

THE ISO QMS IMPLEMENTATION IN THE PRINTING HOUSE

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SUMMARY

An ISO 9001:2008 certificate confirms that the quality management system in a printing company is in accordance with the requirements and norms and that it conforms to regulations.

By implementation of a quality policy and meeting the requirements of ISO 9001:2008 norms, the management of the printing company wishes to establish management with the quality system in all aspects of business. The reproduction chain involves not only pure technical variables, but all other information such as customer, materials, equipment, planning, product control, regulations etc.

Keywords: ISO 9001:2008, QMS, print production

1. INTRODUCTION

Constant development of technology and new media strongly affects the publishing and the printing industry. Paper has been used for centuries as a medium, but electronic media is becoming increasingly accepted today. Newspaper, magazines, books and other printed media are faced with a technological metamorphosis. Therefore the printing industry has to analyze the trends in order to survive and adapt to the age of electronic media. The understanding of the printed media market and its new possibilities are the key to adopting right business judgments and are a part of business reality and strategy of every printing company's management team. New market challenges demand bringing more attention to the management of adaptations as well as the improvements of business processes. In the competitive market, orientation towards customer demands investments in development, constant adoption of new technology and the foundation of system based on business excellence.

With growing competition and costs, the only possibility of raising profit is cutting the costs of products and services. Printing houses which neglect the changes and do not act towards cost reduction, raising quality, and raising business excellence cannot sustain.

In addition, the policy of business systems has to aim at meeting or even exceeding the customer's expectations, [1]. One of the ways to achieve that goal is the implementation of a quality system.

2. QUALITY SYSTEM CHARACTERISTICS

Quality system comprises a set of rules and norms applied within the organization. Those rules and norms are guidelines aimed at meeting the quality demands and achieving business excellence. Quality system is an important part of organizational culture, which should present quality and business excellence culture within the modern business environment. Every organization can develop its own quality system. However, such quality systems are not widely applicable nor are certified. The only certified quality management systems are those based on ISO standards, [2, 3, 4, 5].

ISO standards pronounce the importance of continuous improvements of products and services, as well as business processes with the aim of meeting the customer's demands.

Business system has successfully implemented a quality system if it is certified by the independent certification body. The certificate confirms that the business system's practice meets the following demands and norms:

- Quality management system
- Documenting quality
- Management orientation towards quality
- Resource management
- Product realization
- Data collection, analysis and improvements

The benefits of implementing the ISO 9001-9008 standard are multiple and exceed the cost of standard implementation and application, and generally relate to management of resources, [6,7]. The benefits are cost reduction, elimination of superfluous process phases and documentation, and efficient production with reduced waste. Implementing a quality system is more efficient than revising it on the bases of customer's complaints. The important benefit of implementing ISO 9001-9008 lies in the possibility of extending business towards foreign markets. In addition, the certification is a way of public presentation of a business system and proves its dedication to meeting quality demands.

3. IMPLEMENTATION BENEFITS

It should be stipulated that the benefits of applying ISO standards are long-term and become obvious after several years of application. Research has shown that most organizations achieved higher productiveness, customer and employees' satisfaction and lower costs through the application of ISO quality management standards, [8,9].

This paper presents a segment of a business process in the printing house "Vjesnik", appropriate due to measurable characteristics. The topic of this paper is the measurement of positive effects of standard implementation on the manipulation of newsprint paper, from reception in storage to expedite of finished newspaper. The research is based on reports on paper consumption in the manipulation and printing process of daily newspaper "Jutarnji list". Customers' demands dictate rational management and reflect in the production of a high quality product at a competitive price. The printing house "Vjesnik" is faced with technical and technological limitations such as the inadequate manipulative path at the paper stock reception, inadequate storage room, and technologically obsolete printing machine inadequate for given circulations. The company cannot influence those limitations momentarily. The aim of this research is waste paper cost reduction by the implementation of the ISO quality management system.

The analysis of consumption and savings monitoring methodology is the result of the management decisions to raise quality and implement the ISO quality management system which detects costs and optimizes them to achieve rentable business conducting.

4. WASTE IN NEWSPRINT

Due to high costs of newsprint paper, the printing houses are seeking ways of reducing waste in the production process. Waste is divided by the phase or point of occurrence, amount and type. It is therefore essential to differentiate types of waste and measure their amounts. Waste paper is the difference between the amount of received paper and net newspapers produced. Waste, by the phase of occurrence can be divided to transport, storage, production and expedite. There are multiple ways of calculating waste amounts: weight, product circulation, or most commonly both.

This research is based on the calculation of average page weight. The average weight was calculated from 20 measurements of newspaper with 64, 72 and 80 pages. Paper weigh was documented as sum weight of paper reels declared by the paper producer. This data was used as weighting reels of paper at the storage room would greatly increase the analysis costs.

4.1. Paper waste analysis during years 2009 and 2010.

In the year 2009, the paper consumption equaled 5.321.117,6 kg of paper. In the year 2010, the paper consumption equaled 4.876.701,7 kg of paper. The maximum tolerated proportion of waste paper is agreed on with the publisher and equals 6,5%. Most of the waste occurs in the production process, and only a smaller amount occurs during the reception at storage and at the expedite.

Table 1. Average monthly circulations

	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>	<i>IX</i>	<i>X</i>	<i>XI</i>	<i>XII</i>	<i>Average</i>
2009.	84.255	81.078	86.489	82.872	78.565	78.588	86.362	89.715	90.783	91.657	85.503	86.581	85.204
2010.	88.396	82.540	75.416	79.180	78.195	78.906	80.466	79.424	77.445	80.708	75.701	81.282	79.671

Table 2. Average number of newspaper pages during years 2009 and 2010.

	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>	<i>IX</i>	<i>X</i>	<i>XI</i>	<i>XII</i>	<i>Sum</i>
2009	60,4	62,6	63,2	63,4	63,5	64,1	65,3	65,2	63,8	61,9	62,5	63,7	63,3
2010	59,4	61,6	62,7	63,0	62,8	63,6	64,2	64,0	62,1	61,5	61,9	62,3	62,4
Index 09/10.	1,01	1,01	1,01	1,00	1,01	1,00	1,01	1,02	1,03	1,01	1,01	1,02	1,01

In the year 2009, 31.099.460 copies of newspaper were printed. Daily average equaled 85.204 copies, 63,3 pages and 171,1 gram per copy. Total paper weight equaled 5.321.117,6 kg. Subtracting the net weight of paper (31.099.460 copies x 171,1 g = 5.321.117,6 kg; 5.321.117 kg x 4,11 kn/kg = 21.869.793,33 kn) from weight of paper consumed (5.773.807,3 kg x 4,11 kn/kg = 23.730.348,0 kn), results in 7,85% waste. Since the agreed tolerated waste equals 6,5%, the excess equals 1,35% or 320.359,6 kn loss covered by the printing house.

In the year 2010, 29.079.915 copies were printed. Daily average equaled 79.671 copies, 62,4 pages and 167,7 gram per copy. Total paper weight equaled 4.876.701,7 kg. Subtracting the net weight of paper (29.079.915 copies x 167,7 g = 4.876.701,7 kg x 4,11 kn/kg = 20.043.244,2 kn) from weight of paper consumed (5.232.700,0 kg x 4,11 kn/kg = 21.506.397,0 kn), results in 6,8% waste. Since the agreed tolerated waste equals 6,5%, the excess equals 0,3% or 64.519,2 kn loss covered by the printing house.

In the year 2010, average circulation was smaller by 6,5% compared to year 2009. The number of pages was smaller by 1,5%. If the circulation and number of pages of newspaper printed in the year 2009 is adapted to the year 2010 (320.359,6 kn x 0,935 x 0,985 =

295.043,2 kn), waste paper saving between years 2009 and 2010 equal 295.043,2 kn – 64.519,2 kn = 230.524,0 kn. Although it is a considerable improvement, the aim is to reduce the waste below 6,5%

4.2. Determining paper waste causes

The company's constant concerns are raising quality and reducing waste. Waste reduction in the production process has met the technological limit. The waste occurrences in paper manipulation still have some potential for improvement. The team occupied with cause analysis and acting towards waste reduction was never formed within the company. Incomplete documentation did not allow a comprehensive approach to this kind of analysis. The implementation of the ISO quality management system made this analysis possible through the established documentation. Waste analysis made by this model and published in this paper is based on the following documentation:

- Paper supplier documentation
- Storage documentation
- Accountancy documentation
- Order
- Expedite documentation
- Internal waste documentation

The quality management system was implemented in all of the following procedures:

- Paper reception
- Storage manipulation
- Transfer to production
- Production
- Packaging
- Expedite

Each of the abovementioned phases was audited and the documentation needed to conduct the analysis was prepared. Procedures and instructions with assigned responsibilities were prepared.

Paper reception:

Control: Determine the difference between the declared and received paper weight by measurement and document them. Upon the determined difference, deliver the complaint to the supplier. Upon the specific supplier demands, return the damaged and underweight reels of paper to the supplier. Monitor the losses caused by reel damage during the internal transport. Special records were made for internal losses with names of responsible employees. It could be determined where losses occur most frequently.

Documentation: storage documentation, internal transport loss records and supplier complaints.

Mounting paper roll:

Control: Validity of roll mounting device.

Documentation: Record of paper roll or machine damage.

Printing process:

This is the most demanding phase with respect to monitoring, detecting and preventing paper waste and causes of paper waste. Most of the overall paper waste occurs in this phase. The main document used to record losses is manufacturing order.

Control: Depending on the paper quality, roll breaks or stretching may occur. It is agreed that three roll breaks during the printing process are the limit for customer complaint. If this occurs, the roll is replaced with another roll from other supplier. If the problem is not solved, the press has to be checked.

Documentation: record.

Control: Influence of ink quality on paper waste. Ink and paper quality and compatibility have to be checked. Printing plates also have to be inspected.

Documentation: record on the validity of paper, inks and printing plates.

Control: Press and critical points validity. Intermission may be caused by regular maintenance or faults.

Documentation: hours of intermission, repairs made and spare parts installed.

Control: Circulation counter control is very important due to the possibility of manipulation.

Authorization of person responsible for starting and checking the counter is required.

Documentation: Record on working hours and validity.

Expedite and packaging

Control: Counting the number of newspaper within the package, finished product quality control, address material quality control and waste disposal.

Documentation: record on waste, distribution and other documentation.

All of the phases have individuals with assigned responsibilities for tasks of quality control, documentation and recording. The application of this concept resulted in significant savings. This procedure is the foundation for all future activities on conducting the quality management system in the printing house because it justifies the achievement of rentable production and increases profit.

5. CONCLUSION

The purpose of this paper was to present direct effects of implementing ISO quality management system in the printing house "Vjesnik". The implementation process was laborious, but resulted in multiple benefits. The three key questions were how to start the implementation process, which are the basic phases and deadlines, and which are the company's benefits. The setting of unambiguous company's functional scheme, defining aims and quality policy, assigning head of management, employee education, process documentation, application of documented system, internal system evaluation, external audit and continuous improvement were basic phases in the implementation process. It should be noted that even the best quality management system cannot prevent the damage caused by bad projects. This paper presented a model which proved that the company "Vjesnik" had multiple benefits from ISO quality management system. One of the goals set by the management was resource management and continuous savings on materials in the manipulation and production processes. As paper makes the largest part of the final product cost, the choice was to conduct the study on newspaper "Jutarnji list", the largest paper consumer within the company. The idea was to present management quality by reducing waste.

6. REFERENCES

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