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The importance of data analysis in the modern era of print production

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Introduction

Data analytics applies generally to all processes and resources necessary for the collection and analysis of critical data. For all businesses to achieve a strategic edge, data analytics play a vital role for three main purposes:

-**Product Development:** data analytics offer estimation and exploration capability for information and provide a good understanding of the market or current state, while offering a solid base for forecasting future results.

-**Target Content:** for improving consumer orientation in campaigns, figure out which client case group responds to the initiative and thus increases the overall performance of the marketing activities.

-**Efficiency in Operations:** data analytics helps find more viable ways to streamline operations, recognize possible issues and act on them.

In order to improve any operation, relevant data needs to be collected, either from the production itself or where else is needed. Organizations usually gather data from employees, companies, industry, and realistic expertise. In the printing industry, as in all other businesses, data analytics also help the optimization of the processes, so companies can help reduce costs, make better decisions and help analyze customer trends and satisfaction, which can lead to new –and better- products and services

Problem Description
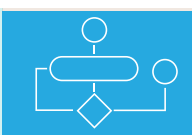
According to many, digital transformation is not just a current trend for all businesses. It is a survival issue. The pandemic period made clear a fact that was also known before COVID-19: each organization needs to have the ability to adapt quickly to supply chain disruptions, time to market pressures and rapidly changing customer expectations. For all these critical facts and company decisions, one must take consideration of all data analytics

Industry 4.0
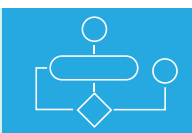
Industry 4.0 is often connected with digital transformation. And digital transformation is not only a high trend of the latest years, but the main procedure that a company needs to follow to stay competitive, grow up, survive. This is a lesson obtained from the last three years, due to COVID-19 pandemic where a high acceleration took place in adoption of digital technologies and digital transformation in all businesses and society.
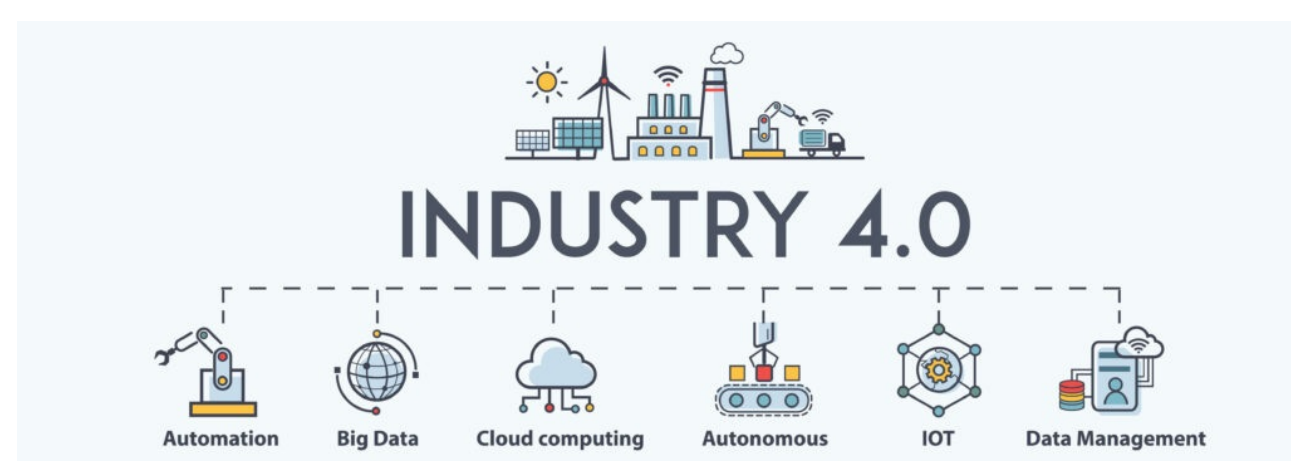
Figure. 1.
Themes at the heart of Industry 4.0

Data Analytics / BI

As a company's level of digitalization increases, huge volumes of data are generated. This is referred to as big data. If big data is to be used to control operations or to develop and monetize digital business models, the available data needs to be complete, centralized, and of a high quality. Only then does it provide a true picture of the actual circumstances, which is in turn a prerequisite for reliable analyses and forecasts, and for efficient operational control.

However, most big data is nothing more than raw data. Only if this wealth of data is provided on a cross-company basis for data analytics solutions does it become valuable information and the driving force behind a data-driven organization. And only then can decision-makers use evaluations to react to changes quickly and confidently. The structured collection and analysis of data also creates transparency regarding purchasing processes and customer activities throughout the digital customer journey. The resulting in-depth understanding of customer behavior and expectations can be used to optimize offerings, products, and business ideas on an ongoing basis.

For printshops, transforming data into actionable intelligence can mean the difference between struggling and thriving. Maximizing the value of information requires data analytics: the process by which raw data is analyzed to reach conclusions.

In terms of Industry 4.0, data analytics focus on "what will happen" rather than "what has happened". These problems are entitled as predictive analytics and aim at building models for forecasting future possibilities or unknown events. Data Analytics helps printshops to get actionable insights resulting in smarter decisions and better business outcomes. For this reason, data analytics is becoming a very attractive topic for almost every manufacturing firm in Industry 4.0 era.

Figure 2

Data analysis process steps as proposed in the Heidelberg predictive monitoring solution. Recording - Analyzing – implementation – Reporting

In the future, the most successful commercial and packaging printers will be the ones who make their processes leaner and faster, who get more out of their data, and who can adapt more effectively to the needs of customers with an increasingly digital setup. All that requires new ways of thinking and working, which in turn demands an understanding of the key technologies and their potential for the printing industry.

Digital transformation and implementation of a smart printshop ecosystem based on industry 4.0 and Lean manufacturing practices is not a readymade product or a one-and-done project or just another IT initiative. To truly keep each company competitive and adaptable, it is necessary to adopt a holistic approach

Discussion / Conclusion

While many printing companies have made significant progress with their digitalization efforts, smaller companies are still struggling to find and implement a workable digitalization strategy. Accordingly, the challenges they face are different, too. The task confronting those companies that are lagging behind is normally to bridge fundamental digitalization gaps by replacing outdated technology and modernizing processes that are still analog. Other businesses have been investing in the relevant technology for years but are struggling to adapt their business model, while others still, despite having the latest technology and an innovative business model, are unable to find a viable operating model. These few examples alone demonstrate that there can be no one-size-fits-all digitalization strategy. Each company needs to find its own way based on its strengths and its goals. Often, the best way of establishing what is possible and makes sense is to bring in external experts with proven industry experience.

However, it is vital to aim for a holistic strategy from the outset – even if a new or modified digital organization initially takes shape little by little and point by point, something that is strongly recommended.

If digitalization is the leveraging of the processes and information themselves, digital transformation is the sustained implementation of new business practices enabled by digitalization. Digital transformation should start with manageable projects and defined subgoals to limit the expense and the resources required. This approach removes any risk from ongoing operations, while also encouraging acceptance among management and other staff. Rather than being achieved through single ground-breaking solutions, a successful transformation is based on the orchestrated interaction of various solutions.

Another important consideration is that Lean manufacturing philosophies and continuous improvement processes first need to be implemented to unlock the full potential of digitalization. If these prerequisites are met, nothing further stands in the way of successful digitalization.

Even after 30 years of the Internet economy, do printing companies still have time to switch to systematic digitalization? Time is running out, though, because increasingly – unlike in the analog/traditional business world – the winner takes it all in the Internet economy. Anyone who fails to make the transition or delays doing so, runs the risk of becoming a victim of the digital era. For industrial settings such as the printing industry, that means the time to act is now!

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