BUSINESS SCENARIO PLANNING FOR DECLINING INDUSTRY

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Abstract

Companies seek ways to anticipate the **future** of their existing business and keep it sustainable. Researchers claim that it is possible to gain such an insight into the future and that there is an appropriate methodology for doing so. How will digitalization affect our business in particular? It has never been easy to foresee the future, but a scientific approach would help. Rather than claiming an ability to predict the future, **scenario planners** advocate the construction of multiple stories that encompass a variety of plausible futures (Schwartz, 1991). The paper industry seems to be an excellent example of an **industry** declining due to **digitalization**. This desk research is conducted for future scenario planning of the paper industry.

Topicality of the study

We're living in a digital age. *"Everything that can be digital, will be digital"* (Razorfish Annual Report, Cover Page, 1999). This statement was published 15 years ago and it is still valid today. Modern technologies are changing traditional businesses – some of them have disappeared already. Just as film cameras have been replaced by digital cameras, music players now use digital files instead of tapes. Consumers decide to go digital whenever possible. Even more, consumers prefer cloud storage and cloud processing to reduce physical file storage on their own devices. Could we call it – digitalization of hardware? Businesses have to face digitalization challenges and adapt their strategies accordingly. Will Apple Watch change the traditional watch business? How will the internet of things blur the borders between the digital and physical word? There are several theories and methodologies described by various researchers. A **scenario** has been defined by Porter as "an internally consistent view of what the future might turn out to be – not a forecast, but one possible future outcome" (Porter, 1985). One of the most comprehensive descriptions of **future scenario planning** can be found in Chermak's (2010) publication "A Theoretical Model of Scenario Planning". He affirms that scenario planning is believed by many to be a useful means of conducting or enhancing strategic organizational planning options (Fahey & Randall, 1998; Swanson, Lynham, Ruona, & Provo, 1998). This study uses Schoemaker's (1995) Tool for Strategic Thinking to foresee future scenarios for a **declining industry**. This tool uses 2 axes of relevant propositions identified by the researcher and allows us to identify 4 different future scenarios. Scenarios are not predictions but can provide a deeper foundation of knowledge and self-awareness in approaching the future (Harvard Business Review, May 2013). Scenarios provide the right framework for appreciating fundamental long-term choice, which is not the same as next year's annual plan (Voser, 2009). The demand for printing and writing paper is decreasing due to digital alternatives. Documents are reviewed, commented on, signed and published on PC screens, and stored in cloud storage and most of them are never printed. EDI systems allow for connections between trade companies and secure all order-confirmation-invoice workflows directly from PCs. Advertisements are delivered on screens of static and portable devices instead of printed media. There is no need to go to a bookstore and purchase the latest bestseller – e-books are downloadable in seconds. There is no need to print concert or flight tickets – scanners can read QR codes directly from a smartphone screen. What will happen to paper printed media in the digital age? Is the paper industry sustainable? Can it survive and meet the challenges of digitalization? How do we keep paper and printing-related businesses sustainable? What are the environmental impacts of paper versus digital? Can we foresee scenarios of further development for the paper and print industries? The paper industry is an important part of the EU economy. The pulp and paper industry provides 180,000 jobs in Europe directly and 1.5 million in the value chain. It has a turnover of 75 billion euros and adds 15 billion euros to the EU's GDP. Pulp and paper mills employed about 420,000 workers in 1992 and 180,000 workers at the end of 2015 (CEPI Key Statistics 2015). The graphic industry in the European Union represents around 118,000 companies – more than 6% of the EU's total manufacturing industry (Data from Eurostat, 2014). Employment in

the industry stands at around 685,000 people with a turnover of around 88 billion euros (Intergraf, Unfold the Benefits of Print, 2014).

Statement of the problem

Digitalization challenges traditional businesses, causing a decrease in demand. Scientific **future planning** can help to maintain the sustainability of the business and detect interrelations with other industries in the value chain.

Research Study, Subject and Hypotheses

The research study constitutes **future business scenario planning** for a declining industry. The paper industry is used as an example of an industry influenced by digital alternatives for paper. The research subject is the interrelation between industry statistics, PESTLE analysis and possible future scenarios.

The research hypotheses are:

1. Future scenario planning will generate recommendations for business sustainability.
2. Future scenario planning will reveal connections with other industries in the value chain.
3. The paper industry is declining because of digital alternatives to paper.
4. The demand for paper will continue to decrease.
5. Electronic alternatives are environmentally friendly compared to paper.

Research Aim and Main Tasks

The aim of the research is to prepare scientific future scenario plans for a declining industry.

The main tasks include:

1. Quantitative research by gathering data from industry-related associations, organizations and statistical institutions. Data accuracy is cross-checked through comparison with Eurostat figures.
2. Data analysis and relevant conclusions.
3. Identification of key drivers.
4. Comparing the environmental impact of paper and electronic media.
5. PESTLE analysis for the industry.
6. Building possible future scenarios for the industry based on Schoemaker's (1995) Tool for Strategic Thinking.

Research Limitations

The Research covers European Union Countries, Norway and Switzerland.

Theoretical and Methodical Basis for the Research

The theoretical framework consists of investigatory projects about scientific future planning, including the work of authors such as: Chermack, T. (2010), Porter, M. E. (1985), Schoemaker, P. (1995, 2001), Schwartz, P. (1991), PESTLE analysis, reports and models regarding relevant industries, advertising expenditure reports, and studies of environmental sustainability. Future scenario planning is based on Schoemaker's (1995) methodology.

Theoretical Significance and Scientific Novelty of the Research

Future scenario planning helps us to foresee developments in declining industries and adapt business models when this is necessary to maintain sustainability. The methodology is simple enough to be adapted for other industries as well. The research will reveal connections with corresponding industries in the value chain and identify possible impacts.

Research Methods

Quantitative research methods are used by gathering data from industry-related associations, organizations and statistical institutions. To ensure data accuracy the figures are cross-checked with Eurostat.

Research Design

The research design consists of the following steps: collecting statistics about the industry, analysing the collected data and identifying the key drivers, completing a PESTLE analysis, coming to relevant conclusions and building future scenarios on a 2D scenario plot area.

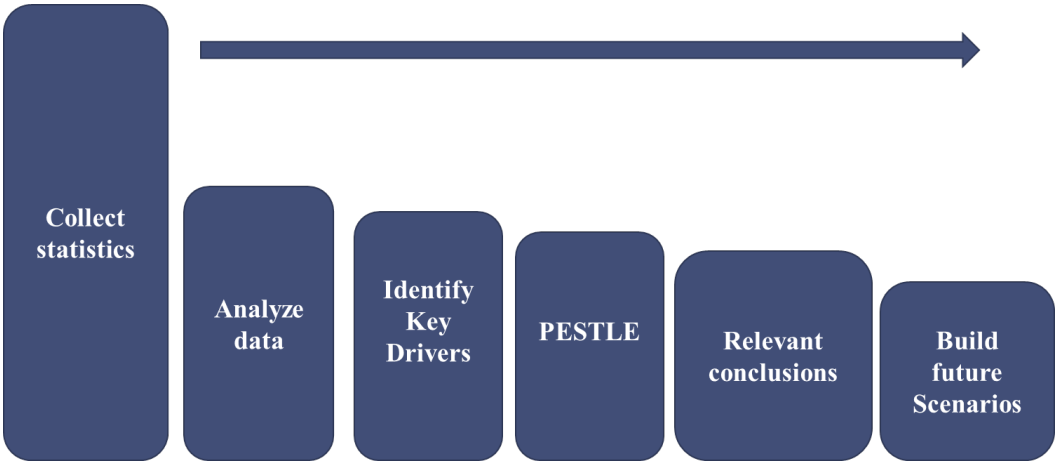

Figure 1. Research Design
(Source: author)

Structure of the Research

To be able to proceed with relevant future scenarios, it is essential to collect statistics about the respective industries. The statistics have to be accurate and detailed enough to reveal the real causes of the decrease in demand. It might not be enough to collect statistics for a particular industry alone. In this research the following statistics are used: CEPI – Confederation of European Paper Industries – for the paper industry's key statistics; Intergraf – European Federation for Print and Digital Communication – for the print industry's key statistics; Creative Industries Economic Estimates (published by the UK government) for publishing products according to end use; the Federation of European Publishers for book publishing statistics; and Zenith Optomedia for advertising expenditures in different media. All these data were cross-checked with Eurostat data to ensure data accuracy. After data collection and analysis it was possible to make a PESTLE analysis as well as plan future scenarios.

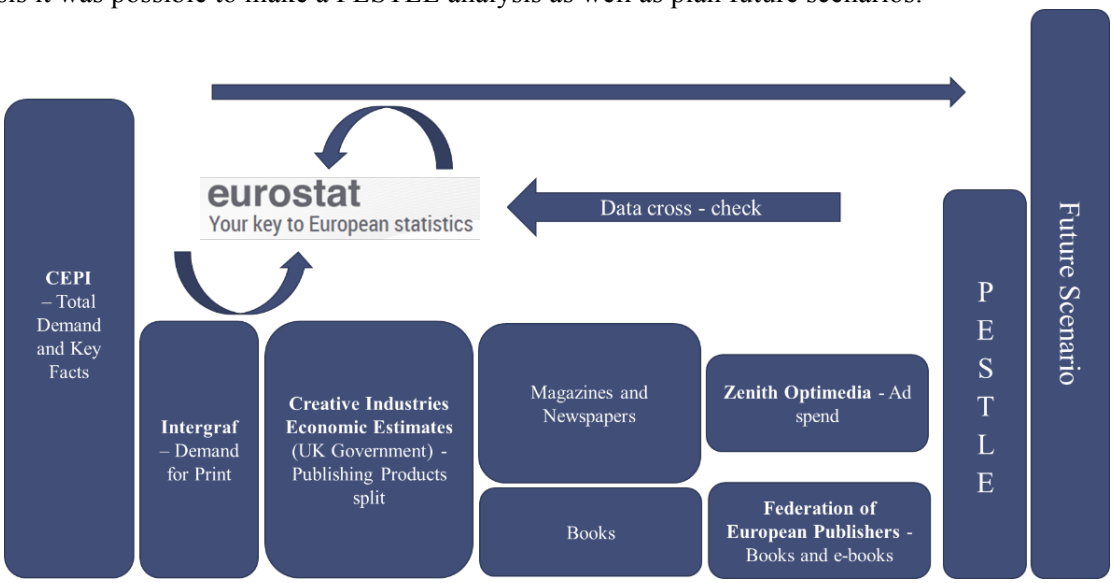

Figure 2. Structure of the research.
(Source: author)

Key Statistics for the Pulp and Paper Industry

To be able to build a future scenario for a declining industry, it is necessary to find the real causes of the decline. The pulp and paper industry has been under pressure for many years. Only half of the paper mills that existed in 1991 are still in the production stage today. Over 24 years this industry closed 717 pulp and paper mills and employment decreased by 256,449 persons in European Union countries alone.

Table 1

Number of mills and employment

Year	1991	2000	2005	2008	2009	2010	2011	2012	2013	2014	2015
Number of Mills	1 601	1 335	1 245	1 077	1 020	1 007	983	959	941	920	884
Employment	435 400	309 954	280 933	242 200	227 565	225 072	189 952	185 112	183 690	181 111	178 951

Source: author; Data source: CEPI (2015)

By comparing tons produced and the number of employees involved, the research can illustrate the average weighted productivity in the industry (export-import data are ignored), represented in Table 2.

Table 2

Average weighted productivity in EU pulp and paper mills

Year	1991	2000	2005	2008	2009	2010	2011	2012	2013	2014	2015
Productivity tons/employee	141	275	314	371	355	369	429	418	416	426	429

Source: author

Despite the decreasing number of pulp and paper mills, the industry can still supply the paper demanded. Pulp and paper mills are becoming integrated, able to connect the value chain from raw wood to cut paper. Paper mills grew in size, output and volume and reduced their number of employees at the same time. That was possible due to automation and rapid technological development as well as continuous investments in R&D. The industry counted 3 billion euros in investments in 2013, a share of 23% of global paper production, maintaining an average EBIDTA of 11.4%. The investment rate in the paper industry is two times higher than the average in the whole manufacturing industry. The industry is important for the trade balance – the European paper industry exports 21.6% of its production. Environmental performance has improved year by year and 56% of energy used by the paper industry is bioenergy; CO2 emissions have been reduced by 43% since 1990 (CEPI Sustainability Report 2013). Most productive paper mills are able to produce about 500,000 tons of paper per year with just 230-280 employees in total, which is 4 times more output than average in the manufacturing industry. Paper machines grew in size to a 6m paper roll width, reaching paper output speeds of more than 100 km per hour. Productivity records have been announced every year since 2004. According to CEPI statistics, paper demand in the EU has been decreasing since 2011, and to find out what the real reasons are behind this, the research differentiates paper demand according to paper grades. There are many paper grades produced by the industry – paper for industrial and hygienic use, packaging paper, cigarette paper, cardboard boxes and book-binding boards, newspaper, office paper, magazine paper and much more. Separating paper into grades according to end use will allow us to find the reason for the decline of the industry.

Table 3

Graphic Paper (Paper for Printing)

Paper	Typical use
Newsprint	Newspapers, info books, direct mail ads
Other Uncoated Mechanical	Various printing jobs
SC Magazine	Magazines and catalogues
Coated Mechanical Reels	Retail and subscription magazines, advertisements
Coated Wood-free	High quality magazines, illustrated books, advertising materials
Uncoated Wood-free	Reading books, documents

Source: author

Total paper demand has been decreasing since 2008, when the world faced a financial crisis. As we can see in Table 4, total paper consumption has been relatively stable since 2012, varying between 77 and 76.5 million tons, while graphic paper consumption has been decreasing constantly.

Table 4

Paper consumption in the EU in '000 of tons

Year	1991	2000	2005	2008	2009	2010	2011	2012	2013	2014	2015
Consumption All Paper	61 533	85 087	88 219	89 865	80 761	82 984	81 498	77 364	76 419	77 080	76 830
Consumption Graphic Papers	44 304	45 947	42 345	40 949	34 714	36 318	34 896	32 655	31 056	30 249	29 061

Source: author; Data source: CEPI (2015) and EuroGraph (2015)

Figure 3 shows that the decrease in graphic paper demand is the main reason for the overall decrease in paper demand in Europe. In the year 2000, demand for graphic paper was almost 46 million tons, and it decreased year by year to 29 million tons. Just to understand how much a decrease of 17 million tons of paper is – one truck can carry 24 tons of paper. European demand for graphic paper decreased by 709,000 trucks of paper, or approximately 190 trucks every day, over the last 15 years. The highest total demand for paper in Europe was in 2008, reaching 90 million tons.

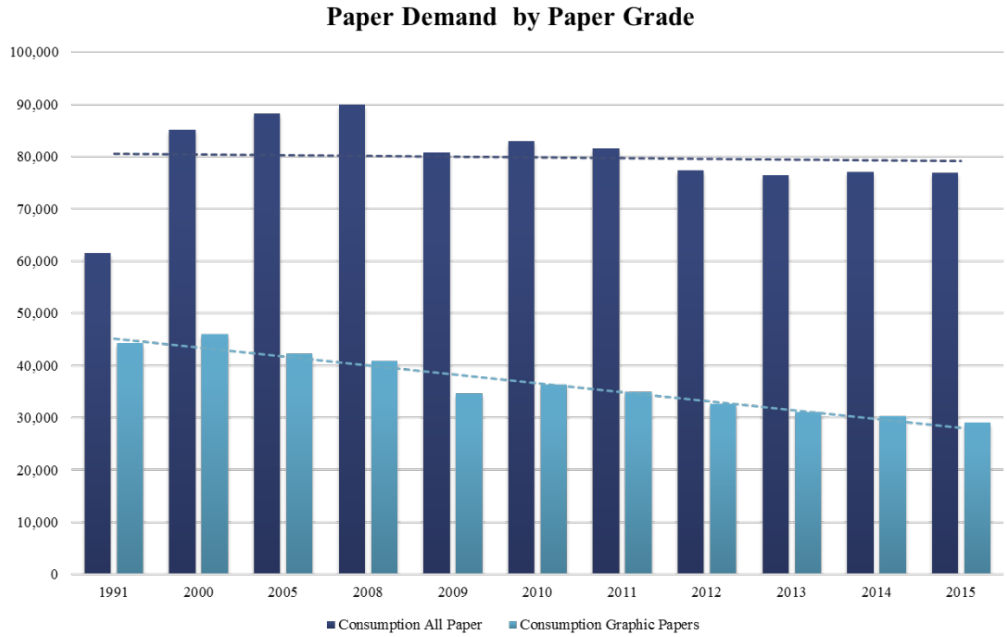

Figure 3. Paper demand by paper grade.
Source: author; Data source: CEPI (2015) and EuroGraph (2015)

The end use of graphic paper is printed media, which is a result of the publishing industry. Some publishing industries are very dependent on advertising – like newspapers and magazines, as well as direct mailing, catalogues, advertisement brochures and leaflets.

The percentage of publishing according to category is presented in Figure 4.

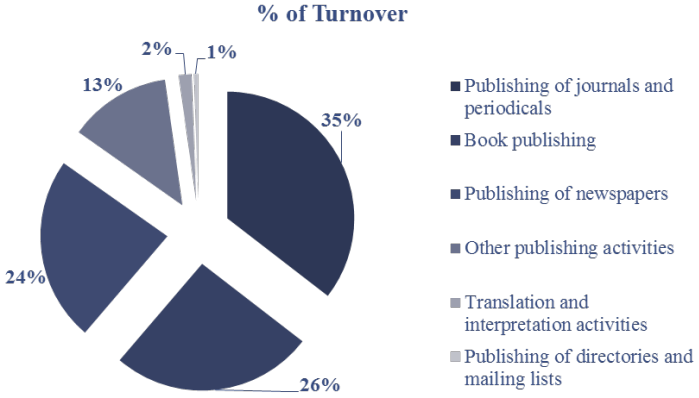

Figure 4. Publishing end use according to product category.
Source: author; Data source: Creative Industries Economic Estimates (2015)

Newspapers and magazines represent 59% of publishing products according to turnover. These products are especially dependent on advertisement area sold. The decrease in demand for graphic paper can be explained by the switch in advertising expenditures from printed media to electronic media. Newspapers and magazines are substituted by Internet portals and delivered on the screens of electronic devices. In 1998, printed media received 57% of advertising expenditure in Europe; by 2014 the figure had decreased to 9% (Zenith Optimedia, 2014).

Table 5

Advertising Expenditure on Printed Media

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ad Spend in Printed Media	57%	51%	47%	43%	38%	36%	39%	39%	42%	46%	32%	21%	15%	13%	12%	11%	10%	9%

Source: author; Data source: Zenith Optimedia (2014)

What about books – representing 26% of turnover in the publishing industry? Books in Europe remain printed on paper; e-book popularity was below 11% in 2015 (Federation of European Publishers, 2015). There are many reasons for the low popularity of e-books in Europe, reported by various researchers. One of the reasons is that many European countries have lower taxation on printed books, while e-book VAT taxes are applied without any deduction, which makes e-book pricing less attractive. Another reason is Amazon's price policy – they price e-books very similarly to printed books; consumers pay just 2-3% less for an e-book than for a hard copy.

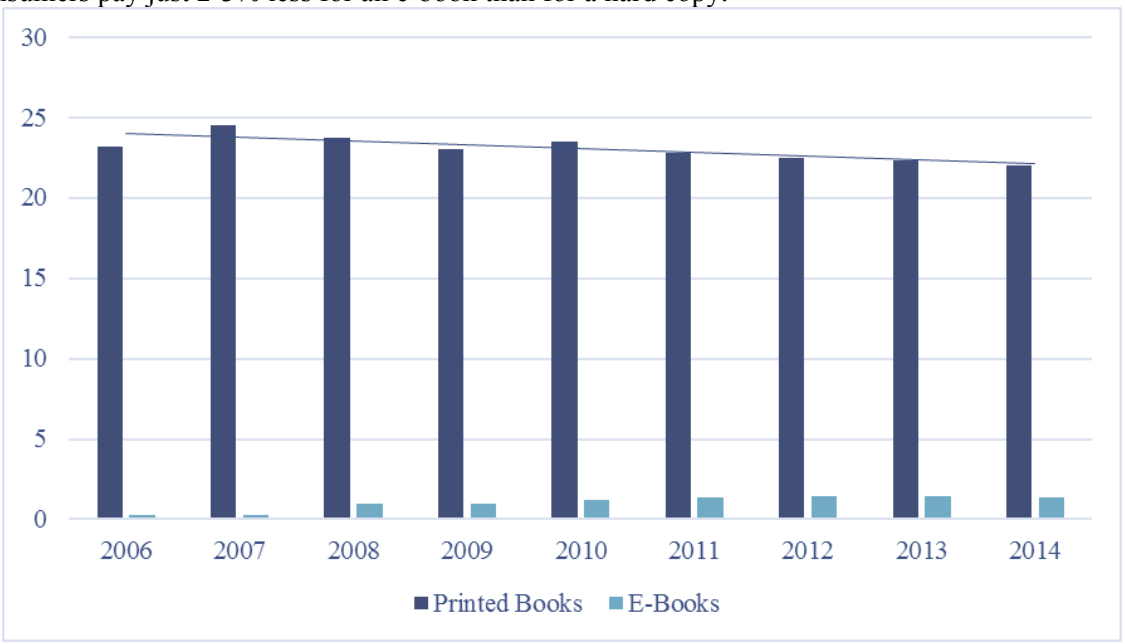

Figure 5. European Book Publishing Statistics 2014, Turnover Bn €
Data source: Federation of European Publishers (2015)

Key industry drivers

Research can identify the key drivers to be included in the final version of future scenario planning. The axes will be Technology Acceptance Level (high/low) by consumers and Technology Development Speed (fast/slow). The real cause of the decrease in demand for paper is printing and writing paper (also called graphic paper). The decrease in demand is most visible in documents and printed publishing, such as newspapers, magazines and books, including school materials.

Environmental sustainability of paper versus electronic media

There are many myths and stereotypes in the discussion of the environmental impact of the paper industry. The main concerns are related to the use of forest and energy resources. The paper industry uses significant amounts of forest resources; at the same time, European forests have grown by over 30% since 1950 and are increasing in size by an area four times the size of London City every year (World Forest Resources, 1953 and UN FAO Global Forest Resources Assessment, 2010). In fact, 90% of deforestation is caused by unsustainable agricultural practices (Underlying causes of deforestation,

World Rainforest Movement and UN FAO, 2013). 55% of the world's wood harvest is used for energy and 25% for construction. There are some other uses but paper only takes up 11% directly and in addition can utilize up to 7% from construction waste (FAOSTAT, 2011). In Northern Europe, where almost all ancient forests are protected, paper comes from managed semi-natural forests where the cycle of planting, growing and logging is carefully controlled. Historical concerns in Northern Europe and Canada have now been largely resolved through co-operation between legislators, campaigners and forest industries to protect ancient forests. 82.7% of the pulp used in the EU originates from Europe. (CEPI Sustainability Report, 2011). All pulp imported to Europe is covered by the EU Timber Regulation, which prohibits the import of wood products from illegally harvested timber. Well managed forests provide a natural habitat for wildlife. There is always room for improvement and the European Environment Agency (EEA) has stated that "forestry practice in Europe is developing in a way that can be considered good for biodiversity." (EEA, The European Environment, State and Outlook 2005). Forests in Europe are planted – planted forests can be environmentally sound sources of renewable energy and industrial raw material. (WWF, Living Forest Report, 2012, Ch 4). The paper industry has a number of respected certification schemes ensuring the paper used has come from a sustainable forest source. There are some 30 schemes in existence, but the two main auditable certifications that have emerged are the Forest Stewardship Council (FSC®) and the Program for the Endorsement of Forest Certification (PEFC®). The paper industry uses energy as well. On average it takes 500 kilowatt hours to produce 200kg of paper, the average consumption per capita in Europe. The paper industry is the biggest user of renewable, low carbon energy and 54% of the energy used in European paper making is biomass-based – more than in any other sector. Recyclable paper is made from wood, a renewable carbon storing resource. (EMIP, The Facts of Our Value Chain, 2008). It is hard to believe, but reading a newspaper can consume 20% less carbon than viewing news online. With a reading time of 30 minutes per day the environmental impact of a web-based newspaper is, in general, in the same range as a printed newspaper's environmental impact. (Swedish Royal Institute for Technology, Moberg et al, 2007). The sector Pulp, Paper and Print is one of the smallest greenhouse gas emitters on the planet, responsible for just 1.1% of CO2 emissions. It is important to remember that paper is recyclable – 74% of paper is recycled in Europe (CEPI Key Figures, 2014) – while electronic waste is becoming a serious problem. Electronic waste is now the fastest growing component of the municipal waste stream. The amount of electronic products discarded globally has skyrocketed recently with 20-50 million tons generated every year. In Europe, e-waste is increasing by 3-5% a year, almost three times faster than the total waste stream. (Greenpeace, The e-waste problem, 2013). The main conclusion is that use of paper is no less environmentally friendly than electronic alternatives. Paper is a renewable, sustainable and recyclable product. Paper is produced from renewable resources, using bioenergy and producing low CO2 emissions compared to other industries.

PESTLE Analysis of the Paper Industry

Political factors

Many EU countries support paper printed books with a lower VAT rate. Some EU countries have a fixed book price policy – e.g. a particular book price is exactly the same in all bookstores. A fixed book price encourages consumers to purchase the printed book. Some countries have additional tax on data storage devices, including e-book readers. The paper industry uses bioenergy and this energy source is supported by EU countries with special rates and lower taxes.

Economic factors

Paper is the cheapest and most reliable information storage system by far. Consumers in the EU can afford portable devices with high resolution screens. Publishing can be cheaper per copy on electronic devices than on paper; however, this is not always reflected in the end-user price. Many newspapers and magazines are not printed on paper anymore; only e-versions are available. Advertising expenditure is moving to electronic devices – away from paper printed media.

Social factors

Portable devices, such as smartphones and tablet PCs, are becoming popular for data access and storage. Consumers are spending more time on social media networks. News can be delivered immediately on electronic devices. Messaging services are used for information exchange – both

personal and business. Free-of-charge newspapers (like METRO) are becoming a publishing phenomenon in big cities. Self-publishing is growing compared with the previous decade.

Technological factors

Printed paper media is being substituted by electronic alternatives – static and mobile devices, mainly PC and tablet screens. 4G and LTE mobile networks are developing quickly in all EU countries, allowing high-speed data access and transfer. Documents are being printed less. Batteries are becoming faster-charging and longer-lasting. Screen resolution increases every year. Wi-Fi coverage is growing.

Legal factors

Copyrights are well protected in the EU. Content authors and publishers enjoy a safe and functional legal environment.

Environmental factors

Forest areas are growing, the resource is well managed, and biodiversity is maintained according to EU guidelines. Several certification systems for sustainability are in place and accepted by forest owners. Paper recycling in Europe is close to the maximum possible. Waste management provides the possibility to separate paper from other waste. The paper industry's CO2 emissions have been reduced and are considered as very low compared to other industries. Electronic waste is becoming a serious problem.

Future scenarios based on Schoemaker's (1995) Tool for Strategic Thinking

The scenarios are built on a Technology Acceptance by Consumers axis (vertical) and a Technology Development Speed axis (horizontal), allowing us to plan 4 different future scenarios for the paper industry.

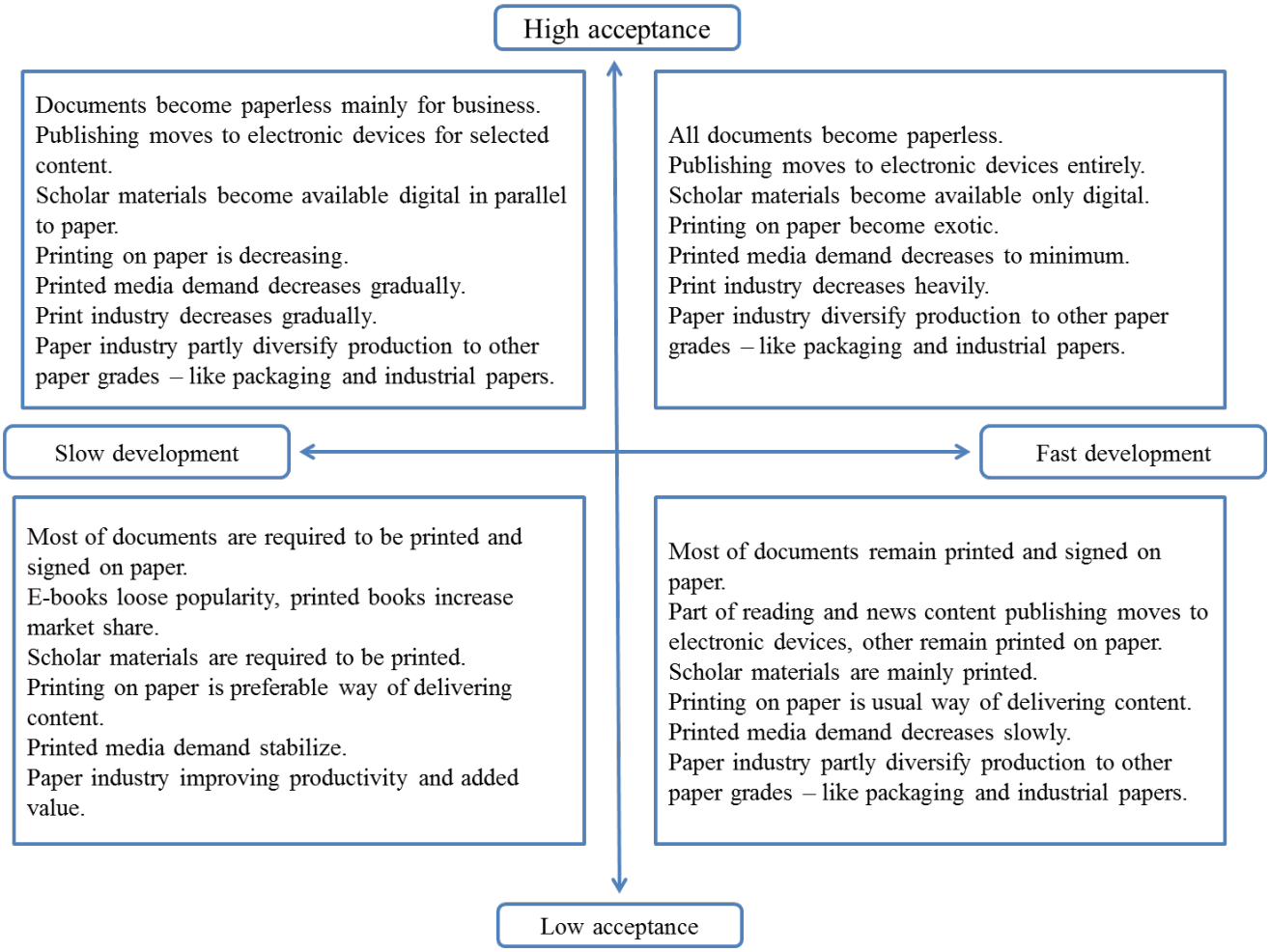

Figure 6. Future scenarios based on Schoemaker's (1995) Tool for Strategic Thinking
Source: author

Three of the four future scenarios foresee a decrease in the demand for printed paper. That will have an effect on three industries – the paper, graphical (printing) and publishing industries. Three of the scenarios predict the need of the paper industry to diversify and switch its production capacities to other paper grades. There is no scenario where the printing industry grows. All the scenarios predict a business model change for the publishing industry.

Research hypotheses confirmed:

- Future scenario planning will generate recommendations for business sustainability. The need for diversification has been confirmed.
- Future scenario planning will reveal connections with other industries.

The decrease in demand for paper will impact other industries as well. Future planning identifies directions for the paper, printing and publishing industries – these industries will have to adapt their business models. There is the possibility to launch more in-depth research for each industry based on the same methodology, especially applicable in the case of strategic business decision-making such as vertical or horizontal integration.

Research hypotheses partly confirmed:

- The paper industry is declining because of digital alternatives to paper.

The decline is connected not only to the fast development of digital technologies, but also to consumer acceptance of these technologies. Consumers are changing their habits, which is changing advertisement expenditure allocation, which is increasing the pressure on publishing products like newspapers and magazines. It is a combination of factors which is causing the decrease.

- The demand for paper will continue to decrease.

The decrease in total demand for paper is partly counterbalanced by the increase in non-printing paper grades. The demand for printing paper will decrease; this is confirmed in three possible future scenarios out of four.

Research hypotheses not confirmed:

- Electronic alternatives are environmentally friendly compared to paper.

A direct comparison of these technologies is not relevant. Both have their pros and cons, but we can state that paper is environmentally friendly, sustainable, renewable and recyclable – the key indicators are favourable for paper, not for electronic alternatives.

Main Conclusions and Recommendations

Conclusions

1) Data analysis confirms that the total demand for paper has decreased in the EU.
2) The demand for printing and writing (also called graphic) paper has decreased considerably, while demand for other paper grades such as paper for packaging and non-printing paper grades is increasing, which partly compensates for the total decrease in demand.
3) The demand for printing and writing paper will continue to decrease.
4) The decrease in demand for printing and writing paper will have a negative influence on European print industries.
5) The change in consumer habits in combination with technological development will challenge the publishing industry.
6) Paper is an environmentally friendly way of delivering and storing information.
7) There is the possibility to launch more in-depth research for each industry based on the same methodology, especially applicable in the case of strategic business decision-making such as vertical or horizontal integration.

Recommendations for the industry based on future scenario planning

1) The paper and pulp industry remains healthy, but needs to adapt – convert production from decreasing paper grades to increasing ones, maintain productivity and diversify when necessary. Printing paper production has to be decreased and production capacity needs to be converted to packaging and non-printable paper grades.

2) The printing industry needs to look into long-range planning and diversification of business – there is no scenario predicting an increase in demand for printed media. Book printing seems to be more sustainable than other printed medias.

3) All the industries above should use environmental factors to educate against stereotypes, explaining the real consequences of using different technologies.

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