printing houses supplying packaging materials for food articles,
- prospects of using the earned certificate as a valuable marketing tool
- increasing consumer satisfaction,
- evidence of the company's continual development and progress.

Internal advantages:

- minimalizing expenses related to low levels of quality and safety among products offered by the company,
- clear division of duties, obligations, and powers,
- precise process documentation,
- analysis and effective elimination of the sources of occurring defects,
- external audits conducted both by consumers and certifying units constitute security provisions for the management with regards to the process of the company's proper functioning.

The investigated Company has a professional and well-qualified staff at its disposal who are familiar with the risks posed by the production of a faulty product, and thus they strictly adhere to the procedures created during the implementation of the ISO 22000 Norm. It is their engagement and dedication that help ensure that the labels produced by the ETIKO Limited Liability Company are manufactures with utmost care and are safe, top-quality products.

Summing up, fulfilling the requirements necessary for the implementation of the Food Safety Management System certification according to the ISO 22000:2006 norm in the Company has led to an increase of contractors' trust and satisfaction, which has positively influenced the Company's profitability.

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