Journal of Environmental Protection, Safety, Education and Management

2015, Number 5, Volume 3, date of issue 28th Juni 2015 ISSN 1339-5270

WORKFLOW OF THE MANAGEMENT IN PRINTING PRODUCTION IN CONDITION OF PRINT ON-DEMAND

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ABSTRACT

Print on-demand process of printing of publications is defined as process done in short period of time, while you wait. On-demand print production process is closely related to management of resources in publishing, printing, storage and distribution of publications. The market analysis for printed publications suggests that employing high inputs for print, delivery, storage and distribution followed by high number of copies delivered to the final consumer is ineffective.

Implementation of Print on-demand technology allows you to print single book up to 200 copies. Correct use of digital printing and binding equipment effectively addresses the economics of this process as well. Process of storing the books is ignored as the number of printed copies is directly related to the number of orders. Publishing house owning the printed version of pdf publication chooses the file from the database and sends it to printing company with on-demand printer. This process is highly effective for printing companies, but also for bookstores as well. They should be no exception in being Print on-demand printer owners.

Key words

management, organizational structures, future, company, team, trend, technology Print on-demand, storage and distribution

INTRODUCTION

Current markets are experiencing rapid decline of material form of printed products in favour of the digital media. Market slump caused excess of production capabilities and therefore pressure on prices. Because of this market situation, even technologically advanced competitors fight for the contracts, which they would previously reject, especially if the contracts are unprofitable. Nowadays, producers aim to employ all available production capacities disregarding the costs.

ANALYSIS OF CURRENT STATE OF PRINT MEDIAS

In context of economic results the polygraph industry in Slovakia is in state of stagnation and crisis. The economic result, which has been affected by the unfavourable situation of the sector, has fall dawn dramatically. The number of employees is around 3 000, while the average monthly wage decreased to 870,- €.

Chart 1 - The polygraph industry in Slovakia [13]

	2009	2010	2011	2012	2013	2014
Sales (mil. €)	279	297	298	263	263	258
Added value (mil. €)	78	79	77	71	63	68
Profit after tax (mil. €)	1	2	5	5	–5	5
Average number of employees	4 244	4 013	3 747	3 397	3 291	3 012
Average wage per month (€)	752	797	839	854	844	870

The number of journals sold is constantly decreasing. The forecasts assume that printed form of journals will slowly fade away until 2020. Daily news as an information sharing will not disappear, but it will transit into a digital form (Fig. 1). This is based on the fact that today's reports are available on the Internet for minimal fees and the number of phone and tablet readers is increasing and this trend is irreversible. The reason behind decreasing number of readers of printed products is caused by change in demography as well as new generation searching for information only in the context of the market offered technologies.

It has been confirmed by the research that 35% of the population shifted from printed titles to digital media. New technologies have changed the habits of television viewers and their way of watching television.

The free of charge access to information is growing rapidly. The availability of non-free information is stagnating, which is associated with poor purchasing power of the population and unwillingness to pay for intellectual property.

The critical factors with which material form of information is faced is financial crises that contributed to the disappearance of printed titles, easy access of information on the internet, replacement of human labour with computer technologies while saving costs, stagnation of consumption and the overall decrease of financing of media.

Considering the economic development and minimal investments there is no growth forecast for media. The polygraph institute has never been an interest of banks, and therefore investing money in this sector was never a priority.

The largest amount of investments into digital media come from commercials, such as advertisement of motor vehicles, banking services, telecommunications, pharmaceutical industry and electronics. Advertisers concentrate mainly on television, which has upward trend and least towards the press, which has a decreasing trend. Definitely a growing share of investments is directed to the Internet.

Media became interest of financial groups and we can follow the acquisition of both periodicals and non-periodicals. This provides owners with influence on the whole sector including publishing, printing and distribution channels. Ideal example is represented by ownership of IKAR, 7plus, Pantarhei, PetitPress, Hypernova with the aim to dominate the market through these brands. The interest of these groups will be penetrating towards other media (such as SME). It comes to further strengthening of the position of leading media groups. The main goal is to own everything "under single roof".

Phenomenon of available information, via Internet, opens the question of copyright ownership. The deficit of legal knowledge does not justify its free distribution over the Internet.

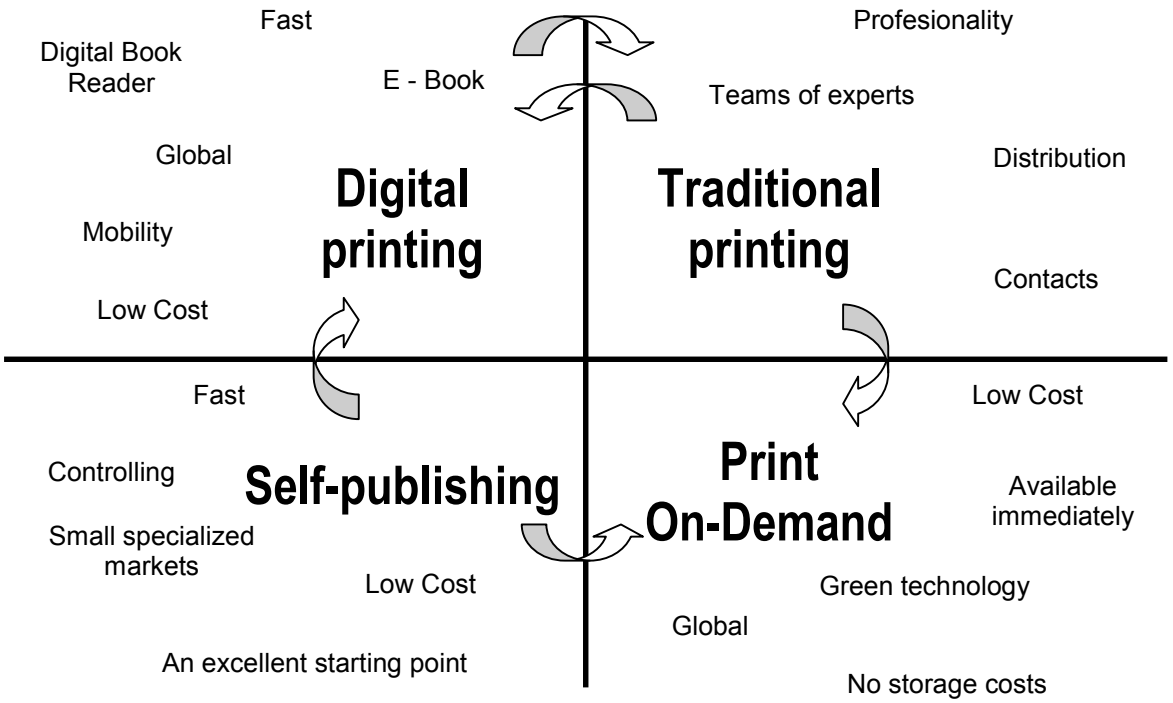

Fig. 1 Comparison of printing offerings based on their strengths [11]

The model of the workflow broken down into simpler works and ties describes way of the delivery between all participants in the industry. This model usually describes technology of the process. Workflow is software-predefined system of programmed processes, which should do specific actions in terms of the whole process. The software controls the actions of partial tasks and the process of reconciliation.

The Workflow makes three basic parts:

- rules that regulate processes,
- transmission of information,
- methods and instruments of measurement.

Journal of Environmental Protection, Safety, Education and Management
2015, Number 5, Volume 3, date of issue 28th Juni 2015 ISSN 1339-5270

Dealer registers potential customer in the system. Basic identification data could be extended by adding personal characteristics (the ability of communication and to honour code of ethics). The *Calculant* suggests **calculation** of optimal price. He communicates with dealer so that he is able to consider demands of the customer. Out of the potential price calculations, he chooses the right one for the customer and the order is passed to *technologist*, which with regards to **local technology** suggests the process. The suggested technology does not have any impact on the final price. The output is a **technological list** by which the entire production is organized. The *warehouseman* gets the specification of the purchase and check availability of the **material**. Orientation in MIS is quick and easy. If system is connected to barcode readers, it can quickly process intake and outtake of materials in the loading bay.

Production management is performed via **production schedule**, where the **controller** operatively controls flow of orders, their progress, machine status and cooperation through MIS. The system can be supplemented with a sensor monitoring current state of individual machines. It is a collection of data from the system and provides automatic evaluation (currently executed contract in the printing and binding machines, speed of printing, folding, tolerance of stitching, production of book covers). The *warehouseman* expedites finished order according to the date and overlooks completion of production, output quality and prints out a delivery note and pallet labels. Through barcode scanner he inserts data about delivery of finished order into the MIS. Based on delivery notes *accountant* provides an **invoice**. The invoice is generated by the system in accordance with the customer given identification to MIS when price offering was made.

As far as MIS software is connected with the accounting program of the printer, the order is recognized in the economic system.

PRINT ON-DEMAND

On-demand print production process is closely related to management of resources in publishing, printing, storage and distribution of publications. The market analysis for printed publications suggests that employing high inputs for print, delivery, storage and distribution followed by high number of copies delivered to the final consumer is ineffective. The classical technology needs to provide:

- Editorial processing;
- Graphic design;
- Preparation of printing forms;
- Preparation of printing machines;
- Printing;
- Bookbinding.

In contrast, Print on Demand offers the convenience of success by printing the very first book placed on the shelves of the bookstore. The digitalisation and archiving of the created files have brought the simplicity into all technological process. Using them, it is possible to print one piece of copy right in the redaction. Thanks to this technology the publishing house is able to respond operatively to market requirements. Publisher's coverage requirements are to meet number of printed editions to amount of customer orders. Thanks to this technology there is no need to print large amount of high-risk publications and eventually cover storage capacities, where estimated horizon of sales projected to two years cannot be realized and implemented. The high costs of printing process and transport are reduced and return is spread over the entire period of merchantability.

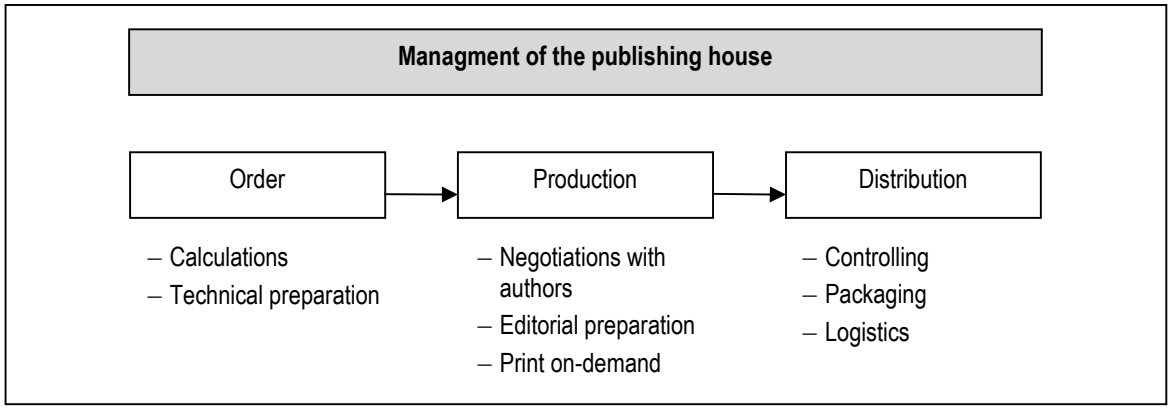

Fig. 2 Logistical processes of publishers

Journal of Environmental Protection, Safety, Education and Management
2015, Number 5, Volume 3, date of issue 28th Juni 2015 ISSN 1339-5270

The realisation of publishing books in the publishing house (Fig. 2) by Print on-demand technology enables competitiveness to 200 specimens. The correct use of digital printing and the bookbinding machine for paperback is an effective solution for an economic part of the process. The storage of publications is in the end, as the number of printed pieces depends on the amount of orders. The publishing house owning the printing version of pdf of publications chooses file from the database and delivers it for processing. The owner of the print on-demand technology can be publishing house, but bookstore is no exception.

The order lifecycle starts with Internet portal where the customer orders selected title. Afterwards the operator of the digital printing chooses selected book title from the database. Publication is printed, book-bended and ready for the distribution. This is followed by personal pick up by the customer or by distribution through e-shop. Distribution channels ensure transport of the order right to the doors of the customer.

The connection between the publishing house, printer and distribution is done through Internet sales – e-shop. Customer provides orders, process sheets for the press operator, invoices, shipping labels for delivery through web application and sales software is activated. The whole process is automatically collected into the economic software and variable number is assigned, which is the number of the order. The state of the whole process is under control of the publishing house, which saves administration costs, process orders, production and distribution. System is controlled through web application and offers list of orders, payments and manufacturing costs.

This model is based on the operational capacity to satisfy market demand and provides customer with a copy on the day of the order if personally picked up and ensures that the distribution is no longer than two days. Customer is known right at the start of the production process of the book. This way publishing house ensures low-cost full service of niche, academic, technical or encyclopaedic literature, technical documentation and training materials.

Print on-demand provides titles which commercial offset printing cannot print at the desired price range and in optimal time (Fig. 3). Low costs of the process provide opportunities for publishing houses to introduce upcoming authors to the market, which title's marketability and sales are questionable. Following the positive response of the market, this pilot project can be printed using commercialised offset printing.

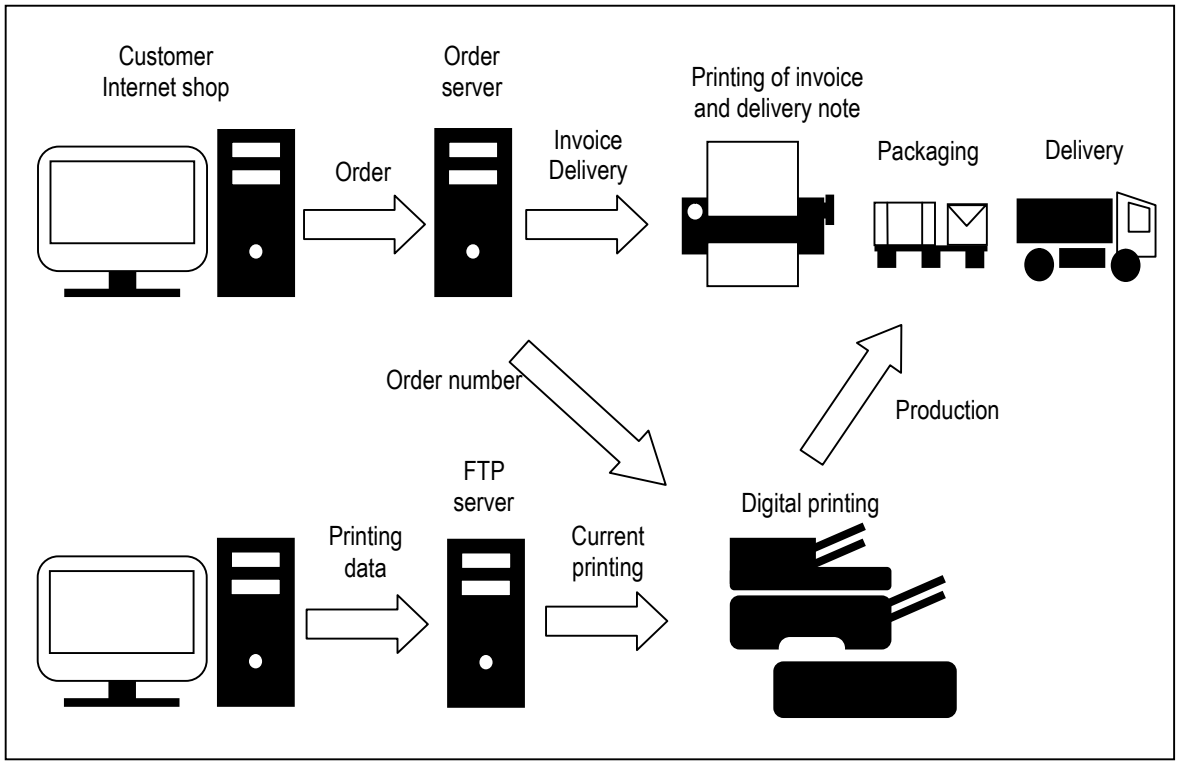

Fig. 3 Lifecycle of publication ordered online using Print on-demand process [11]

DISTRIBUTION IN THE CONCEPT OF INTERNET SALES

The unforgettable part of the polygraph industry is packaging and distribution of the goods. This part of the operations is directly related to bookbinding, but not part of it. Packaging of the goods in the printing industry ensures its protection during distribution. Wrong choice of packing material can cause irreversible damage to the goods. Because of this, packaging is resolved from the start of the ordering process. If printing house takes care of the transport of orders, these

2015, Number 5, Volume 3, date of issue 28th Juni 2015 ISSN 1339-5270

orders are covered with stretch film, which exhibits optimum protection. Subsequently, the goods covered with stretch film are placed on a pallet, where corners are protected with cardboard and the whole pallet is once again strengthened with stretch foil.

Organisation of the company's warehouse is managed through software and system organises technological processes. Sales department takes care of pallet labels indicating the product, amount of printed copies in the package, number of packages in a row, the number of rows and finally the total quantity of copies.

Requirements of the customer could be packaging of the goods into cartons from corrugated cardboard. For this purpose there are standard sizes of boxes, for instance ones supplied by the Slovak Post, or while negotiating the order it is required from customer to enter specific parameters of packaging.

Process of books production with Print on-demand approach introduced changes to packaging and distribution of the publications.

Orders from the e-shop are processed locally on the publisher's server. Publisher prints books one by one, individually, depending on the orders. The total number of printed copies is directly linked to the market demand.

Digitally stored data on the server about the print are automatically prepared for the Print on Demand requirements. Data about orders are automatically sent to the department for distribution and web interface aids customer with an overview of the current state of the order (date of shipment, state of the packaging, distribution delivery by courier, invoice).

Customer obtains account on the server with variable symbol and has an access to the publishing data saved on the server. Through the night these data are automatically processed and are ready for print. Ordered goods will be automatically provided with printed order information, invoices, delivery notes, cover slips and address label.

Publishing educational books for e shopping would not be possible without introduction of printing on demand. Inventory and warehouse space has become too expensive, while turnover fell down. Print on demand reduces costs and eliminates the need of storage space for unsold copies.

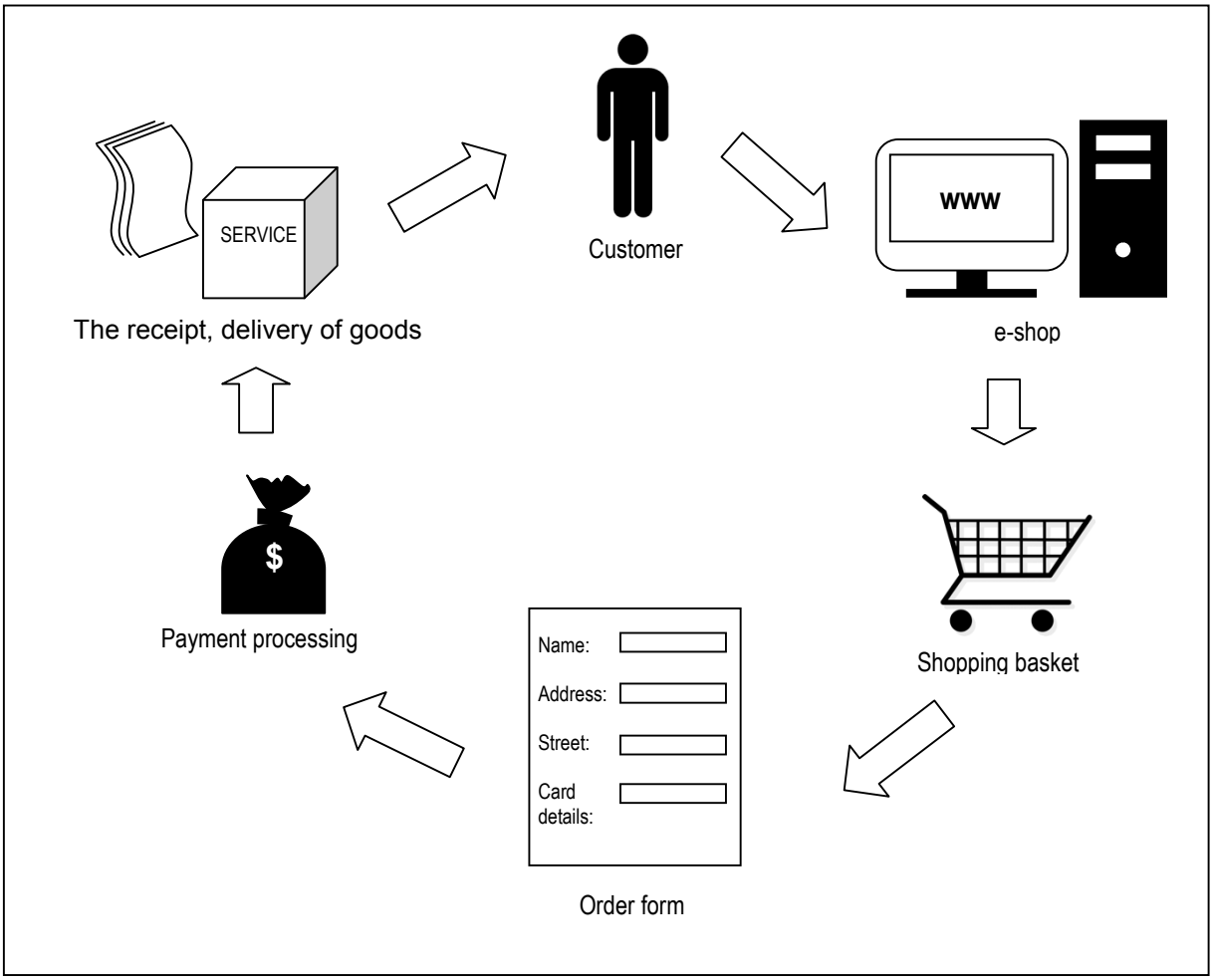

Fig. 4 Transaction lifecycle of purchase and distribution of goods throughout the internet shopping [11]

Distribution logistics of the publishing house ensure summary of logical strategies, which are related to the flow of goods to customer. Strategy concentrates on efficient distribution of time, reduction of the costs and increase in quality. Wider goal is meeting customer requirements and overall satisfaction. The traditional meaning of logistics oriented on the transport, warehousing, procurement activities, materials management and handling of operations changes into customer service through external logistics processes. Information processes aimed to transfer information about work in progress and order status from publishing house to customer are characteristic for these kinds of processes.

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