Guide for the Digital Transformation Manager (DTM) for the Furniture Sector

Leading companies in Furniture value chain to implement their digital transformation strategy

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Content

DIGITAL TRANSFORMATION MANAGER

Enroll in the online and free of charge training course for Digital Transformation Managers for the Furniture Sector

You can register at this link

Introduction

WELCOME

DITRAMA EU project partners are glad to introduce the training course "Digital Transformation Manager (DTM) for the Furniture Sector". It is a complete and interactive online training course, free of charge. It is available in 7 languages (English, French, Italian, Polish, Portuguese, Romanian and Spanish). The training materials and online course have been created in the framework of the DITRAMA project, a Sector Skills Alliance co-funded by the EU ERASMUS+ program, by 12 partners from 8 EU countries.

The Digital Transformation Managers will be in charge of leading the deployment of the digital transformation within companies in an integral manner. This professional will require technical, technological and managerial knowledge and skills, vision for their deployment within the sector and transversal skills for change management.

The course consists of 100 micro training pills (70 hours) grouped into 10 units, that cover strategic as well as practical aspects. The online course offers two training paths: for Higher Education students (EQF 5 with 2.8 ECVET credits) and for Vocational Education & Training students (EQF 4 with 1.4 ECVET credits).

BOOK OBJECTIVES

- *Complement the online course*
- *Make learning easier for both teachers and students through a tool that brings together all the DITRAMA training material*

TO ENROLL IN DITRAMA COURSE

Do not miss this opportunity to become a DIGITAL TRANSFORMATION MANAGER for the furniture sector and access for free the online course at aula.ditrama.eu/register

TO GET MORE INFORMATION

Discover the aims of the Project and all the news on the Official Website
www.ditrama.eu

Follow the hashtag #DITRAMA in LinkedIn and Twitter and share your own DITRAMA experience!

TO BE CONTACTED

WOULD YOU LIKE TO PRESENT DITRAMA TO YOUR STAKEHOLDERS?
Feel free to contact us for any better clarification!

info@ditrama.eu

Digital technology - exploration of contemporary emerging and potential disruptive technologies

PILLS

TOPICS

- *Internet of Things (IoT)*
- *Industrial Internet of Things (IIoT), framework for product development*
- *Cloud computing, enabler of Industry 4.0*

Internet of Things - Emergence of Connected Economics

SUMMARY

IoT is settled in the principles of connected economics. Connected economics converges economic principles from both the industrial and informational economics plus the potential accelerator of network effects. IoT and associated connected companies will create new business models.

LEARNING OUTCOMES

- *Main components are: PREDICT and PREPARE*

TOPICS

- Definition of Internet of things
- Future trends

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

New business models: confluence of physical products with connected digital services will create connected economics.

New capabilities: the mash-up of industrial and information economics and network effects is creating a deep capability gap within the executive of firms.

Disruption already started: firms need to prepare for the new basis in competition and begin to act as if it is already late.

ADDITIONAL MATERIAL

- The Economic Impact of IoT PUTTING NUMBERS ON A REVOLUTIONARY TECHNOLOGY, Frontier Economic (2018) https://www.frontier-economics.com/media/1167/201803_the-economic-impact-of-iot_frontier.pdf
- Growing opportunities in the Internet of Things, MC Kinsey & Company (2019) https://assets.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/growing-opportunities-in-the-internet-of-things#
- Ross, J. W., Beath, C. M., & Mocker, M. (2019). Designed for Digital. MIT Press.

What is IoT/IIoT? General approach and platforms

SUMMARY

One of the shortest and comprehensive definition of Internet of Things (IoT) say that the IoT is "a world-wide network of interconnected objects uniquely addressable, based on standard communication protocols." IoT applications can be found in all important areas of our lives (economic, social, health, governance etc.). The Industrial Internet of Things (IIoT) refers to IoT in an industrial context. The concept involves connected machines and data management in order to achieve improvements in productivity and quality. IIoT applications can be seen in many areas: industrial automation, logistics, software, security, energy management etc. IIoT platforms are systems for connecting industrial processes with information systems. They include hardware and software and they are tools for improving connectivity, control, and data analysis in industrial environments.

LEARNING OUTCOMES

- *Recognize IoT & IIoT systems/applications*
- *Identify IoT & IIoT platforms*
- *Compare IoT & IIoT platforms*

TOPICS

- IoT and IIoT
- Applications
- Platforms

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

In the wood industry IIoT platforms like Tapio (Homag) and Maestro Digital Systems (SCM) offer its customers many options for networking, monitoring and increasing productivity and efficiency in order to develop new business models through digitization. They offer solutions for machines monitoring, machines servicing and remote servicing, data backup, management of tools and materials, optimization of cutting, nesting processing, furniture design/configuration, CNC programming, augmented and virtual reality, software applications for all machining types and methods.

ADDITIONAL MATERIAL

- IOT5.net: Internet of Things (IoT) Revolution in Digital Industry.
- Tulip: Manufacturing Resources.
- Tapio: Digital tools for the wood industry.
- SCM: Maestro digital systems.

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IoT framework - Case study Tapio (HOMAG)

SUMMARY

Tapio IIoT platform "The open wood industry ecosystem" offers its customers many options for networking, monitoring and increasing productivity and efficiency in order to develop new business models through digitization. It offers solutions for machines monitoring, machines servicing and remote servicing, data backup, management of tools and materials, optimization of cutting, nesting processing, furniture design/configuration, CNC programming. Developed in partnership with Homag and already having over 40 large companies as partners, it is one of the best known in the field.

LEARNING OUTCOMES

- *Recognize the main features of a IIoT platform*
- *Understand how an IIoT platform works*
- *Understand the benefits of using an IIoT platform*
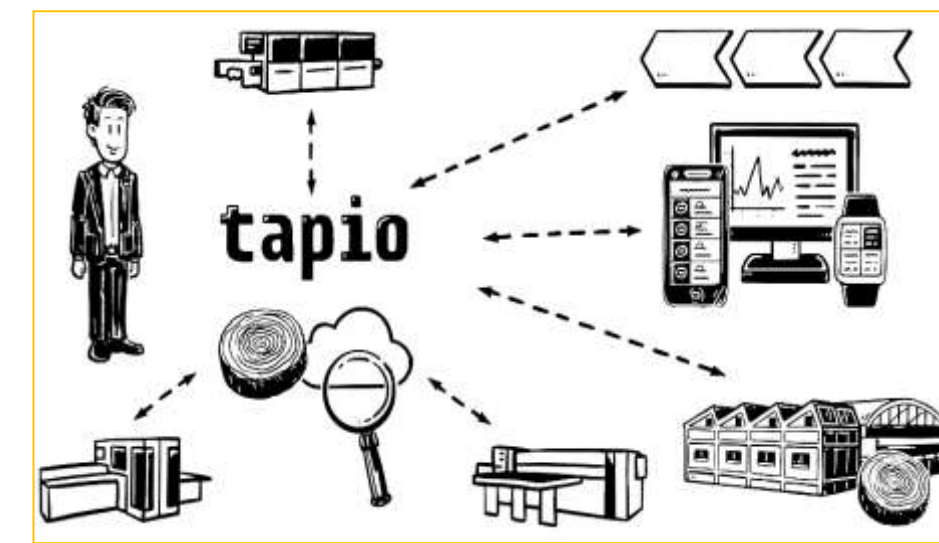
TOPICS

- IoT application in Wood Industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

With over 40 key industry partners, Tapio is a perfect example of an IIoT platform. It offers different solutions for companies in the wood industry: real-time machine management, machine service management, data management, TeleService, tools and materials management, optimization of panel cutting, optimization of nesting cutting, furniture configuration. All this, in order to increase productivity and competitiveness in an increasingly crowded market.

ADDITIONAL MATERIAL

- https://www.tapio.one/en/

7

Digital product configuration, selling, buying from a single platform (pCon)

TOPICS

- International B2B network platform
- pCon digital platform concept
- How to use pCon digital platform

SUMMARY

Compared to clasical methods, the international B2B network platform connects business partners in an easy and powerfull way. PCon platform is a digital platform where professionals from all over the world are connected in the pCon community.
Any professional registered in pCon community can see manufacturer's catalogues and request access to them. Once the manufacturer accept the request, the professional can use the tools provided by pCon platform for presenting and selling the products.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

As an interior designer or architect in a design studio, retailer at the point of sale or order processor in the backoffice, it is important to take part in an international digital platform that connects business partners in an easy and powerful way. This could be one way to increase the scale of your business.

LEARNING OUTCOMES

- *Understand the concept of international B2B network platform*
- *Understand how a digital platform such as pCon works*

ADDITIONAL MATERIAL

- https://www.businessnewsdaily.com/5000-what-is-b2b.html
- https://www.walterknoll.de/en/inspiration/products/digital-wow-for-your-customers

Time and Job registration by barcode scanning
Case study of One Two

SUMMARY

Nowadays, more and more data is being recorded and processed, yet getting reliable data was not always that easy. Workers were asked to write down their working hours, jobs, labour and activities. In order to process these data, an office worker punched the information into the computer. With the increasing use of technologies like barcodes (or RFID) this has become a thing of the past. With the use of barcode scanners not only all activities within a company is being tracked but also stock management and material consumption is constantly monitored so that the office knows when to order new stock or to deal with stock problems.
The next step is to couple this information to the ERP software used in the company so it can process the data and suppliers are automatically prompted to send more of the stock supplies.

LEARNING OUTCOMES

- *What is a barcode scanner and why use it?*
- *What information is being recorded?*
- *Why is this information being recorded?*
- *An introduction to barcode-possibilities*

TOPICS

- How are the barcodes scanned?
- Why are the barcodes scanned?
- What can be done with the data?

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

With the use of barcode systems, we can first and foremost monitor working hours, jobs, projects and activities. At the end of the project we can see how long we worked on the project, who carried out the given tasks and how much time was consumed by each individual task.

Secondly, we can monitor the consumption of materials. We can monitor what was consumed for the individual project, see when stock is running low and what the total consumption of certain products is over time. We can also monitor the project status to see the progress and verify milestones and we can connect our warehouse inventories to locate certain goods for picking and restocking the inventory.

Barcode scanning is most useful when connected with an ERP package.

ADDITIONAL MATERIAL

- OneTwoConcept. https://www.one-two.com/en
- OneTwoConcept. Woodsector - Job Registrationhttps://www.one-two.com/en/pp/hout-jobregistratie
- OneTwoConcept. Barcode-kookboek https://www.one-two.com/nl/sp/barcode-kookboek

Cloud Computing – Enabling Industries of the Future

SUMMARY

At its core, Cloud Computing allows you to design, configure, and use a variety of computing services without owning or maintaining the hardware. In other words, it allows a company to lease computers (processors, memory), storage capacity, based on their needs without paying for times where the equipment is not being used and having the flexibility to grow or reduce the number and type of resources (servers, storage) used. This flexibility is one of the key drivers for Cloud computing's popularity. The alternative for a company is usually to overprovision (buy a lot more equipment than needed) or react slowly to market demands. However, the benefits of Cloud Computing go well beyond just leasing computation or storage. Current offerings allow for powerful engines that can (i) automatically increase or reduce computation power based on minute-to-minute traffic and computational demands (e.g., Google AppEngine); (ii) offer specialized solutions (e.g., Analytics on Data, highly scalable data storage); (iii) choose where to deploy and availability of your services around the globe; and (iv) provide disaster resilience and recovery.

LEARNING OUTCOMES

- *Understand Cloud computing and its capabilities*
- *Understand Cloud service models: Infrastructure as a Service, Platform as a Service, Software as a Service*

TOPICS

- Cloud computing definition
- Service models
- Public, Private, Hybrid Clouds
- Locality and reliability

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Cloud computing can be a key enabler for the design, optimization, and customization of quality furniture into the future. On the one hand, it allows for digital models of the furniture to be developed and used to improve quality and cost-efficiency as well as opening the door to custom solutions for customers. On the other hand, it can help power the manufacturing process itself, from delivering specifications and requirements to providing control to high-end robots manufacturing specific parts. Finally, the use of Cloud computing can power new business models in conjunction with Internet of Things Technologies. For example, moving to a pay-for-performance (or rather 'pay-for-comfort') approach, where a customer pays a monthly fee for usage (e.g., of a sofa) and the manufacturer can use sensors in the furniture to automatically adapt its configuration or detect damage to schedule repairs.

ADDITIONAL MATERIAL

- IEEE Educational Activities, "Cloud Computing Definition, Reference Architecture, and General Use Cases," Link: https://cloudcomputing.ieee.org/images/files/education/studygroup/Cloud_Computing_Definition_Reference_Architecture_and_General_Use_Cases.pdf
- Video: Amazon AWS, "What is Cloud Computing?" Link: https://youtu.be/dH0yz-Osy54

Cloud computing explained in the context of Industry 4.0

SUMMARY

In order to achieve the goal of the 4th industrial revolution, namely strong customization of products under the conditions of highly flexible (mass-) production, there are necessary 4 major elements: cyber-physical systems, IoT, cognitive computing, on-demand availability of computer system resources, in other words "cloud computing".

In simple terms, "cloud computing" means storing and accessing data and run programs on the Internet instead of the computer's hard drive. The "cloud" is only a metaphor for the Internet.

Advantages of cloud computing: cost efficiency, accessibility, flexibility, easy implementation, efficient data back-up and recovery.

Disadvantages of Cloud Computing: limited control, network connectivity dependency, security, downtime, portability issues, ownership issues.

LEARNING OUTCOMES

- *Understand cloud computing*
- *Differentiate cloud computing service and deployment models*
- *Recognize the advantages and disadvantages of cloud computing*
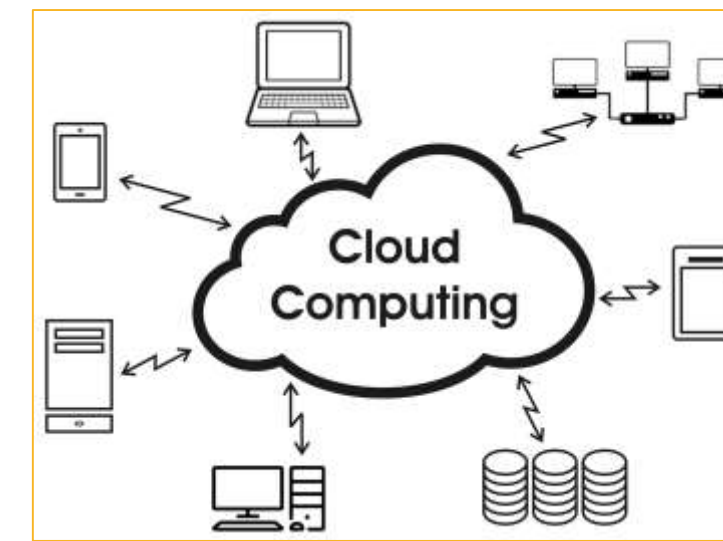
TOPICS

- Cloud computing - definition
- Cloud computing main characteristics, service models and deployment models
- Advantages and disadvantages of cloud computing

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Computing on the "cloud" instead of the local PC have undeniable advantages for companies: lower costs, accessibility, flexibility, efficient data back-up and recovery, easy-to-use services etc. Like any other technology, cloud computing has shortcomings: limited level of control over the data, Internet connectivity dependency, downtime, security breach potential etc. It is up to companies to weigh the advantages and disadvantages and to do so in a way that maximizes the former and minimizes the latter.

ADDITIONAL MATERIAL

- https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf
- https://polcode.com/blog/cloud-computing-defined-and-explained-infographic/
- https://www.stratospherenetworks.com/advantages-and-disadvantages-of-cloud.html
- https://intellipaat.com/blog/tutorial/amazon-web-services-aws-tutorial/advantages-and-disadvantages-of-cloud-computing/

Digital technology - engineering and manufacturing

PILLS

TOPICS

- *Horizontal and vertical system integration*
- *Additive manufacturing*
- *Autonomous robots*

Technical General Competences

SUMMARY

A technical competency refers to a skill or area of knowledge used in a specific industry. Different fields of work emphasize different skills and thus require different technical competencies. Digital transformation requires a special set of skills and competencies, such as business process management, robotic process automation, cloud computing, emerging technology, agile program management, cybersecurity, and effective internal and external communications skills. But it is much more than this.

It is about the customer facing processes through social media and other mobile channels, and about using customer and other data to analyse customer experiences. Furthermore the technical competences include the ability to automate and monitor processes in real time and adapt to external changes. It also takes technical competences to actively share knowledge, using social networks and video conferences to the ability to work anywhere, anytime at any device to integrate digital technologies into services that provide value to the customers and the ability to lead a company wide effort to service the customers through digital offerings.

LEARNING OUTCOMES

- *Technical competences needed in digital transformation*

TOPICS
- Customer-facing processes (Social Media, Customer Experiences, Mobil Channel (see attachment)
- Operational processes (Analytics, Process Digitization, Data Integration and Internal Collaboration (see attachment)

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The furniture industry consist primarily on manufacturing firms and retail stores. Manufacturing are traditionally slow to react to digital transformation and remain focused on operational efficiencies and worker enablement.
The B2B nature of many firms limit their attention to digital customer engagement. Manufacturers see less opportunity and threat in digital transformation than other industries. To mature, these firms need a transformative digital vision, plus the engagement and governance to develop impetus for digital investments.
Retailers on the other side are generally confident in the potential for social and mobile, as well as their digital skill set. Moving forward, these firms may want to focus on cross-channel consistency and worker enablement while building analytics capabilities.

ADDITIONAL MATERIAL

- Customer Experience and Operational Excellence join forces for digital transformation, Digital Clarity Group https://www.digitalclaritygroup.com/customer-experience-operational-excellence-join-forces-digital-transformation/

- Digital Transformation: A Roadmap for Billion-Dollar Organizations, p- 18-22. MIT Center for Digital Business and Capgemini Consulting (2011) https://www.capgemini.com/wp-content/uploads/2017/07/Digital_Transformation__A_Road-Map_for_Billion-Dollar_Organizations.pdf

Horizontal and Vertical System Integration

SUMMARY

In a digital transformation Horizontal and Vertical System Integration is important. Three interrelated value systems exists: The Market, Hierarchy and the Ecosystem based Value System.

The market-based value system relies on generic (e.g wood and steel) complementarities, competitive relation (price) and arms-length transactions between seller and final customer. Final customers buy separate products from independent sellers for consuming them individually or jointly.

The hierarchy-based value system is build up by horizontal supply chain relations with cooperative and competitive ties between component suppliers. Additionally vertical supply chain relations between component suppliers and focal firm product. In addition, here is arms-length transactions between focal firm product and final customer. The final customers buy final output in the form of assembled and sold by the focal firm.

The Ecosystem-based value system consists of horizontal supply chain relations with cooperative and competitive ties between component suppliers.

Furthermore vertical supply chain relations between component suppliers and focal firm product. Specific complementarities exist between different complementors and the focal firm product and between different complementors within the ecosystem. The final customers buy focal firm product and complements from individual complementors.

LEARNING OUTCOMES

- *Ecosystems* **consist of "a set of actors with** *varying degrees of multilateral, non-generic complementarities that are not fully hierarchically controlled"***.*

- *Multilateral complementarities arise when the value of a local firms output depends on the* **value of other firms' output.**

- *Non-generic refers to the specific nature of the complementarity between the components within a product.*

TOPICS

- Interrelated value systems
- Continuous value creation for customers

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Today, most furniture firms do not think of themselves as operating in an ecosystem but instead as controlling or participating in a more linear value chain. Nevertheless, digitization enables consumers and firms to seek out a wider array of benefits. Therefore, firms needs deep knowledge of its end customers, including their names and addresses, demographics, IP addresses, purchase histories within the firm and within other firms, and most importantly, their life events (such as upcoming weddings or births or, for businesses, planned mergers or expansions) to create value for them. Along with a decision on how much they want to invest in knowing their end customers, business leaders must determine the extent to which they want to control the value chain or be part of a more complex ecosystem.

ADDITIONAL MATERIAL

- Towards a theory of ecosystems, Jacobides et al. (2018), Strategic Management Journal, Volume 39, Issue 8 https://onlinelibrary.wiley.com/doi/full/10.1002/smj.2904

- Vertical Versus Horizontal Integration: What to Consider When Building A Product, Medium (2018) https://medium.com/@ajitkulkarni/vertical-versus-horizontal-integration-what-to-consider-when-building-a-product-9acf7fb9398a

A brief history on the first, second and third industrial revolution

The Industrial Revolution

SUMMARY

Before we talk about the Fourth Industrial Revolution, or Industry 4.0, understanding its historical predecessors is crucial. This is a very brief and incomplete crash-course on the industrial revolution, it can help to understand the challenges we face today and put them in perspective.

It is a long journey from the Boulton-Watt engine to the first steps on the moon. Here we look back on a few steps with photos, text and video.

TOPICS

- The first industrial revolution. Coal, Iron and Steam
- The second industrial revolution. Combustion engine, electricity, mass production
- The third industrial revolution. Electronics, IT systems, automation

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Looking back at the past may lead us to reflect on the decisions we take today. The first three industrial revolutions have profoundly changed our quality of life and way of living together. Technological developments can have a major impact on people and the environment. Predicting that impact is often not easy, but we can certainly learn from the first three periods of the industrial revolution.
The choices and investments in the new technologies we make today will determine our near and distant future.

LEARNING OUTCOMES

- *Learn about some highlights of the industrial revolution*

ADDITIONAL MATERIAL

Presentation: https://www.sutori.com/story/the-industrial-revolution--4YdV9UyrnrQ7BzNB8N9SHZ1h

https://www.britannica.com/topic/The-Fourth-Industrial-Revolution-2119734

Industry 4.0

SUMMARY

The fourth industrial revolution, also referred to as Industry 4,0 is changing the way goods are being produced by digitizing manufacturing processes. It takes what was started in the third industrial revolution with the adoption of computers and automation and enhances it with smart systems. It's all about connectivity and driven by big data and machine learning. Machines and people communicate via the internet of things (IoT) or the internet of people (IoP). Operators, engineers and managers have access to huge amounts of data from all points in the manufacturing process which offers the opportunity to identify key areas susceptible to improvement on different levels.

The digital transformation that the industry is undergoing is an evolution on a global scale. National initiatives around the concept of industry 4.0 can help you on your way in this digital transformation.

LEARNING OUTCOMES

- *Learn about the origin of the term/concept industry 4.0*
- *Learn about the broader view of the concept*

Industry 4.0

TOPICS

- The origin
- The broader view on Industry 4.0

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Furniture manufacturing companies can explore some literature and find out some opinions on industry 4.0. Furthermore, the Digital Transformation Scoreboard gives you insight into the recent European situation.

ADDITIONAL MATERIAL

- https://www.plattform-i40.de/PI40/Redaktion/EN/Bilder/Cover/acatech-global.jpg?__blob=normal&v=2&size=420w

- ERIK BRYNJOLFSSON, ANDREW McAFEE (2014) *The second machine age*. W.W.Norton & Company, Inc. New York, NY.

ERP Introduction

SUMMARY

ERP or Enterprise Resource Planning is a business process management software intended to bring all the different business processes together in one package An ERP software package joins among others the customer relations, financial management, production and planning, customer relations, human resources, access control, sales and purchasing, so that you as a professional don't have to do it manually anymore.

ERP enables the workflow of information between all departments
ERP works with a single database, common platform and integrated set of data

TOPICS

- The origin of ERP
- What is ERP
- What is the purpose of ERP

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Many organizations confirm that an Enterprise Resource Planning System is truly an asset. The system helps linking together different parts of your company and thus making your business run smoother and faster. Furthermore, the system takes care of unifying and protecting all your information.

The organizations benefit from systematized processes and easy-to-understand trends. There are several additional capabilities and benefits of ERP systems by enterprise-cloud-for-ERP in an organization. It is proficient in making your day-to-day operations and long-term planning more efficient.
(best-enterprise-resource-planning-system)

LEARNING OUTCOMES

- *The definition of ERP*
- *Why ERP is used*
- *When ERP is used*

ADDITIONAL MATERIAL

- https://precisebusiness.com/solutions/enterprise-resource-planning-erp/
- http://syntax.over-blog.com/2019/07/best-enterprise-resource-planning-system.html
- https://www.proteussystems.eu/products/proteus-erp/
- https://www.youtube.com/watch?v=6qys-562kp4
- https://www.youtube.com/watch?v=rJRtomHo6Co

Case study of Proteus® ERP

SUMMARY

Proteus ERP is a fully integrated software solution developed in close cooperation with (amongst others) the wood trading and furniture industry. The software consists of various modules that directly communicate with one another. The system possesses a single database, so there is no need to put in the same data twice. Proteus has been specially developed for use in many construction/design industries.

Proteus ERP specializes in: import, customized projects and sales of wood panel material. Proteus has been developed for the wood industry and supports your business processes, gives you a clear overview of your business conduct and allows for the efficient processing of all your customers' orders.
(Proteussystems)

LEARNING OUTCOMES

- *Getting to know an ERP package for the industry*
- *What can be connected with Proteus ERP?*
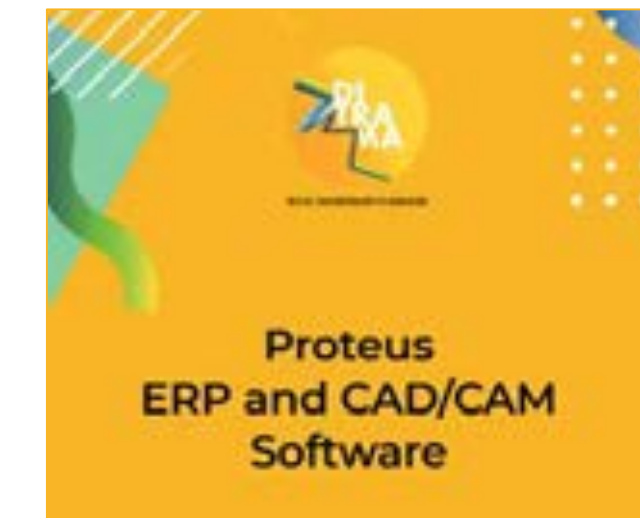
TOPICS

- Overview of Proteus
- Output of Proteus
- Connections with Proteus

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

ERP Specially designed for (amongst others) the wood trading and furniture industry.

One single database (so you only transfer your data ones).

All expertise of your company is linked, this reduces the chances of a bottleneck caused by bad communication.

ADDITIONAL MATERIAL

- https://www.proteussystems.eu/sectors/wood-inustry/
- https://youtu.be/rJRtomHo6Co

Operational Resource Planning Case study - ARDIS®

SUMMARY

When it comes to productive operations teams, effective resource planning is vital. Without strong resource planning processes in place, team members can become stressed, confused, or overloaded. ARDIS®, founded in 1983, is a global market leader for optimization & manufacturing software. They offer a modular all-in-one platform designed and built for the sheet, bar and coil cutting industry. It all started with a machine manufacturer-independent cutting optimization software. Nowadays, the company offers a wide range of modules for the sheet, bar and coil cutting industry.
The ARDIS® platform for Operational Resource Planning offers an integrated approach to manage and monitor all personnel, materials and machines – typically called Operational Resource Planning (ORP).
In their own words:
'Our ORP architecture is split into various functional products that also work perfectly on their own. Together they provide an even better result thanks to integration on our ORP platform'.

LEARNING OUTCOMES

- *Understand the distinction ORP/ ERP*
- *Explore and understand the ARDIS® ORP diagram*

TOPICS

- The ORP diagram explained
- The benefits of a modular system
- An overview of ARDIS® Analytics

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Furniture manufacturing companies can use the modular platform to streamline applications already in use or to improve collaboration. Different modules can be implemented at the same time as the needs or growth of the company. Applications and machine controls do not have to be from one particular supplier and it leaves the organisation free to implement different systems from different machine manufacturers in their own customised system. The modular nature of the platform allows it to offer solutions for both small and large companies.

ADDITIONAL MATERIAL

- https://www.ardis.be/en-US/home

Review of parametric design software for Industry 4.0

SUMMARY

The implementation of the Industry 4.0 concept implies the existence of software solutions that allow furniture manufacturers to automatize the process manufacturing and fully integrate the design into the production process.
The parametric design is a process based on algorithmic thinking that enables the expression of parameters and rules that, together, define, encode and clarify the relationship between design intent and design response.
The parametric modelling offers the possibility to vary different dimensions for the parametric variables and of other features of the same furniture product, so that a range of variants can be obtained and any needed parameter modification becomes possible.

TOPICS

- Definition of parametric design
- Review of parametric design software for Industry 4.0
- Designing of furniture products based on parametric variables
- Examples of furniture products designed by using parametric variables

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The companies from furniture manufacturing need to integrate software related with Industry 4.0 because are based on innovative technological approach providing multiple ways of designing and modifying furniture at every step of the process; and they provide solutions for managing furniture production from the 3D design phase to monitoring the production flow.

LEARNING OUTCOMES

- *Understand the role of the parametric process in furniture design*
- *Understand the facilities offered by advanced design software as a solution for Industry 4.0*

ADDITIONAL MATERIAL

- https://www.imos3d.com/en/service/ix-support-center/media-library
- https://www.topsolid.com/products/topsolidwood.htm
- https://www.cabinetvision.com/videos
- https://www.biesse.com/ww/wood/software/bcabinet

Case study: Imos as customized design software

SUMMARY

The Industry 4.0 concept implies the existence of software solutions that allow furniture manufacturers to automatize the process manufacturing and fully integrate the design into the production process. One such example is the Imos iX software which accompanies furniture and interior furnishing manufacturers from planning, presentation and construction to production and sales.
The case study refers to the implementation of Imos within Romanian company Green Forest Furniture & Fit Out. The Green Forest's mission is to provide professional furniture and fit out for a great office experience.

LEARNING OUTCOMES

- *Understand how a furniture product can be designed with Imos software*
- *Understand how a drawing can be transferred in the production sector*

TOPICS

- Information about how Imos iX software works
- Case study: Green Forest Furniture & Fit Out

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The customized design or custom-built products in the context of Industry 4.0, a solution implemented at Green Forest Furniture & Fit Out, Romania, show that companies should integrate CAD/CAM software in their production process, that the furniture products should be designed by using parametric solutions and that, with Imos, parts list, production list and CNC data are immediately obtained.

ADDITIONAL MATERIAL

- https://www.imos3d.com/
- https://www.imos3d.com/en/products/ix-2019
- https://www.greenforest.ro/en/despre-noi/

Case study: Inventor software (applied in Nord Arin S.A Co.)

SUMMARY

Inventor is a parametric design software for industry 4.0 applied in the field of furniture manufacturing. Its concept is based on customized design or custom-built products in the context of Industry 4.0. Inventor software is successfully applied in Nord Arin S.A Company, a modern furniture manufacturer from Romania. This company produces oak based furniture with a modern design and it is mostly exported to countries such as Italy, Germany and United States. The flexible production facilities of this company allows it to deal with small and big batches, and also with customized design and custom-built products. Thus, they are able to produce furniture for hotels and restaurants, administration buildings and residential ones. Inventor software offers to this company an easy way of designing and changing dimensions of the furniture according to the client demand. It is time saving and effective compared to other software. It can also simulate a production process and connects to the machines.

LEARNING OUTCOMES

- *Know an easy way of furniture design*
- *Acquire knowledge of parametric design*
- *Learn about pre-processing by simulation*
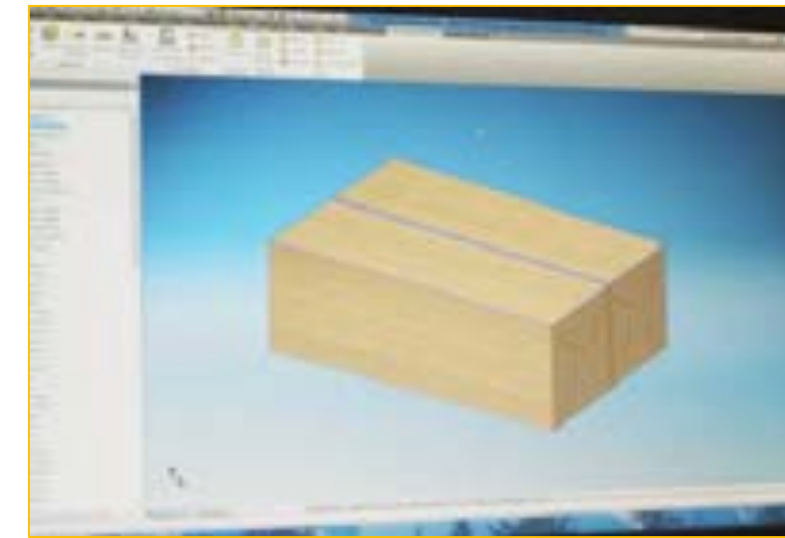
TOPICS

- How Inventor software works
- Customized design
- Custom-built products
- Simulation function and processing

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Inventor is an easy-to-learn software and very suitable for furniture design, both for simple and complex shapes. This software has customized design or custom-built products, having the features of fast design and various wood textures.
Parametric design of Inventor software allows to change the overall dimensions and component sizes very rapidly, so that a new piece of furniture is generated. The software is able to simulate the machining operations and information is automatically transferred to the processing machine.

ADDITIONAL MATERIAL

- https://knowledge.autodesk.com/support /inventor/learn-explore/caas/auonline/autodesk-university/forge-content/au-class-urn-adsk-content-content-4778c3c4-0449-46e4-a37a-b08e46778b03.html?st=furniture
- https://www.youtube.com/ watch?v=6MFRFkvAFxo
- https://www.youtube.com/watch?v=_uPHWIrOiO8Q
- https://www.youtube.com/watch?v=BVYowX2OyRM

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CADCAM
Case study -TopSolid

Boris De Doncker
TopSolid Belgium

SUMMARY

CAD/CAM or Computer Aided Design & manufacturing are software applications used to design products and program manufacturing processes. The CAD part is used by engineers and designers to create 2D and 3D drawings. The CAM part on the other hand, uses the geometrical CAD design to control automated machinery like CNC machinery. TopSolid is such a CADCAM package consisting of several modules. Not only woodworking is included, but also metalworking is among the possibilities. The CAM side is machine builder-independent.

Via the link in this pill you can view a short presentation of the package.

Promotional videos on the internet always look great. To find out more about the package, we ask Boris De Doncker, account manager at TopSolid Belgium, for some explanation about the application. It gives some more insight in the structure and the possibilities of the package. An introduction.

LEARNING OUTCOMES

- *Learn about parametric and associative design*
- *Know the difference between the Interface model and the WoodCam model*
- *Learn about workspaces*

TOPICS

- Parametric design explained
- The benefits of parametric components
- Different possibilities on the CAM-side
- Simulation
- Manufacture the way you want it

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The CADCAM package can arouse the interest of all those who are looking for a machine builder-independent application. CADCAM packages are plentiful, the search for a suitable package can take a lot of time. There are always advantages and disadvantages to one or the other.

ADDITIONAL MATERIAL

- https://youtu.be/FWskGKAi-wk

- https://www.topsolid.com

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CAD-CAM system Industry 4.0 Case study - Cabinet Vision

SUMMARY

Cabinet Vision allows manufacturers of panel or solid wood furniture, from small workshops to large production lines, to automatize and fully integrate the product design into production process.
Cabinet Vision is more than a CAD / CAM software, it is a complete design and production solution for the furniture industry.
The case study refers to the implementation of Cabinet Vision within Romanian company GABXA Design. The Gabxa Design mission is to provide professional and quality furniture in order to fulfil the clients needs.

LEARNING OUTCOMES

- *Understand how a furniture product can be designed with Cabinet Vision software*
- *Understand the facilities offered by Cabinet Vision software as a solution for Industry 4.0*

TOPICS

- Information about how Cabinet Vision software works
- Case study: GABXA Design

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The CAD/CAM solution revealed by Cabinet Vision software and implemented at Gabxa Design company shows that being developed as a modular solution, the software is suitable for any size of company. The software allows users to use raw material more efficiently and also to reduce the labor costs by improving the production process.

ADDITIONAL MATERIAL

- https://www.cabinetvision.com/videos
- https://nikautilaje.ro/software-de-proiectare/
- https://gabxa.ro/

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CAD-CAM Case study - B_Cabinet (Biesse)

SUMMARY

B_Cabinet is a solution for managing furniture production from the 3D design phase to production flow monitoring. It makes possible to plan the design of a space and quickly pass from creating the single elements to generating photo-realistic images. It generates also technical prints and reports.
B_Cabinet FOUR, is a supplementary module. It makes easy to manage all the work phases (cutting, milling, boring, edge-banding, assembly, packaging) and includes an environment dedicated to the real time monitoring of the progress of the production phases. That means complete control of the order status, thanks to charts and 3D images.
With B_Cabinet software it is possible to create 2D drawings and display 3D interactive environments with detailed parts and components. Data from any management software can be imported and the integrated management of cost estimation and requirements, assessing is done by B_Cabinet software .

TOPICS

- Design with B_Cabinet software
- Deliverables
- B_Cabinet four and production system
- Monitoring stage. Traceability of the production process.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

B_Cabinet transforms the ideas into real solutions. Creates amazing made-to-measure designs. Creates 2D drawings and display 3D interactive projects.
Creates personalized catalogues by importing data from any management software, managing options and applying price lists.
B_Cabinet can be used to completely configure the 3D components and their codes to create a graphical parts list of all the parts in the furniture component. It also generates printouts.
The module B_Cabinet Four offers process & system integration by factory working phases, multimachine management, multi post processors, track on production and visual monitoring.

LEARNING OUTCOMES

- *Understand integration software*
- *Learn about simply and intuitively design*
- *Understand how the software communicates with the machines*

ADDITIONAL MATERIAL

- https://www.biesse.com/downloads/14863/751/5808A1632_Bs_Cat%20bCabinet_mag19_ENG_Lr.pdf
- https://www.youtube.com/watch?v=rOD6mw0rLSs

Additive Manufacturing Introduction

SUMMARY

An introduction to additive manufacturing, more commonly known as 3D printing. The shaping of materials into objects within a manufacturing process can be achieved by one, or combinations of three basic principles. Formative shaping, Subtractive shaping and additive shaping. Additive manufacturing technology applies the additive shaping principle and thereby builds 3D objects by successive addition of material. Some essential steps in 3D printing are explained.

TOPICS

- The three basic principles of shaping
- Example of basic steps in 3D printing

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Furniture manufacturing companies need no introduction in the world of subtractive manufacturing, they are very familiar with subtractive techniques. Traditional techniques will most probably be around for a very long time, additive techniques can complement and fundamentally change the way objects are produced.

LEARNING OUTCOMES

- *Learn about the difference between AM and traditional techniques.*

ADDITIONAL MATERIAL
https://www.researchgate.net/publication/332597317_A_comparison_of_traditional_manufacturing_vs_additive_manufacturing_the_best_method_for_the_job

Additive Manufacturing Overview

SUMMARY

In the last 30 years, Additive Manufacturing (AM) has been referred to as direct digital manufacturing, additive layer manufacturing, additive fabrication, additive techniques, additive processes, free-formed fabrication, solid free-formed fabrication, rapid manufacturing, and rapid prototyping. All kinds of AM processes, each with their own names and abbreviations can be confusing when exploring AM manufacturing for the first time.
The ISO/ASTM 52900 Standard was created in 2015 to standardize all terminology used in AM as well as classify each of the different methods of 3D printing.
The basic principles of AM and the most used materials are explained.

LEARNING OUTCOMES

- *Learn about the seven AM process categories , material groups and the (dis)advantages of different technologies*

Additive Manufacturing Overview

TOPICS

- The international standard
- Use of materials

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Furniture manufacturing companies that are interested in AM but do not have a clear view because of the many different techniques can find an overview here. Different techniques are more explained in detail in the link below.

ADDITIONAL MATERIAL

- https://www.3dhubs.com/guides/3d-printing/#technologies

Additive Manufacturing Examples from the furniture sector

Additive Manufacturing Examples from the furniture sector

SUMMARY

3D printing is not widespread in furniture manufacturing. Some examples of furniture pieces are presented but also applications or improvements in machinery and assembly. The possibilities that additive production techniques can offer may not yet be immediately deployable for large production numbers in the furniture industry, but the future will show.

TOPICS

- Examples from the furniture sector

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Larger furniture manufacturers have probably adopted AM techniques somehow. Smaller furniture manufacturers may be inspired by these examples and think about other ways of production.

LEARNING OUTCOMES

- *Learn about realized furniture projects with AM techniques*

ADDITIONAL MATERIAL

- https://wohlersassociates.com/wa.html

Autonomous Robots: An Introduction

SUMMARY

Since the industrial revolution, machines helped humans in the production process within all kinds of industries. Robots are even more versatile and allow higher precision in production and manufacturing processes. While robots can perform various predefined task, autonomous robots can do even more than simply following initial instructions by learning about their environment and integrate this information continuously. This allows autonomous robots to either notify human operators if certain tasks cannot be completed or generate plans to overcome an arising limitation in their existing execution plan. Furthermore, modern autonomous robots can collaborate with each other as well as human co-workers to complete a manufacturing process.

LEARNING OUTCOMES

- *Understand autonomy*
- *Learn about collaborative robots*
- *Know the benefits and pitfalls of autonomous robots in production*

TOPICS

- Autonomy
- Collaboration
- Online learning and decision making

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Robots are being used in all kinds of industries. In the furniture industry their autonomy can become a gamechanger due to their ability to adapt on their own to different materials and challenges during the production process and their ability to collaborate with others without additional input and explicit instructions. Individual robots can optimise and improve different steps in the production process such as sewing, cutting, or assembling materials. Together, multiple robots can optimise the entire production line by exchanging information or testing new strategies during runtime.

ADDITIONAL MATERIAL
- Ingrand, Félix, and Malik Ghallab. "Deliberation for autonomous robots: A survey." Artificial Intelligence 247 (2017): 10-44.
- https://waypointrobotics.com/blog/what-autonomous-robots/
- https://www2.deloitte.com/us/en/pages/manufacturing/articles/autonomous-robots-supply-chain-innovation.html
- Wooldridge, Michael. An introduction to multiagent systems. John Wiley & Sons, 2009. (Book)

Autonomous robots - Case study: Lesta robots for furniture finishing

SUMMARY

A robot is autonomous if it is based on computational resources and can work independently, without the real-time human interference.
The case study on finishing applications explains how the Lesta robots can be programmed: self-learning, which means the robots mirror human movements while learning the code, point to point on the field, which uses a camera vision system to create the painting program and off-line programming in a 3D software or directly on the robot panel.
The finishing result can be virtually seen by using 3D finishing simulation. The finishing production line can be managed by robots integrated and controlled with special software.

LEARNING OUTCOMES

- *Understand the concept of autonomous robots*
- *Understand types of robot programming for finishing production*
- *Get aware about 3D simulation*

TOPICS

- What are autonomous robots?
- Lesta robots types of programming
- Finishing 3D simulation

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Implementation of autonomous robots in the finishing production line increases the working precision and reduces the production time. Lesta robots programmed in self-learning mode, point to point on the field and off-line, can replace the need of real-time interference from a human agent. 3D simulation and virtual visualization of the finishing job prevents finishing mistakes. Lesta software solutions can integrate and control the robots in the production line and control the production queue.

ADDITIONAL MATERIAL

- Wooden drawers painting
- Wooden chairs painted by FANUC M-20iA Robots
- Highlights robotic-Show 2019 - software, robots and machines for furniture industry 4.0

Digital technology – simulation and AR/VR

PILLS

TOPICS

- *Simulation, digital twins, machining and virtual prototyping*
- *Virtual/Augmented reality: in design and in relation to AI*

Establishing Digital Twins for Cyber-Physical Systems

SUMMARY

This video gives a short introduction to what a digital twin is and how it needs to contain models of both the cyber part and the physical part of a physical twin. It may be necessary to calibrate the models such that they can be used inside a digital twin to predict if a physical twin behaves as expected.

LEARNING OUTCOMES

- *What is a digital twin?*
- *The need for models inside a digital twin*
- *The need for calibration of a digital twin*

TOPICS

- Digital twins
- Models for predictions
- Calibration

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Digital twins can make sense in the manufacturing of furniture or for intelligent furniture that contains computer elements and have some kind of functionality for its users.

ADDITIONAL MATERIAL

- Fitzgerald, John & Larsen, Peter & Pierce, Ken. (2019). Multi-modelling and Co-simulation in the Engineering of Cyber-Physical Systems: Towards the Digital Twin. 10.1007/978-3-030-30985-5_4.

Case study - bSolid (Biesse)

SUMMARY

Biesse bSolid is a 3D CAD-CAM software, which allows the users to go from the 2D or 3D drawing of the furniture part to be processed, to the simulation phase of all the technological operations that will be performed on a CNC machine. The geometry of the furniture part can be drawn or imported in various formats. During the 3D simulation phase, the user has the possibility to check the accuracy of the tool path, the characteristics and sequence of the processing tools (milling cutters, blades and boring bits) . Also, another important feature of the software is to allow the user to modify and to check the project before machining. Moreover, bSolid has the ability to view the CNC machine in virtual reality including its main components, axis kinematics, tools magazine etc. Last but not least, another feature of the software is the collision check, which helps the user to visualize and solve the potential errors during the processing phase.

LEARNING OUTCOMES

- *Understand what is bSolid*
- *Understand the machining simulation process*
- *Know the application of bSolid*

TOPICS

- Geometry Drawing or Importing
- Simulation of machining operations
- Virtual prototyping of the workpiece

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Furniture manufacturing companies can use bSolid to create or to import the geometry of furniture parts. The software has the ability to simulate the machining operations to visualize the effect of the sequence of operations on the furniture part prior to manufacturing.

bSolid enables the customer to view the machine in virtual reality including its main components, axis kinematics, tool magazine etc. This feature can help the user to check any collision between machine parts and the tool during operation. It also enables a calculation of the time needed to carry out all the machining operations.

ADDITIONAL MATERIAL

- https://www.biesse.com/downloads/14104/721/5808A1618_Bs_Cat_bSuite_mag19_ENG_Lr.pdfbS https://www.youtube.com/watch?v=yBaNPoGfMpk
- https://youtu.be/xHIIGGN5y4O
- https://www.youtube.com/watch?v=SvppnbdFNt8

CAD-CAM-CAE - Sophia platform

SUMMARY

The market requests solutions that allow manufacturing companies of the fourth industrial revolution to evolve technologically, combining human skill and experience with total production automation and interconnectivity. Biesse responds to this demand with advanced technologies and services that can digitalise and automate factories and production processes, optimising all their main assets - whether technological, strategic, organisational or human. Sophia is the platform created by Biesse in collaboration with Accenture which enables its customers to access a wide range of services to streamline and rationalise their work management processes. The companies must be able to make a leap towards even greater quality, and must know how to take full advantage of the incentives that emerge as the fourth industrial revolution takes shape. Thus, digital technologies and new managerial approaches are harmoniously integrated with more traditional solutions.

LEARNING OUTCOMES

- *Learn about fourth industrial revolution*
- *Learn about customer-service interactions*
- *Understand how performance and productivity of machines and Systems are optimised*

TOPICS

- Discover Sophia
- B_Cabinet Four
- B_Suite
- B_Avant

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Sophia takes the interaction between customer and service to a higher level. The entire Biesse worldwide service network is interconnected and can access the Sophia web portal, which means quick, incisive reactions and resolutions for customers all over the world.
Software distribution is very simple and user-friendly. It takes place via a dedicated function called Software Manager, that sends the specific software package directly to the machines in protected mode.
There are integrated softwares (from Biesse) that offer unique solution for managing furniture production from the 3D design phase to production flow monitoring: B_Cabinet Four, B_Suite, B_Avant.

ADDITIONAL MATERIAL

- https://www.biesse.com/downloads/15339/_951/5808A1498_Bs_Cat_Sophia_set19_ENG_Lr.pdf

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Visualization of the design

SUMMARY

To «visualize design» means to translate thought processes into visible information. There are three types of communication – non-verbal, verbal and visual. Visual communication skills refer to ability to communicate through the signals received by eyes, meaning that any nonverbal communication that utilizes sight is a visual communication.

LEARNING OUTCOMES

- *There are three types of communication – non-verbal, verbal and visual.*
- *Visual communication is one of the most effective ways to communicate*
- *Visuals are processed 60,000 times the speed of text.*

TOPICS

- Visual communication
- Information design functional principles and factors
- Information bandwidth and efficiency

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

By using visual communication to visualize any design process or final product (furniture), the information provider (the sender) can ensure that he or she has the necessary tools to avoid the miscommunication with the audience (the receiver).

To make sure the information is well designed information design is the right method that will guide the sender. Main rules for designing information are – clarity, unity, simplicity, structure and emphasis.

ADDITIONAL MATERIAL

- Rune Pettersson. Information Design–Principles and Guidelines (2010) Journal of Visual
- Anders Wikström. Literacy 29(2):167–182 A DESIGN PROCESS BASED ON VISUALIZATION. (2010)

Augmented Reality & Artificial Intelligence

SUMMARY

Augmented reality (AR) and artificial intelligence (AI) are two of the newest and most powerful tools to be integrated in many industries. AR can help to visualize and design, as well present and view 3D objects in real life scenarious. These tools save time and therefore boosts innovation.

LEARNING OUTCOMES

1. *AR consists of device (camera, screen and processor), tracker, and information (3D object, video, etc.)*
2. *AR is an input and output tool*
3. *AR augments reality and creativeness*
4. *AI can be used to create unique and unimaginable combinations and forms based on geometry*

TOPICS

- Augmented reality components
- Augmented reality for furniture industry
- 4 types of Artificial intelligence
- Artificial intelligence for furniture idustry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Artificial intelligence gives freedom to:

- Visualize 3D objects (furniture) in real spaces
- Change dimensions, colour, models of furniture, to fit the interior
- Scan rooms and objects to be used in virtual environments
- Interact with 3D objects in more intuitive way
- Present the objects and ideas in more interesting way

Artificial intelligence helps:

- Create unlimited iterations
- Make unique combinations and geometrical shapes based on the given inputs from users (weight, material, balance, etc.)

ADDITIONAL MATERIAL

- Rebecca Reynoso, 4 Main Types of Artificial Intelligence (2019) - https://learn.g2.com/types-of-artificial-intelligence
- Oliver Bimber, Ramesh Raskar. Spatial Augmented Reality: Merging Real and Virtual Worlds (2005)

Augmented Reality - General concepts and applications

Augmented reality- general concepts and applications

SUMMARY

Coming from the word "augment" which means to enhance, Augmented reality is a new technology, very easy and friendly to use, that allows users to see virtual informations (such as texts or objects) overlayed on real environment via a specific or mobile device.

AR range of applications is very wide starting from entertainment, tourism, military, industry and medical domain. Due to its applicability AR is likely to be more and more present in our daily life.

TOPICS

- Definition of Augmented reality
- Augmented reality concept
- Augmented reality applications in furniture industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

In furniture industry, augmented reality has its applications in product processing quality and precision, machines maintenance, process parameters control and optimization.
Augmented reality is also very useful in furniture product design, interior design and product sell, being integrated into applications for many important furniture companies.

LEARNING OUTCOMES

- *Understand what Augmented reality is*
- *Understand how AR works*
- *Know AR applications in furniture industry*

ADDITIONAL MATERIAL

- SCM WOODWORKING TECHNOLOGY. *Maestro Smartech.* https://www.youtube.com/watch?v=ECgkyRHWCoo&t=2s&ab_channel=SCMWoodworkingTechnology
- FELDER-GROUP TV. *F4 Vision.* https://www.youtube.com/watch?v=Dg0qxfoTmiQ&t=12s&ab_channel=FELDERGROUPTV

Case study - design pCon digital platform

Case study design pCon digital platform

SUMMARY

Technologies such as Augmented Reality based applications are more and more common in product design, interior design and product selling. Related to interior design, augmented reality is easy to use and helps you see how a product will look like, inside your real room.

Using pCon.box application, to import a specific furniture product from a lage database and within your mobile device display to see how it will look like placed in your real room, can help you decide how to place the furniture, if you need to change the design, colors or textures or finally decide whether to buy or not the product, anytime and easy from your home.

TOPICS

- Augmented reality in pCon Ecosystem
- Augmented reality application for mobile devices-pCon.box
- Using an Augmented reality application – pCon.box – to import furniture for interior design

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Use an Augmented Reality based application for mobile devices to promote furniture products. This way is easier to help the customer choose the right product. For the producer/seller becomes easier to promote the products on-line, and reduce the costs for shipping and eventual product damage in case of product return.

LEARNING OUTCOMES

- *Understand the Augmented reality applications for furniture and interior design*
- *Understand how to use mobile application pCon.box*

ADDITIONAL MATERIAL

- https://theintellify.com/impact-of-augmented-reality-on-the-furniture-industry/
- https://www.youtube.com/watch?v=JF31gq0UwKU
- https://zealar.com.au/augmented-reality-in-furniture-industry/

Using AR/VR in sales

SUMMARY

As the industry 4.0 is slowly settling itself in industry and with companies trying to sell their (custom) products through web shop based sales strategies, The AR or Augmented reality and VR or Virtual Reality is a way to show customers what can be expected from the product all while being on their own cosy couch at home.
This type of visualisation is being implemented by stand-alone- and cad-cam- software (like the unreal engine and IMOS) and is already implemented by some of the bigger companies.

TOPICS

- An introduction to VR
- The possibilities of VR

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Although VR and AR are still in an early stage in our sector, many of the bigger companies are already exploring into the possibilities.

More and more tech companies are reaching out to manufacturers of kitchens and other products in the industry for implementing AR and VR as sale-tactics. It is important to verify the need and benefits that this technology can bring.

LEARNING OUTCOMES

- *Knowing the possibilities of AR/VR in the sector*

ADDITIONAL MATERIAL

- https://www.cuisinesdovy.be/decouvrez-dovy360/
- https://youtu.be/P8jhgPUzE6A
- https://youtu.be/XMT60ykWSH0
- https://youtu.be/z4khHaYAClw

Remote technician and operator training by AR/VR

SUMMARY

Augmented reality (AR) adds digital elements to a live view, often by using the camera of a smartphone. Examples include the game Pokemon Go. On the other hand, virtual reality (VR) implies a complete immersion experience excluding the physical world. Using a VR device the user is transported into a number of environments which can be either real or imagined. Mixed reality (MR) combines elements of both AR and VR. MOS Consult in cooperation with HOMAG Group developed a training and exam platform build on AR/VR to train the machine operators and technicians in the furniture industry. The system works on desktop machines as a computer game, as well as Virtual Reality application with full VR glasses support. The aim of the project is to remotely train new employees in the industry and continuously distribute the knowledge without the need of visiting a physical training center.

LEARNING OUTCOMES

- *Understand the machine workflows*
- *Train yourself*
- *Experience the furniture industry*

TOPICS

- Operator workflow training
- Service technician training and education
- New features and software products showcase
- Customer presentations and factory layouts design

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The VR and desktop experience platform is used in furniture factories experiencing a non-stop shifts in personnel as well as implementation of new technologies and machines, leading to constant trainings of the operators. The platform enables the operators to train themselves without occupying the time of their colleagues. Field Service technicians will also no longer need to visit the manufacturer's training centers to get trainings on the new features and machines, they can do the trainings and even their exams by themselves remotely.

ADDITIONAL MATERIAL

- For more information: www.mos-consult.com
- Operator experience: https://www.youtube.com/watch?v=znhtKN5gwu0
- Field Service technician experience: https://www.youtube.com/watch?v=gj9J-dR2hfE

Digital technology – data & security

PILLS

TOPICS

- *Data management and data-driven analytics*
- *Information Security Management & Cybersecurity (including Blockchain)*

New ways of collecting and moving data - digital platforms

SUMMARY

A digital platform is a multi-sided market with a software-based core that enables two or more actors to interact with each other and that underlies the influence of network externalities. The software-based core of a multi-sided platform is extensible, reusable, data-driven and provides stable interfaces (architecture).

TOPICS

- What is a digital platform
- Data collection, movement (i.e., APIs) and analytics

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

A digital platform is not only technology, but also a business model:

1. Attract a critical mass
2. Match multi-sided platform users
3. Connect participants
4. Transact and interact
5. Optimize digital offerings continuously

LEARNING OUTCOMES

- *On the platform services for end users or for developers may be developed, added or changed and products and services may be sold*

ADDITIONAL MATERIAL

- The Science of Digital Platforms, Leading Edge Forum (2020) https://leadingedgeforum.com/research/the-science-of-digital-platforms/
- Ross, J. W., Beath, C. M., & Mocker, M. (2019). *Designed for Digital*. MIT Press.

Tools for Understanding and Monetizing Data

SUMMARY

Monetizing data is one of the big interest points of digitalization. In order to understand this, we need to understand the transformation organizations go through.

Typically an organization will sell a product to a customer, but the organization will not know to whom the product is sold or how it is being used. IoT technologies makes it possible for organizations to create a possible feedback loop, meaning they know who bought the products and how it is being used, and therefore being able to create value for the customer over a lifetime.

This allows organizations to monetize and sell the relationship with a customer, instead of just selling the sale itself.

IoT technology is able to connect back to organizations, and is typically connected to an app, which becomes the mediating tool between the product and the company that produces the product. The company is then able to gather knowledge about the customers, optimizing their product for the specific customer, which in the end could create value for the customer.

One initiative that will make people pay for technology, is the service that targets the specific customer. Using for example artificial intelligence to analyse data collected from the customers, the organization is able to collect information from all the families using the product.

LEARNING OUTCOMES

- *Advantages of IoT Technologies*

- *Monetizing Data*

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www.ditrama.eu

TOPICS

- IoT technology
- Creating customer value
- Feedback loop
- Apps and monetizing data

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Tools for monetizing data is usually based on artificial intelligence, that analyses all the data collected from the customers, which makes the organization able to optimize their products. Not just for family X, but for all the families using the product, which in the end will provide value for the customers.

There is no reason that this could not be used in the furniture industry, exactly the same way as for example Smart Lightning, Smart House or so, by creating the same feedback loops where the customers, product and organizations connected through apps that can be monetized.

ADDITIONAL MATERIAL

- Your Easy Guide to Data Monetization, Sisense (2020) https://www.sisense.com/data-monetization/ in English 2: reading, video, website... (no more than 4 references)
- Fuelling growth through data monetization, McKinsey & Company

Big Data analytics & advanced analytics

SUMMARY

The combination of vast amounts of distributed sensors, cheap processing power and novel data analytics methods is prodiving the foundation for a data revolution. Several decades ago, most companies never expected that software would become an integral part of their business, but today almost no companies exists without the use of software. In a similar fashion, data will become an integral part of every company. To prepare for the future, it is vital that the value from data is understood, and terms like "Big Data" and "Artificial Intelligence" are translated into meaningful business objectives.

LEARNING OUTCOMES

- *Understand the value of data*
- *Learn about future possibilities*
- *Know the prediction model canvas*

TOPICS

- Data analytics
- Future opportunities
- Prediction model canvas

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Advanced data analytics can be employed in almost every step of the production chain. Some can substitute existing manual workloads, and others provide novel opportunities. From designs based on user behaviour analyses and digital prototyping, to automated durability estimation and cost optimization, the possibilities are many. The prediction model canvas is one method of bridging the ideas and identified opportunities from the management group, with the implementation-specific details from the engineering department, such that the vast subject of data analytics is divided into valuable and realizable business objectives.

ADDITIONAL MATERIAL

- Agrawal, Ajay, Joshua Gans, and Avi Goldfarb. Prediction machines: the simple economics of artificial intelligence. Harvard Business Press, 2018.

- https://medium.com/louis-dorard/from-data-to-ai-with-the-machine-learning-canvas-part-i-d171b867b047

- https://eosc-hub.eu/digital-industry-hub/datafurn-furniture-enterprise-analytics

LEAN and Digital **Manufacturing "Total** Production **Maintenance" TPM**

TOPICS
- Use PM to identify bottlenecks and value stream
- Coal OEE technical stop
- Implement TPM to reduce technical stop
- Why look at SMED as an end2end process
- How to get started

SUMMARY

A key component to a competitive furniture manufacturing process is to understand how TPM can increase the Overall Equipment Effectiveness (OEE) of plant equipment, two key goals are to address causes for accelerated deterioration and plan maintenance to fit an optimal production plan.

Both OEE and TPM are complex disciplines where data capture on each machine and data analysis of the end-to-end production, can contribute significantly to productivity and the bottom-line results. Process Mining is a simple yet strong technology to understand relations between TPM and OEE.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

By taking this training you will be inspired to understand how data capture and process mining will help you to see through the complexity of OEE calculations (Performance x Availability x Quality = OEE) and balance the 8 pillars of TPM in one continuous improvement cycle. This training is based on a case from a danish furniture manufacturing showing OEE improvements 64,9 -> 79,1 %.

LEARNING OUTCOMES

- *How digitalized Total Production Maintenance can become a cornerstone for optimization of the end to end furniture manufacturing*

ADDITIONAL MATERIAL

- www.Breakawai.com
- www.apromore.org
- www.blackbird.com
- www.lindgaardconsulting.dk

LEAN and Digital Manufacturing SMED

SUMMARY

Lean has allowed manufacturing companies to work with disciplines such as SMED and EPEC to optimize the changeover time (tune how productions are best changed) between production orders. With the focus often being on a single machine, rather than understanding the entire end-to-end process, makes building a production plan more difficult when the product mix contains a considerable number of finished goods and the sale is unstable.

To achieve a better understanding of the end-to-end process you will need to capture and/or generate data to enable databased analysis and deliver the optimal flow of goods and ensure optimal competitiveness.

We found that data capture combined with Process Mining is effective and help linking data and process from the counter of your customers to the manufacturing lines 1:1 is the new world class furniture manufacturing target.

LEARNING OUTCOMES

• *How digitalized SMED and EPEC can become the foundation for optimization of the-end-to end furniture manufacturing.*

TOPICS
• Why apply digitalization to SMED
• How to capture data relevant for SMED
• How to analyse data related to SMED Inner/Outer Change over Time
• How to get started Start with Process Mining to identify bottlenecks

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

By taking this training you will be inspired to understand how data capture and process mining, can enable a significant lift in productivity and cut cost in the end-to-end process from order entry to shipping finished goods.

ADDITIONAL MATERIAL

• www.Breakawai.com
• www.apromore.org
• www.blackbird.com
• www.lindgaardconsulting.dk

Big data analytics and evaluation of customer experience

SUMMARY

Two case studies are presented, in which big data analytics is used to evaluate the customer experience. One of them, relates to smart furniture, able to scan its surroundings, interact with the users, collecting patterns of movement and of customer behaviour. Company can further improve the product design, safety and adaptability to customer needs.
The second case study, looks at the success story of Ikea, who massively invested in digital applications, enhancing customers data collection, to personalize the offer to the customers' needs and increase their satisfaction. Furthermore, the customers were encouraged to use computer vision-based technologies to customize their furnishing design with Ikea's products.

TOPICS
- Case study 1. Bas Sala Studio and Big data furniture
- Case study 2. Ikea's strategy to evaluate and enhance the customer experience

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Companies should orientate to creating smart furniture, collecting big data and be interactive and adaptable to the customer habits and preferences. Customize the customer needs by investing in digital applications that enhance customer virtual furnishing experience. Collect quantitative, qualitative and psychographic customer data featuring for a higher-grade personalization.

LEARNING OUTCOMES

- *Understand how big data collected by smart furniture can improve the customer experience*
- *Understand how digital applications can evaluate and enhance a tailored customer experience*

ADDITIONAL MATERIAL

- [Preview Big Data Furniture by Studio Bas Sala](#)
- [Ikea Launches Augmented Reality Application](#)
- [Customer experience management in the age of big data analytics: A strategic framework](#)

Cybersecurity Introduction
– backing up your data might not be enough

SUMMARY

With the global digitization and shift towards a more connected tomorrow, digital transformation as well as the democratization of data is seen in almost all industries. It has almost become a must for companies to incorporate digital transformation into their planning and products to avoid lagging behind their competitors in gaining and retaining customers. As cyberattacks evolve over time from lone wolf hackers to more sophisticated attackers from organized groups, looking for a security system that is developed with cybersecurity at the forefront is mandatory.
Computer security, cybersecurity or information technology security (IT security) is the protection of computer systems and networks from the theft of or damage to hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide. Security should be the top priority for the company. Computer security is related to people, process and technology and they are all interrelated. The people and process parts need particular focus in companies that are going through a digital transformation compared to companies born global. This is because security is as much related to the mindset and culture as related to technology.

LEARNING OUTCOMES

- *Security tools to protect the network from cyber-attacks are important.*

- *People or employees need to understand the critical issues about cyberattacks.*

- *Organizations should have processes set up to deal with cyberattacks.*

TOPICS

- Democratization of data
- Corporate security team
- Security strategy
- Security action plans

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Like all other industries, the furniture industry increasingly incorporate digital transformation. Thus, firms need to develop a corporate security team that designs a security strategy and action plans. They will need technology solutions designed with several security layers, employing advanced authentication, and encryption technologies. A system that anticipates and prevents breaches.
People needs to be told not to leave any devices like laptops or computer unattended, always be very careful while opening any attachment in the email, only browsing from secure Wi-Fi or internet, and take a backup of data regularly.
Furthermore, processes must be outlined to overcome the threats, containing specific information on security controls (whitelisting IP addresses, firewall access, etc.). Vulnerability scanning can be set up with the latest released software to scan on each system periodically and keep eye on the traffic.

ADDITIONAL MATERIAL

- Cybersecurity Strategies for the Digital Workplace, Mc Kinsey & Company
https://www.mckinsey.com/about-us/covid-response-center/leadership-mindsets/podcasts/cybersecurity-strategies-for-the-digital-workplace

- Mukherjee, S. (2019). Overview of the Importance of Corporate Security in business. *Available at SSRN 3415960.*

- People, Process, and Technology: Resource Pillars of Cybersecurity, Asher Security (2019)
https://www.ashersecurity.com/people-process-and-technology-resource-pillars-of-cybersecurity/

- People, Process, and Technology: The Trifecta of Cybersecurity Programs, Helical (2019)
https://helical-inc.com/blog/people-process-and-technology-the-trifecta-of-cybersecurity-program/

A strategy for cybersecurity: how to protect your digital assets

SUMMARY

A Cybersecurity strategy is a plan of action designed to maximize the security and resiliency of your organization. It uses a top-down approach to establish a set of objectives and protocols to help keep you safe.

It outlines the duties of individuals within your organization and defines who's responsible for what. This type of strategy also addresses what will take place in the event that an incident does occur and how you'll respond.

Lastly, it recognizes the fact that cyber threats are continually advancing and devises ways to adapt so that you're always improving your security.

LEARNING OUTCOMES

- *Digital transformation initiates the need for focus on cybersecurity*
- *Cybersecurity is not only a technical issue*
- *Cybersecurity or information technology security is the methods of caring processors, networks, programs and data from illegitimate, unlawful, illegal access or occurrences that are intended for exploitation or corruption.*
- *Cyber crime is exploding*
- *Privacy is becoming an issue*

TOPICS

- Cybersecurity
- Cybersecurity as organizational issue
- Cybersecurity management

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Need to secure current data, make back up and ensure who has access to implemented systems. Focus on customers privacy when information about transactions with suppliers and customers are stored on devices or when implementing IoT in products.

Cybersecurity relates to: Company network, Company data, Company transactions with suppliers and customers, Company technology, Company product and services with IOT and Customer privacy.

Corporate Security Highlights: Ransomware, Malware, Phishing and Hacking.

Cybersecurity is not only a technical issue but also an organizational issue: Technology, people and the processes in an organization collaborate with each other to produce operative protection from cyber-attacks.

Cybersecurity management: Secure technology with all possible means: firewalls, encryptions, double security log on, etc., Use best secure software and technology in particular cloud based services, Organizational processes: back-up, usb sticks, guest log on, double check of unusual situations, mail, requests and are Well defined and trained crisis management.

ADDITIONAL MATERIAL

- Burton, Richard M., Børge Obel, and Dorthe Døjbak Håkonsson. Organizational design: A step-by-step approach. Cambridge University Press, 4th edition 2020.
- Mukherjee, S. (2019). Overview of the Importance of Corporate Security in Business. Available at SSRN 3415960.
- Protecting your critical digital assets: Not all systems and data are created equalm McKenzie and CO, 2017

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Cybersecurity (internally in the firm)

SUMMARY

Digital transformation initiates the need for focus on cybersecurity. Cybersecurity or information technology security is the method of caring processers, networks, programs and data from illegitimate, unlawful, illegal access or occurrences that are intended for exploitation or corruption. Cybercrime is exploding and privacy is becoming an issue.

LEARNING OUTCOMES

- *Learn about Corporate Security Highlights: ransomware, malware, phishing and hacking*

TOPICS

- Company network
- Company data
- Company transactions with suppliers and customers.
- Company technology
- Company product and services with IOT
- Customer privacy

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Cybersecurity is not only a technical issue but also an organizational issue. Technology, people and the processes in an organization collaborate with each other to produce operative protection from cyber-attacks. Cybersecurity management secures technology with all possible means: firewalls, encryptions, double security log on, etc. Use best secure software and technology in particular cloud-based services.
Organizational processes: back-up, USB-sticks, guest log-on, double check of unusual situations, mail, requests, well defined and trained crisis management.

ADDITIONAL MATERIAL

- Mukherjee, S. (2019). "Overview of the Importance of Corporate Security in Business." Available at SSRN 3415960.

- Cybersecurity and Internal Audit, Deloitte (2017)

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GDPR and Safety - General Data Protection Regulation

PILL 29

SUMMARY

Organizations with 250+ employees or conduct higher-risk data processing are required to keep an up-to-date and detailed list of their processing activities and be prepared to show that list to regulators upon request.

Organizations with < 250 employees should also conduct an assessment because it will make complying with the GDPR's requirements easier. The list should include: the purposes of the processing, what kind of data you process, who has access to it in your organization, any third parties that have access (and where they are located), what you're doing to protect the data (e.g. encryption), and when you plan to erase it (if possible).

Another part of "data protection by design and by default" is making sure someone in the organization is accountable for GDPR compliance. This person should be empowered to evaluate data protection policies and the implementation of those policies.

LEARNING OUTCOMES

- *Know the lawful basis and transparency*
- *Know about data security*
- *Know about accountability and governance*
- *Know about privacy rights*

TOPICS

- Use of data in new ways
- GDPR Regulation
- Data security

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The best way to demonstrate GDPR compliance is using a data protection impact assessment. You must follow the principles of "data protection by design and by default," including implementing "appropriate technical and organizational measures" to protect data. In other words, data protection is something you have to consider whenever you do anything with other people's personal data. You also need to make sure any processing of personal data adheres to the data protection principles. Technical measures include encryption, and organizational measures are things like limiting the amount of personal data you collect or deleting data you no longer need. The point is that it needs to be something you and your employees are always aware of.

ADDITIONAL MATERIAL

https://gdpr.eu/

https://www.dlapiper.com/nl/global/focus/eu-data-protection-regulation/explore-gdpr-get-the-mobile-app/

Blockchain - a changing trend for industries and what does it mean for your business

SUMMARY

Blockchains are open tamper-proof distributed ledgers. They are used in banking, supply chain management, transport, identity management, etc. The first generation of blockchains (bitcoin) focused on cryptocurrencies. The second generation (ethereum) aims to be a "world computer". Although, this technology holds a big promise, there are many issues related to scalability, efficiency, software quality, privacy and identity, regulation, etc. A third generation of blockchains is now trying to address these issues.

Blockchains are build on insights from cryptography, programming languages, distributed systems, privacy and identity.

LEARNING OUTCOMES

- *What are blockchains?*
- *How do blockchains work?*
- *Blockchain applications*

TOPICS

- What are blockchains
- How do blockchains work
- What are main Blockchain applications

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

A main application of Blockchains is in supply chain management.

Key advantages are Transparency, Traceability and sustainability.

More detailed information is available at:
https://blockchainacademy.dk/blockchain-i-dansk-design/

ADDITIONAL MATERIAL
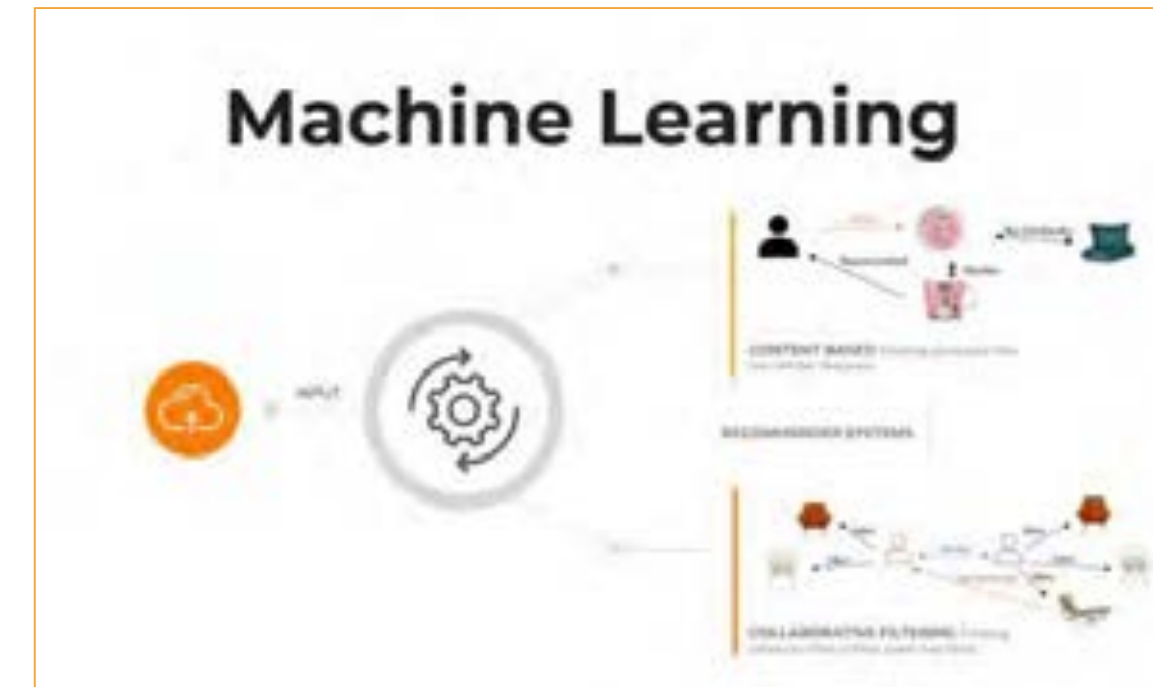
- https://blockchainacademy.dk/

Machine Learning in the furniture industry

SUMMARY

Machine Learning can be used to digitalize the furniture industry. It uses data to make an algorithm that can help the industry with automating processes and help consumers with finding their products. Recommender Systems is one of the known use cases in ecommerce where the algorithm recommends products to the consumer based on product features or what similar consumers has liked or bought. There is an endless number of possibilities with Machine Learning, where the only limit is the data available. An introduction to how the marketing platform for interior products, DecorRaid, uses Machine Learning to recommend products to their users is presented.

TOPICS

- Introduction to Machine Learning
- How to get started with Machine Learning
- Use case – How do DecorRaid use Machine Learning
- Inspiration to use cases

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Data is the key to using Machine Learning. Therefore, it's important to get started fast, so you know that the right data is being tracked. What data to track is up to the individual case. Creating a Machine Learning algorithm takes lots of iterations, and can be improved over time.

LEARNING OUTCOMES

- *Understand Machine Learning*
- *Learn the steps to get started*
- *Get inspiration to use cases*

ADDITIONAL MATERIAL

- www.DecorRaid.com

Innovation and digital transformation

TOPICS

- *Disruption and (digital) business models and frameworks*

- *Innovation, creativity and ideas generation*

- *Business and IT strategy & alignment*

Understanding the Digital Ecosystem

SUMMARY

To understand "your" market you need to identify:
Who is (are) my (profitable) customer segment(s)?
What are their needs and value expectations?
What is their consumer behavior/their respective customer experience and journey?

TOPICS

- What are the major steps of understanding your market
- Segmentation – targeting – positioning
- Which current trends support these steps

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Use data analytics to support digital marketing strategies.

LEARNING OUTCOMES

- *Learn what are the major steps of understanding your market*
- *Learn that in the digital age – data collection and advanced analysis can support all these steps*

ADDITIONAL MATERIAL

- The STP Model of Marketing: Segmentation, Targeting, and Positioning, DevriX (2019) https://devrix.com/tutorial/stp-model-of-marketing-segmentation-targeting-positioning/

- Brynjolfsson, E., Hu, Y. J., & Rahman, M. S. (2013). Competing in the age of omnichannel retailing. MIT. https://sloanreview.mit.edu/article/competing-in-the-age-of-omnichannel-retailing/

Managing innovation processes and tools to drive digitalization

PILL 20

SUMMARY

An important aspect to drive innovation processes in market-driven organizations is customer linking.

Customer linking is seen as creating and managing close customer relationships. It mainly includes close communication, customization, joint problem solving (i.e., with regard to new product developments, and coordinated outside-in activities (i.e., effective complaint management, joint product planning).

Thus, platforms and information and communication technologies (ICTs) facilitates open-innovation and/or cross-industry innovation processes through activities such as crowdsourcing, co-creation or hackathons and more.

LEARNING OUTCOMES

- *The need for customer linking by use of digital tools*
- *Effectiveness of integrating customers and other partners in the innovation processes (open innovation) around a digital platform*

TOPICS

- Customer linking
- Innovation processes and tools in the digital age

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Customer linking is an essential key success factor for understanding needs and expectation in a B2C but also B2B relationship.

Customer linking in the early innovation process enhance market-orientation and new product developments.

ADDITIONAL MATERIAL

- 5 WAYS IT CAN DRIVE DIGITAL INNOVATION, Digital marketing institute (2020) https://digitalmarketinginstitute.com/blog/5-ways-it-can-drive-digital-innovation
- Your Guide to Driving Digital Innovation, Mx Medix (2020) https://www.mendix.com/digital-innovation/
- How innovation management contributes to the succesfull digital transformation, Acivate (2018) https://acuvate.com/blog/innovation-management-contributes-success-digital-transformation/
.

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Ability to sense the opportunities within digitalization

PILL 19

SUMMARY

Market-driven organizations are superior in relation market-sensing as main outside-in capability as well as showing individual and organizational absorptive capacities.

Market sensing in market-driven firms is seen as the processes of systematically gathering, interpreting, and responding to market information.

Absorptive capacities are seen as a corporation's ability to find and identify new knowledge and opportunities, generate ideas, and develop and implement those ideas for corporate innovation. The concept of absorptive capacity emphasizes evaluating, adapting and exploiting new sources of knowledge to increase a company's competitiveness, flexibility and agility.

LEARNING OUTCOMES

- *Need to develop ability to both explore and exploit information*

TOPICS

- Market sensing in the digital age
- Absorptive capacities

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Gather: Fast and precise market intelligence (i.e., data on digital customer journeys, data on channel usage and conversion rates)

Interpret: identify employees and teams with different absorptive capacities to assimilate, transform and exploit external knowledge to internal process and new product developments

Respond: Use in decision making, start new initiatives.

ADDITIONAL MATERIAL

- Lean PMO: Explore vs Exploit, O'reilly, B. (2020) https://barryoreilly.com/lean-pmo-explore-vs-exploit/
- What is Market Sensing and How Can it Help Your Business?, Parking, G. (2018) https://www.gopromotional.co.uk/blog/what-is-market-sensing-and-how-can-it-help-your-business/
- Absorptive Capacity, Marketing91, https://www.marketing91.com/absorptive-capacity/
- Day, G. S. (2011). Closing the marketing capabilities gap. Journal of marketing, 75(4), 183-195

New (Digital) Business Models

PILL 27

SUMMARY

Business models are the recipes that organizations follow to make money. The most common business model is that of selling products. However, smart technologies allow products to be connected back to the manufacturer via apps so that the manufacturer can now follow how products are used.

Research shows that even if this knowledge can become part of a new business model, most organizations are not willing to take this step.

Changing business model requires designing what the customer consumes, how is this consumption experienced and how it is delivered. Redesigning the building blocks of a business model may be a way to easy the process of changing the business model for organizations.

LEARNING OUTCOMES

- *Understand why changing business model is one of the fundamental changes in digital transformation and the most difficult one*
- *Understand that the change needs careful planning and top down protection from the existing business model*

TOPICS

- What is a business model
- Product oriented vs service oriented business models
- The challenges to change business model
- The three dimensions of business models

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

For the furniture industry, the main challenge is to identify the processes that give value to the customers and to find ways to capture this value.
For Asia Paints this required a shift from selling paint to selling the entire experience from envisioning a house with new colors to having the house professionally painted.

ADDITIONAL MATERIAL

- How the Meaning of Digital Transformation Has Evolved, Harvard Business Review (2017)
  https://hbr.org/2017/05/how-the-meaning-of-digital-transformation-has-evolved
- How does digital transformation and business model innovation interlink? BMI Lab (2017)
  https://bmilab.com/blog/2017/7/28/how-does-digital-transformation-and-business-model-innovation-interlink
- What the Best Transformational Leaders Do, Harvard Business Review (2017)
  https://hbr.org/2017/05/what-the-best-transformational-leaders-do

Value generation

SUMMARY

Value generation consists of three main steps:

1. *Providing the value*
2. *Delivering the value*
3. *Communicating the value*

Each step needs to be aligned with the needs of the targeted customers and the marketing management strategy of the company.

TOPICS

- Definition of value generation
- Description and examples for each step

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Identify the needs of your targeted customer.

What are their expectations you need to fulfill and what are augmented/additional values a consumer is not expecting from your product/brand.

This is the superior value you need to deliver and to communicate.

LEARNING OUTCOMES

- *Understand the concept of generating value*
- *How to align the company's strategy with the needs of customers*

ADDITIONAL MATERIAL

- Linking the customer experience to value, McKinsey Insights (2016) https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/linking-the-customer-experience-to-value

Introduction to Digital Transformation

SUMMARY

Digital is a very broadly used term that requires an explanation and especially a clarification respect to a similar - but different term – digitized.
Digitizing is about organizations designing their processes in a coordinated way so that they can be seamlessly executed, based on compatible technologies that generate data that can be readily used by other processes. It is a fundamental process for organization to create a well functioning operational backbone. This provides the basis for understanding the customer.
Digital is about customer facing innovation. It is about empowering employees to develop and enhance digital offerings that provide value to the customers and capture value for the organization.

LEARNING OUTCOMES

- *Digitize before going digital*

TOPICS

- New digital technologies constantly become available to organizations
- Strategic value of digital technologies is in their combination
- Digitization is about making operations execute seamlessly
- Digital is about customer facing innovation

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Research shows that 70% of established organizations do not have a well functioning operational backbone. This makes it difficult to capture value from digital. The main takeaway is to analyze the internal operations of the organization and redesign processes so that they can be executed smoothly in a way that data can flow between processes without human intervention. It is only after digitization that organization should invest into digital offerings.

ADDITIONAL MATERIAL

- Digitized ≠ Digital
- ROSS, SEBASTIAN, AND BEATH (2016). *Digital Design: It's a Journey.* MIT Sloan CISR Research Briefing, Vol. XVI, No. 3

What is
Digital Maturity ?

SUMMARY

Digital maturity is about two capabilities: the ability to integrate digital technologies into services that provide value to the customers and the ability to lead a company wide effort to service the customers through digital offerings. A beginner lacking these two capabilities can move in three directions: 1) It can experiment with new digital technologies though lacking the capability to capture value from this investments (fashionista), 2) It can lead change in a specific area (e.g. logistics) but lack the ability to generate customer value (conservative), or 3) It can develop both capabilities at the same time and become a digital master.

LEARNING OUTCOMES

- *Build capabilities to capture value from new scalable customer services*
- *Notice that digital maturity is not about buying technology*

TOPICS

- Digital capability
- Leadership capability
- Paths to digital mastery
- Examples for the furniture industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The furniture industry is by definition product oriented. But the customer still experiences a service (the comfort of a furnished home). This means that digital mastery needs to be found in the ability to provide services to customers on top of the products. Ecosystems for interior design and partnerships with interior decorators, architects, delivery firms, installers can help in providing support for the customer process rather than a physical product. Ikea is an example of a furniture company that leverage digital tools (augmented reality) to provide a preferential channel to place its products. Asia Paints is an example of an organization leveraging an ecosystem (augmented reality, online sales, distribution, painting, cleaning) to provide an end to end customer service. These are examples of digital mastery.

ADDITIONAL MATERIAL

- GEORGE WESTERMAN, DIDIER BONNET AND ANDREW MCAFEE (2014). *Leading Digital Turning Technology into Business Transformation*. Harvard Business Review Press, chapter 1. https://books.google.dk/books/about/Leading_Digital.html?id=Fh9eBAAAQBAJ&printsec=frontcover&source=kp_read_button&redir_esc=y#v=onepage&q&f=false
- https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/acquiring-the-capabilities-you-need-to-go-digital

Designing the Digital Strategy

SUMMARY

A digital strategy is a part of an overall business strategy and characterized by the use of new information technology to existing activities and creation of new activities enabled by the new technology to optimize the organizations performance.
A digital strategy will turn a company into a digital organization.
The "digital firm" is a general term for organizations that have enabled core business relationships with employees, customers, suppliers, and other external partners through digital networks and digital processes.
The digital firm comes along either by companies that are born digital or a digital transformation of an existing firm.

TOPICS

- Digital capability
- Leadership capability
- Paths to digital mastery
- Examples for the furniture industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The creation of new customer touchpoints, e.g. selling via e-trade and showing product in a showroom. Connecting suppliers, customers and employees via an IT platform. New business models, e.g. changing form selling products to selling digital enabled services. Changing to use cloud based IT services. Strategy for addressing privacy and cyber crime

LEARNING OUTCOMES

- *Determine the scope and goal of the company*
- *Estimate where the digital technology can enhance competitive advance*
- *Estimate the digital maturity on the leadership and technology scale*
- *Choose a traditional or design thinking approach*
- *Estimate benefits, cost and risk*

ADDITIONAL MATERIAL

- Mithas, S., & Lucas, H. C. (2010). «What is your digital business strategy?». IT professional, 12(6), 4-6. https://terpconnect.umd.edu/~smithas/papers/mithaslucas2010dbsitpro.pdf

- Ross, J. W., Beath, C. M., & Sebastian, I. M. (2017). How to develop a great digital strategy. «MIT Sloan Management Review», 58(2), 7 https://sloanreview.mit.edu/article/how-to-develop-a-great-digital-strategy/

Moving from Supply Chain to Ecosystems

SUMMARY

Typical organizations are geared towards selling products. This is a supply chain orientation. However, customers experience value through a process. Connected products are only a first step towards a better service. Organizations need to move out of their supply chain mentality and embrace the ecosystem if they want to provide a superior customer value. Organizations can adjust so that they become part of somebody else's ecosystem or they can try to lead an ecosystem. Remaining in the supply chain model will lead to a race to the bottom.

TOPICS

- Supply chain versus ecosystem
- The dimensions of an ecosystem
- Moving from supply chain to ecosystem

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

A supply chain orientation will lead to a race to the bottom. This is very visible for home complements based on electronics but it is also true for furniture in general. Joining an ecosystem that provides "furniture as a service" may be a way to capture value from customers (along their lives) rather than on a sale.

LEARNING OUTCOMES

- *Understand that an ecosystem provides superior value to the customer rather than products alone*
- *Learn how being a supplier to the right ecosystem is a perfectly viable strategy*

ADDITIONAL MATERIAL

- How the best companies create value from their ecosystems, McKinsey Insight (2019)
  https://www.mckinsey.com/~/media/McKinsey/Industries/Financial%20Services/Our%20Insights/How%20the%20best%20companies%20create%20value%20from%20their%20ecosystems/How-the-best-companies-create-value-from-their-ecosystems-final.pdf

- Ecosystems and the new age of customer value, Dialogue Review (2019)
  https://dialoguereview.com/ecosystems-new-age-customer-value/

Moving from Products to Services: New Value Propositions

SUMMARY

From DVD to Netflix.

From selling wind turbines to selling energy via maintenance.

From selling cars to selling transport.

From selling furniture to renting furniture.

To add IoT and selling services based on the data provided.

Making products "smart" as service like intelligent beds with sleep and health services.

LEARNING OUTCOMES

- *Understand that the value of enterprise activities for realizing survival and purpose must concord*
- *Understand that the value of enterprise activities must concord among hierarchical levels*
- *Understand that the culture must support the value*

TOPICS

- Reason to move from products to services

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Substantial revenue can be generated from products with a long life-cycle by adding a service component.

Services provide a more stable revenue base with a higher margin.

Customers demand more services.

Digital technologies may make service more natural and easy than product, e.g. from CD's to streaming.

(New) competitors are doing it.

ADDITIONAL MATERIAL

- Oliva, R., & Kallenberg, R. (2003). «Managing the transition from products to services». International journal of service industry management, 14(2), 160-172. https://www.researchgate.net/publication/235271845_Managing_the_Transition_from_Products_to_Services

- Transitioning from products to services to fuel growth, Deloitte Insights (2018) https://www2.deloitte.com/ch/en/pages/consumer-industrial-products/articles/transitioning-from-products-to-services-to-fuel-growth.html

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Understanding the Market / Technical Trend and the Competition to Fit in the Digital Ecosystem

SUMMARY

The digital world is no longer characterized by secrecy. Now, the digital world is actually characterized by technologies that are open for everyone. Therefore, the real question is how to take well-known technologies and integrate them in a way that makes sense for your organization, rather than creating something completely new.

The important part is to understand in what direction your organization and the value creation within your organization is moving, in order to create the best combinations of technology. The experimental part of this process is not irrelevant, as long as it has a purpose.

Digital organizations are recognized by being able to lead the transformation towards generation digital value for the customers and also by their ability to integrate existing digital technologies in their business processes.

Many of organizations invest a lot in digital technologies, but fail to transform this investment into something that generates value for the customer at the level of experience. It is crucial for organizations to move this experience into value generating activities.

LEARNING OUTCOMES

- *Digital Transformation*

- *Understanding your organization*

TOPICS

- Digital transformation
- Technological integration
- Organizational understanding

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The digital transformation is happening in almost all industries, also the furniture industry, why it is important for organizations in this industry to be aware of existing technologies that could be used in order to obtain digital value generating activities.

A good example of an organization doing so is Uber. Uber did not invent any new technologies, but they combined already existing technologies, in a way that were very specific for their situation.

ADDITIONAL MATERIAL

- The Post-Digital Era is Upon Us ARE YOU READY FOR WHAT'S NEXT? Accenture (2019) https://www.accenture.com/_acnmedia/PDF-94/Accenture-TechVision-2019-Tech-Trends-Report.pdf

- Where do you fit in the new digital ecosystem? Deloitte University Press (2020) https://www2.deloitte.com/content/dam/Deloitte/tr/Documents/technology-media-telecommunications/digital-ecosystem.pdf
- Competing in a world of sectors without borders, Mc Kinsey & Company (2017) https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/competing-in-a-world-of-sectors-without-borders#

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Leadership in digital transformation

TOPICS

- *Organizational structures and leadership*
- *Change management - strategy and culture*
- *Process management, governance and management of digital assets*

Investing for Digital Transformation: The Business Case

SUMMARY

A possible response when facing a digital threat is to find dynamics that have been observed before, to follow the threat and try to replicate it with something better, which is called doubling down. It requires investment, a clear understanding of what the threat is, and what it means to be better than the threat.

Another response for digitalization is to double up: you take your strengths and try to leverage digital technology to make it an even bigger strength.

A third response is to acquire. If there is a competitor which is emergent, you might be in the situation to acquire the competitor.

The problem with all of the above approaches is both the cost and uncertainty that follows, but especially timing. Timing is a key factor when it comes to investing for digital transformation.

When considering investing for digital transformation, it is important to consider the uncertainty, alternatives, costs in relation to the gain and timing: all these parameters needs to be taken into account.

Your organization might be a in a situation where not to invest in digitalization will preclude the organization from accessing any sales at all. This makes timing crucial. A clear example of failed timing is BlockBuster: they failed to require Netflix when Netflix was requirable and ended up going bankrupt.

LEARNING OUTCOMES

- *Investing*

- *Timing*

TOPICS

- Investing approaches
- Critical factors when investing in digitalization

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

An example of doubling down is Research of Motion, the company that made the BlackBerry in response to the IPhone. They tried to create a phone, that in their view was better in every possible way than the original IPhone and through that trying to beat the competition.

An example of double up is The Financial Times. The Financial Times is almost an monopolist in the domain of news creation, and has for years been observing the emergence of possible competitors. They chose to move from the printed magazine to being online. There is a cost in doing so, but they managed to maintain and build on their core competence, though they changed a lot of their competences and skills.

Both examples, even though they are related to other industries than the furniture industry, are good examples of the execution of different approaches when it comes to investing in digitalization.

ADDITIONAL MATERIAL

- The state of digital transformation, Altimeter (2018-2019)
  https://errolashwell.com/wp-content/uploads/2019/09/Altimeter-State-of-DT-Report-2019.pdf
- Realizing the value of digital investment, CSM (2018)
  https://www.strategyand.pwc.com/ca/en/media/whats-your-digital-roi.pdf

Related to business concepts (i.e. investments)

SUMMARY

The digital transformation changes the focus from market share and profitability, towards customer/user satisfaction with the output. Traditional industrial relationships have built on bilateral dependencies, trust, information transfer and joint problem solving. However, to succeed in the digital area, firms need to invest in their inventive effort, location of complementarities, type of complementarity, location of bottlenecks and their severity, modularity, multilateral coordination and dependencies where they simultaneously cooperate and compete in ecosystems.

You need a focus on value creation for customers, highlights the need for ecosystems where the ecosystem members may or may not have alliances among themselves, but their alignment has to be in place for the value proposition to be realized.

Ecosystems emerge based on modularity as a mechanism for operating it. Modularity is a technological characteristic that allows different components of a technological system to be designed (and made) by different producers yet function together.

The specifics of interconnections between modules are codified via technological interfaces, which standardize the way in which producers of different components of the overarching system interact.

LEARNING OUTCOMES

- *Understand how digital transformation changes traditional industrial relationships*

TOPICS
- Focal offer provided by the ecosystem
    - Technological (digital) investments
    - Managerial investments to create a digital vision, foster a digital culture and engage in ecosystems
- Modularity

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

By engaging in ecosystems with actors with complementary competences and creating technological interfaces, the furniture industry could use digital technology to understand the way humans optimally use their furniture, to ensure good seating comfort, maintenance of furniture etc. Furthermore, IoT could be used to help customers visualizing new furniture in their houses, before they buy it. Additionally, awareness of sustainability and circular economy changes customer demand towards reupholstering, renovating and services of good furniture. Thus, investment in digital technologies, strategies and management could turn competition way from a gruelling price war and towards creating value for customers through new, digital business models.

ADDITIONAL MATERIAL

- Digital Transformation Initiative. Maximizing the Return of Digital Investments, *Value Impact of Digital Investments*, p. 7-13. World Economic Forum (2018) http://www3.weforum.org/docs/DTI_Maximizing_Return_Digital_WP.pdf
- The Case for digital reinvention, McKinsey Quarterly (2017) https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-case-for-digital-reinvention
- Surviving in an Increasingly Digital Ecosystem, MIT SMR (2017) https://sloanreview.mit.edu/article/surviving-in-an-increasingly-digital-ecosystem/

Leveraging Maturity Models to promote Digital Transformation in the Furniture Industry

PILL 1

SUMMARY

Furniture manufacturing companies that seek to transition to Industry 4.0 to become more sustainable, innovative, and competitive must first evaluate its own digital level of maturity to understand the strengths it can already leverage and the systems and business processes that must be integrated into digital solutions. A Digital Transformation Maturity Model (DTMM) is a method to measure the degree to which a company is implementing digital technologies across its manufacturing processes, business operations, marketing strategy, etc. A higher level of digital maturity means the company has a potential for growth in capabilities and processes used to develop products and services.

LEARNING OUTCOMES

- *Learn what is Industry 4.0*
- *Learn what is a Digital Transformation Maturity Model and what does it measure*

TOPICS

- Definition of Industry 4.0
- Differences between digitization (the conversion of analogical or non-digital to digital), digitalization (use digital technologies and digitized data to transform how work gets done, how customers and companies engage and interact, and to create new digital revenue streams), and digital transformation (broad, customer-centric cultural and organizational change across the company, supported by a strong leadership and by the adoption of digital technologies that empower and enable employees)*
- Definition of Digital Transformation Maturity Model (DTMM) and its key dimensions used to measure the digital maturity level

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Furniture manufacturing companies can use a DTMM to evaluate the degree to which it is implementing digital technologies across its manufacturing processes, business operations and marketing strategy, among others.
A DTMM is not a "roadmap" to follow as it does not describe phases a company should go through.
What are the different levels of maturity a company may be within its digital transformation process.
The levels of digital maturity measuring a company's degree of adoption of digital technologies are 1) Initial/Ad hoc, 2) Managed/Opportunistic, 3) Defined/Repeatable, 4) Quantitative/Managed, 5) Optimized.

ADDITIONAL MATERIAL

- Gonçalves Machado, Carla & Winroth, Mats & Carlsson, Dan & Almström, Peter & Centerholt, Victor & Hallin, Malin. (2019). Industry 4.0 readiness in manufacturing companies: challenges and enablers towards increased digitalization.. 81. 1113-1118. 10.1016/j.procir.2019.03.262
- * Colleen Chapco-Wade, Digitization, Digitalization, and Digital Transformation: What's the Difference? Medium, Oct 21, 2018

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Digital Adoption: What, why and how

PILL 65

SUMMARY

Digital Adoption is an integrated part of a successful Digital Transformation, but it's important to understand the different levels of digital adoption. Many companies struggle with digital adoption on multiple levels but there are ways to improve and ensure you leverage the full potential of digital technologies. The importance of Change Management is often underrated, resulting in suboptimal adoption of digital tools. The iterative design process known as Design Thinking can significantly improve the rate of adoption. The Agile methodology also offers a framework for bringing business and IT closer together resulting in cross-functional teams delivering better solutions, faster, suited for the actual business needs.

LEARNING OUTCOMES

- *Understand Digital Adoption*
- *Adoption on different levels*
- *Design Thinking and Agile*

TOPICS

- Definition of Digital Adoption
- Digital Adoption levels: Industy, Organization, Employees and Applications
- Improve adoption using Design Thinking and Agile

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Challenges related to digital adoption is seen across all industries. It's often caused by a too strong focus on technology, thus forgetting to listen to actual user needs. In the furniture industry you can either be a driver of digital adoption, or you can be forced to keep up with your suppliers or customers. The importance of adopting tools for digital collaboration is now more evident than ever due to Covid-19 lockdowns forcing companies to work remote.

ADDITIONAL MATERIAL

- https://www.forbes.com/sites/lilachbullock/2018/12/10/what-is-digital-adoption-and-why-you-really-need-to-know-about-it/?sh=2fc1cce17371
- https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-covid-19-recovery-will-be-digital-a-plan-for-the-first-90-days
- https://www.scaledagileframework.com/design-thinking/

Strategy, Organizational Culture and People

SUMMARY

In an environment of constant, rapid change and high competition, for your company to survive and grow, it must transition from traditional manufacturing models to Industry 4.0 data-driven business practices by deploying a Digital Transformation strategy with clear goals, timelines, action plan and budget. Internally, you need to build awareness, digital skills, and a culture shift. Externally, you need to engage partners to foster collaboration and innovation.
Then, as your company advances in its Digital Transformation process, you need to evaluate your how digitally mature your company becomes by measuring key dimensions and variables in your strategy and organization.

LEARNING OUTCOMES

- *Define Digital Transformation Strategy goals*
- *Train digital skills*
- *Lead corporate culture change*

TOPICS

- Defining and deploying you company's Digital Transformation Strategy
- How can your company adapt to a rapidly changing environment and marketplace
- Shared corporate values and culture aspects that may enable the company to transition to a data-driven Industry 4.0 business model
- Digital and communication skills training your workforce needs for this change
- Using a Digital Maturity Model to evaluate the progress of your Digital Transformation process by measuring key dimensions and variables in your organization

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Need to shift your business model to Industry 4.0, your company needs to define a business case, Digital Transformation strategy with goals, an action plan and budget.
Internally, you need to build awareness, capacity and culture shift to abandon traditional manufacturing models, prepare for and adapt to constant change.
Externally, you need to engage an ecosystem of partners to foster collaboration and innovation.

ADDITIONAL MATERIAL

- Industry 4.0 Readiness Online Self-Check for Businesses
- Cap Gemini: Digitizing Manufacturing: Ready, Set, Go!
- McKinsey & Company. INDUSTRY 4.0. How to navigate digitization of the manufacturing sector. 2015
- Gonçalves Machado, Carla & Winroth, Mats & Carlsson, Dan & Almström, Peter & Centerholt, Victor & Hallin, Malin. (2019). Industry 4.0 readiness in manufacturing companies: challenges and enablers towards increased digitalization.. 81. 1113-1118. 10.1016/j.procir.2019.03.262.

Underpinning execution: ICT, standards and processes

www.ditrama.eu

SUMMARY

In a manufacturing SME's Digital Transformation strategy, measuring key variables like whether the company has the right IT architecture to integrate, structure and manage data from all sources across the company, its customer base and the supply chain, as well as technical standards and governance procedures is key to evaluate how digitally mature a company is and to determine the best decisions to improve business processes and automation of critical processes, and thus ensure increased value is delivered to customers while managing data security, integrity risk and interoperability of devices and software systems more effectively.

LEARNING OUTCOMES

- *Understand why adopting the right ICT, standards and governance procedures can help in the digital transformation process of your SME.*

Digital Maturity and Digital Transformation Strategy in Furniture Manufacturing Companies

TOPICS

- Measuring dimensions and variables in a Digital Transformation strategy (technology, standards and processes, innovation, legal risk management and compliance) to determine the company's digital maturity level and support progress

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

ICT, standards and governance procedures are the foundations of a successful digital strategy, playing a key role in generating, processing, storing, securing and sharing data internally and across the value chain in order to meet the needs of customers, improve the execution of business processes at lower costs and enhance business efficiency and effectiveness.
Standards can help manufacturing SMEs automate processes, ensure devices and software can talk to each other and manage data more effectively.

ADDITIONAL MATERIAL
- Earley Information Science (2016). Building a successful Digital Transformation Roadmap.

Reorienting the company around the Customer Experience to generate business value

SUMMARY

A Digital Transformation process involves shifting the company's value proposition from only offering manufactured products to providing customers with customized, data-driven products and services. The aim is not only to provide customers with engaging experiences, but also to collecting data from each interaction channel and touchpoints throughout the customer journey to gain a better understanding of the customer's needs and preferences.
Using a Digital Maturity Model to measure customer-experience related dimensions and variables can help determine how far a company is down the Digital Transformation road and the decisions to make to ramp it up.

LEARNING OUTCOMES

- *Understand the Customer Experience concept*
- *Understand the importance of wrapping customized digital services around manufactured products*
- *Understand how to use standards and procedures to collect and manage customer data*

TOPICS

- Digital Transformation of products and services
- Customer journey
- Omni-channel
- Customer engagement and retention
- Data management
- Using a Digital Maturity Model to measure customer experience-related dimensions and variables

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Use digital technologies to collect customer needs and preference data through touchpoints along the customer journey through multiple channels and apply technical standards and procedures to ensure data is managed adequately.
Design products as per customer data collected wrap personalized services around them to optimize the customer experience, generate engagement and build an on-going relationship based on trust.
Shifting from a manufacturing-only focus to a services-oriented one requires a culture change throughout the company.

ADDITIONAL MATERIAL

- Industry 4.0 engages customers. The digital manufacturing enterprise powers the customer life cycle
- Standards and the digitalisation of EU industry: Economic implications and policy developments
- Digital Transformation in Product Development
- Digital Transformation and Customer Experience: A Deep Dive

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Embracing constant change and rapid adaptation to generate business value

SUMMARY

To stay competitive and keep generating value in the current economy, it is essential that manufacturing companies understand they must transition from traditional business practices to providing customers with high-quality experiences by delivering physical products bundled together with highly-automated services through multiple online and offline interaction channels. Technologies like digital platforms, IIoT, social media, e-commerce tools, data protection and cloud integration, and metrics measuring data from manufacturing, business processes and customer interactions are key elements supporting a digital transformation strategy. To measure the level of digital maturity of an organization is essential to ensure an optimal use of digital technologies both in customer engagement channels and internal operations.

LEARNING OUTCOMES

- *Learn the basics of defining a Digital Transformation Strategy and the technologies supporting it*
- *Learn the basics of a Digital Maturity Model*

TOPICS

- Setting and prioritizing goals in my digital transformation strategy
- Implementing digital platforms to manage omni-channel interaction with customers throughout digital touchpoints along the customer journey
- Industry 4.0
- E-commerce, IIoT, data protection and cloud integration
- Value realization, sustained business agility
- Transitioning from manufacturing to deliver high-quality customer experiences by providing highly-automated services through online and offline channels
- Metrics to measure and manage progress and ROI

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Digital maturity is not a project, but an ongoing process pursuing organizational improvement.
Defining an on-going digital transformation strategy with goals, action plans to meet them with concrete projects with scope, time and cost estimates.
Identify dimensions and variables to be measured using a Digital Maturity Model to evaluate a company's level of digital maturity.

ADDITIONAL MATERIAL

- Deloitte. Industry 4.0 engages customers. The digital manufacturing enterprise powers the customer life cycle
- Instituto Tecnológico Metalmecánico, Mueble, Madera, Embalaje y Afines (AIDIMME). Agrupación Empresarial Innovadora de Fabricantes de Muebles y Afines de la Región de Murcia. (AMUEBLA). Cluster e innovation hub del equipamiento del hogar y el contract (CENFIM). Centro Tecnológico del mueble y la madera de la región de Murcia (CETEM). Análisis de viabilidad para la Implantación de la Industria 4.0 en el sector hábitat

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Examples of Digital Transformation Enablers and Tools

SUMMARY

Furniture manufacturing companies are increasingly adopting technologies like flexible manufacturing, digital models and the cloud in their digital transformation process towards adopting an Industry 4.0 model. The Digital Transformation Manager is the key figure that orchestrates the digital transformation process and ensures that the whole organization acquires a minimum level of "Digital Mindset", an imperative without which the success of organizations' digital transformation processes are at risk.
In order to facilitate that increasingly more personnel participate in creating and supervising the algorithms that run production systems, more and more manufacturing companies are running training programs in graphic block-based "low-code" or "no-code" programming languages for employees lacking software programming skills but that have acquired a "digital mindset".

LEARNING OUTCOMES

- *Identify key technologies enabling Industry 4.0 adoption in the furniture manufacturing industry*
- *Describe the key role of the Chief Digital Officer vs. Digital Transformation Manager*
- *Understand how training in block-based programming languages increases capacity for Industry 4.0*

TOPICS

- Key technologies in the adoption of Industry 4.0 in furniture manufacturing and other industries.
- Role of the Digital Transformation Manager in an organization.
- Resources to promote training in Industry 4.0 technologies among furniture manufacturing SMEs.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

3-D Printing-based Flexible Manufacturing principles are being increasingly applied to the furniture manufacturing industry adopting an Industry 4.0 model.

Technologies impacting the furniture manufacturing industry include robust communications systems and flexible systems that allow dynamic, on-the-fly changes in design.

Like in other industries, furniture manufacturing companies are increasingly using cloud technologies for cybersecurity, data storage and connectivity.

The Digital Transformation Manager leads the digital transformation process across the organization and ensures a minimum level of "Digital Mindset" is acquired by all employees and throughout all divisions to ensure the process moves along.

To facilitate that more "digitally-minded" personnel participate in creating and supervising algorithms running industrial systems, despite not having software programing skills, graphic block-based "low-code" or "no-code" programming languages are increasingly used.

ADDITIONAL MATERIAL

- [Gartner - Digitalization strategy for Business Transformation](#)
- [Gartner Keynote: 5 Significant Imperatives for Digital Success](#)

Self-assessment exploratory questions

SUMMARY

Relevant questions related to key topics covered in the first 6 Pills to make training mainly practical. Questions will be formulated in a way that may help companies apply a Digital Maturity Model. Questions will help students prepare evaluation questionnaires that suggest interviewees actions to further progress in a company's digital maturity.

LEARNING OUTCOMES

- *How to prepare interviews focused on Digital Maturity Model enablers and artifacts*

Digital Maturity and Digital Transformation Strategy in Furniture Manufacturing Companies

Self-assessment Exploratory Questions

TOPICS

- Questions on key topics from Pills 1-6
- Questions aimed at preparing companies to apply a Digital Transformation Maturity Model

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Semi-structured interviews will focus on enablers, any artifacts available, where are they and the maturity level they evidence.

Prior to the interview, a form with specific questions about any artifacts available will be submitted, followed by more specific questions regarding those variables.

Evaluation Tools - How digitally mature is your company?

SUMMARY

Diagnostic tools are used to determine the Industry 4.0 digital maturity level of a furniture company through survey questionnaires, help evaluate maturity gaps and take appropriate action, with training as a first step. Bringing the company's maturity level above a minimum level may be critical to get the digital transformation started. It is important to map responses provided through surveys across different tools. As there is a broad range of diagnosis tools, it is key that they all use open assessment criteria and share a common structure of Industry 4.0 vocabulary and concepts. There are efforts to create a unified model and corpus of terms to ensure the consistency of the results that diagnostic tools provide. Governments are taking action to support companies diagnose their digital maturity levels. There are also efforts to disseminate and spread the use of diagnostic tools using audio-visual media materials to explain and provide a common understanding of Industry 4.0 concepts.

LEARNING OUTCOMES

- *Explain what are diagnostic tools and how they are used to determine a **company's Industry 4.0 digital** maturity level*
- *Describe what is required before starting a digital transformation process*
- *Understand why it is important to use a unified Industry 4.0 vocabulary*

TOPICS

- Diagnostic tools used to determine a company's Industry 4.0 digital maturity level.
- Minimum levels of maturity required to undergo a digital transformation process.
- The role of experts in unifying Industry 4.0 terms and concepts.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Diagnostic tools to determine a furniture company's level of Industry 4.0 digital maturity are underpinned by digital maturity concept models and include survey questionnaires.

There are many diagnostic tools, but it is important that they all use similar terms understandable for non-digital employees and to map survey results across different tools.

Answers to survey questions are compared against experts' opinions to determine the digital maturity score for each dimension, identify gaps and act accordingly.

There is a minimum maturity level below which a company may push back on the digital transformation process.

Steps to address maturity gaps commonly include training to help bring the maturity scores above the minimum level required to undergo a digital transformation process.

Once reached the minimum level, the actual digital transformation process can start under the leadership of the Digital Transformation Manager.

Experts are working in unifying Industry 4.0 terms and concepts and disseminating this knowledge.

ADDITIONAL MATERIAL

- Industry 4.0 Commission of Engineers of Catalonia - Diagnostic tool
- EY – Digital Maturity Check
- Boston Consulting Group Digital Acceleration Index (DAI)
- Google Digital Maturity Benchmark
- European Advanced Manufacturing Support Centre – Short Scan

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Furniture Manufacturing Industry: Current Status

SUMMARY

Most SME (small and medium) companies in the furniture sector in Spain are at the first levels of digital maturity, between beginner and incompetent. More R&D investment in Industry 4.0 enablers is needed to reach higher levels of digital maturity. In Europe, only 16% of furniture manufacturing companies can be considered digitally mature. Technologies that are most impacting the furniture manufacturing sector include collaborative tools (B2C and B2B e-commerce platforms), business process management software tools (ERP, CRM) and automation and robotics solutions. There is no consistent use pattern, and each company chooses one or the other depending on the prominence of the role it is expected to play in the digital transformation process. Companies operating in kitchen, bathroom and home furniture are traditionally considered as the most advanced in bringing Digital Transformation to the forefront of their business strategy.

LEARNING OUTCOMES

- *Understand how digitally mature Spanish and European furniture manufacturing SMEs are and what is needed to improve them*
- *Overview of technologies impacting the furniture manufacturing industry*
- *Review of companies at the forefront of in digital transformation in the furniture industry*

TOPICS

- Digital maturity of the furniture industry in Spain and Europe.
- Technologies playing a key role in the digital transformation of furniture companies.
- Leading furniture companies leveraging digital transformation to ramp up their portfolio of product.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

More investment is needed to increase the widespread low digital maturity levels prevalent among furniture SMEs in Spain and Europe.

Technologies impacting the furniture manufacturing industry most include B2C and B2B e-commerce platforms, ERP and CRM tools, and automation and robotics solutions.

Each company chooses one technology or another depending on their own digital transformation roadmap.

Companies in the kitchen, bathroom and home furniture business are at the forefront of Digital Transformation in the furniture industry.

In Spain, companies like GAMADECOR in kitchen furniture and Mobiliario Royo in bathroom solutions are leading the application of advanced technologies to create smart products and solutions.

ADDITIONAL MATERIAL

- DIGIT-FUR - Impacts of the Digital Transformation in the Wood Furniture Industry
- HABITAT 4.0 Análisis de viabilidad para la implantación de la Iniciativa Industria Conectada 4.0 en el sector del Hábitat (only in Spanish)

Advancement of the Digital Maturity of Furniture Manufacturing Companies

SUMMARY

When a company starts a digital transformation process, the first steps are often uncertain and short-sighted because they tend to focus on specific aspects instead of on the big picture. Companies should appoint a leader with long-term global vision and capable of overseeing and coordinating the process. Digital maturity models can help the leader to define the steps to follow in a digital transformation process and achieve goals set, identifying gaps in each dimension and taking appropriate action; however, lack of documented guidance may hinder progress. Employees showing high competence using technologies may be a sign that a company is ready to rise to the next maturity level. Another indicator of a company's digital maturity level is the degree to which external stakeholders (customers or suppliers) are given access to company's information.

LEARNING OUTCOMES

- **Discover a company's initial steps in a** *digital transformation process*
- *Understand the importance of leadership in guiding a digital transformation process*
- *Distinguish the signs indicating a* **company's digital maturity level**

TOPICS

- Initial steps of digital transformation processes.
- The role of leadership to guide a digital transformation process.
- Ways maturity models can help furniture companies in their digital transformation processes.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

At initial phases of a digital transformation process, companies tend to be confused and focus on the wrong goals and make wrong technology choices.

Companies needs should adopt a long-term approach to digital transformation.

It is critical to appoint a leader that understands the whole picture and orchestrates the digital transformation process both internally and externally.

There is a general lack of documented guidance on digital transformation in the furniture industry.

Tech-competent employees are a sign of higher digital maturity levels.

Companies giving external stakeholders access to its data is a sign of higher digital maturity levels.

ADDITIONAL MATERIAL

- Lead Innovation Management - How the furniture trade is moving into the digital age
- Porcelanosa - Group goes digital to achieve a sustainable business transformation
- Siemens – Kimball Hospitality, a leading furniture manufacturer, embraces digital transformation

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Communication in digital transformation

PILLS

TOPICS

- *Engagement, transparency and accelerators adoption*
- *Partnerships*
- *Digital marketing*

Digitalization: Opportunity or Threat

SUMMARY

On one side of digitalization, we have the promise of a much better economic status, more agility and a better conversation with the customer. On the other side, we have uncertainty and costs.

Despite the costs following digital setups, you need to have the setup in order to participate in or creating an ecosystem. Not doing this will principally leave you out of business on certain markets.

The evolution of the digitalization in the last decades shows that digitalization is becoming more prevalent in every organization. In a way, digitalization moves beyond the issue of opportunities and threats, and should perhaps soon be seen as the cost of doing business.

Everybody is expecting digitalization to dramatically decrease costs, increase profits, revenues and customer attention. Most of all, to move from a situation where you have revenue per product sold, to a situation where you have revenue over the lifetime of a customer.

Threats following digitalization presents major challenges: one address uncertainty about what direction to move in, and especially uncertainty in the situation where there is a new entrance, that propose solutions which fits the situation of the new entrances, since they do not have prior investment, but does not fit the organizations already on the market.

LEARNING OUTCOMES

- *Opportunities of digitalization*
- *Threats of digitalization*

TOPICS

- Digital opportunities and threats
- The future of digitalization

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The manufacturing sector, and the furniture sector in particular, is not as full of highly digitalized companies as other sectors such as in the sectors of technology, banking and insurance, but there still are some organizations that are digital masters. For that reason, whether you should consider digitalization more of a threat or opportunity might really depend on how much digital master are binging on your territory.

ADDITIONAL MATERIAL

- How to Make Sense of the Digital Economy and its Uncertainties and Opportunities,EY (2020)
  https://www.ey.com/en_gl/alliances/digital-directions-a-perspective-on-the-impact-of-digital-technologies

- Preparing for the Changing Nature of Work in the Digital Era, OECD (2019
  https://www.oecd.org/going-digital/changing-nature-of-work-in-the-digital-era.pdf

Communicating the Digital Change in the Company

PILL 32

SUMMARY

How do you prepare your organization around changes after you've already sold them your original digital transformation strategy? Your team should work towards introducing the right communication plan. It is important to emphasize that such a communication plan needs updates, for each pivoting that happens in your strategies in the digitalization agenda, based on changes in the markets, industry, or customer requests. Preparing only a presentation slide deck is not going to get your organization far. It is a tool to kick-off of a transformation program, which requires additional steps and resources across leadership, employees, customer, and other stakeholders to come along. To mention a few, the following will prove its worth: - Get your team to communicate on time and with consistency; - Be prepared for further discovery work, where you will have to test different assumptions and welcome any feedback from the organization; - Assess how the digital change impacts on people and processes, with considerations on how to develop the team.

LEARNING OUTCOMES

- *Understand and accept the communication plan as part of the Digital Transformation process*
- *Recognize the value of the communications efforts*
- *Identify ways to communicate internally through tools*

TOPICS

- The value of communication initiatives in the organization
- Aligning the Digital Change Strategy with the communication plan
- Communication tools and mechanisms for consideration

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

When your company is welcoming the digital change, inspirational speeches at the beginning will get everyone fired up about the transformation that is about to come. What to do next, is to avoid "the silence". To guide your team through this process, try the following techniques: 1. Build your internal communications activities to push information out quickly; 2. Present mechanisms to facilitate active listening and always keep a virtual "open door"; 3. Propose opportunities for Online Learning to equip your team in practicing the change. For the furniture industry, the internal alignment of the organization is a major step, as it sets the stage for the added-value in the exchange with your customers.

ADDITIONAL MATERIAL

- https://sloanreview.mit.edu/article/using-digital-communication-to-drive-digital-change/

- https://enterprisersproject.com/article/2020/6/digital-transformation-communicating-change

How to create partnerships in a digital ecosystem

SUMMARY

The majority of organizations today are in the area of the supply chain, meaning that they produce manufacturing products to sell to retailers, who then sells them to the customers. Another option is for the organization to become an ecosystem driver or a modular producer.

What partnerships organizations need in a digital ecosystem depends on the choice above. Moving towards becoming a digital ecosystem driver is about understanding the possible partners that you could have and what kind of setups they have. If your organization is moving towards the modular producer, then it is about understanding what the major players in your field wants.

If your organization is in the beginning of the digital evolution, knowing the protocols and technologies enabling other organizations to participate in your ecosystem is crucial for creating partnerships.

If your organization is already an established digital ecosystem driver, you might find yourself in the lucky position of being able to impose already existing protocols and technologies on your partners.

LEARNING OUTCOMES

- *Understand your digital revolution*

TOPICS

- Evolution of digital organizations.
- Partnerships in digital ecosystems.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

If there already is a major player, a digital ecosystem driver, in the furniture industry, then it might be a great opportunity to move from the supply chain setup to the model of producer setup, in which case the partnerships your organization makes will depend on the protocol and standard of the digital ecosystem driver established in this particular context.

ADDITIONAL MATERIAL

- Winning in digital ecosystems, McKinsey Insight (2018).
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- Using Partner Ecosystems to Accelerate Innovation, IDC (2020).
- https://download.schneider-electric.com/files?p_enDocType=White+Paper&p_File_Name=IDC-infobrief-02-19-2020AR0_EN.pdf&p_Doc_Ref=IDC-infobrief-02-19-2020AR0_EN

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LEAN and Digital enabled Supply Chain/Logistic

SUMMARY

The absolute key to a profitable operation is to have 100% understanding and control over all aspects of the end-to-end supply chain, from order entry over manufacturing, warehouse to delivery and happy customers. The good news is that it is becoming easier and less costly to start the journey.

LEARNING OUTCOMES

- *How digitalization and data analysis can become the cornerstone to a profitable and competitive furniture manufacturing operation.*

TOPICS

- How is Lean relevant to Digital transformation
- What is important to focus on in digitalization of the value chain
- What does end-to-end visibility looks like based on data
- Change is a team sport

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

By taking this training you will understand how to start the digitalization journey to achieve a fully digital overview of all part of the Supply Chain.

ADDITIONAL MATERIAL

- https://www.linkedin.com/company/breakawai?originalSubdomain=il
- www.Apromore.org
- www.blackbird.com
- https://www.linkedin.com/in/martin-lindgaard?originalSubdomain=dk

The Financial Perspective for Digital Commerce

SUMMARY

The financial perspective for digital commerce is connected to the shift that digitalization is allowing, which is moving from product to services.

Trough IoT technology it is possible to create a connection from the customer back to the organization. This allows for particular chains in the financial perspective, allowing organizations to monetize and sell the relationship throughout the life of a customer, instead of just the sale.

So, with the new technologies we see two new trends: one is moving from products to services, and the second is making money over the life of the customer, rather than making money on the sales of a product.

Digital technologies are allowing companies to, for example, put censors in their products, making it possible to connect back to the company, and constantly providing data on the product use.

The financial perspective is connected to the shift digitalization is allowing: moving from product to services. Organizations now try to monetize the services attached to the product. This is a fundamental shift, while the sale of services is a repeated advantage, but the sale of products usually is a one-off event.

LEARNING OUTCOMES

- *Digital commerce*
- *From sale of products to services*

TOPICS

- The financial shift
- Digital technologies
- Monetizing customer relationships

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

If you buy Nike shoes through a physical store, the company will not know much about you. If you instead buy Nike's products through their webstore, you can customize the shoes in ways that satisfy your specific needs. This gives Nike the information of what you really need, how long you use the shoes and so on.

The core idea of this can be transferred to the furniture industry, which would be to provide furniture as a service instead of a product, and therefore changing the relationship with the customer from only selling products, to selling and monetizing the entire relationship with the customer.

ADDITIONAL MATERIAL

- DIGITAL TRANSFORMATION OF THE FINANCE FUNCTION , Marsh & McLennan (2020) https://www.oliverwyman.com/content/dam/oliver-wyman/v2-de/publications/2019/jul/Digital_Transformation_Finance_Function.pdf
- Find your future pace today with digital finance transformation, PWC (2020) https://www.pwc.com/ca/en/services/consulting/perspective-digital-transformation/find-today-your-future-pace-with-digital-finance-transformation.html
- How to Sell Services More Profitably, Harward Business Review (2008) https://hbr.org/2008/05/how-to-sell-services-more-profitably

Delivering Digital versions of the furniture/products (e-commerce) - Intro

High quality product information

Rowdy coffee table
Stylish and elegant coffee table with glass top and brass colored shelf.Very beautiful table which will help to adorn the decor.

Coffee table
Black coffee table

SUMMARY

Making furniture presentable online is essential for competing in the furniture industry. With more shopping online, the quality of your images and text is important as the consumers can't touch or try the furniture before purchase. In the company DecorRaid they help furniture brands with getting exposed to the right consumers. They don't own any products themselves and relies therefore on the brands to deliver high quality product information. Through product feeds they get access to all features attached to every product. A product feed is the common way of delivering information about your products to partners or for instance Google Shopping.

LEARNING OUTCOMES

- *Know the importance of being digital*
- *Learn about product feeds*
- *Understand use cases for digital products*

TOPICS

- Introduction to DecorRaid
- High quality product information
- Product feed use case

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Being digital is essential for being ahead of competition in the furniture industry. This includes delivering digital versions of the furniture, so it can be presented in a e–commerce shop. Especially the quality of the image is important as it's selling point online as the consumers can't touch or try the furniture before purchasing it. With a product feed the furniture information can be easily accessed by the internet and partners. DecorRaid gets all their information on products through product feeds.

ADDITIONAL MATERIAL

- www.DecorRaid.com

New customers touch points

SUMMARY

Touch-points are defined as each contact an individual has with a brand during the customer journey. These touchpoints can be brand-, partner-, and customer-owned as well as partner owned.

The greatest challenge is to manage especially the manifold digital touchpoints in alignment to the overall marketing strategy of a company and because of their increasing interactivity during a customer journey.

LEARNING OUTCOMES

- *Digital transformation offers new touch-points for customers to interact with companies.*

TOPICS

- Customer journey
- Definition and examples of touchpoints
- Opportunities and threats

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Take the omnichannel - experience of customers as main framework. Consumers might still purchase offline but without taking mobile and other digital channels/touchpoints into account, you might loose explanatory power for the final conversion.

ADDITIONAL MATERIAL

- Digital Customer Journey Mapping: Improving the Customer Experience, Synegus
https://www.synegys.com/digital-customer-journey-and-touchpoints/

- The digital transformation of customer service: *Omni-channel customer interactions*, p. 11-13, Deloitte (2013) https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/consumer-business/deloitte-nl-the-digital-transformation-of-customer-services.pdf

E-marketing and (mobile) branding

SUMMARY

Digital Marketing is applying digital technologies to contribute to marketing activities aimed at achieving profitable acquisition and retention of customers (within a omni-channel buying process and customer life cycle) through improving customer knowledge (of their profiles, behaviour, value and loyalty drivers), then delivering integrated targeted communications and online services that match their individual needs.

TOPICS

• What is Digital Marketing
• Differentiating from "Traditional" Marketing Management ?
• Examples of Strategies and Implementation

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Use data analytics to identify the opportunities of a targeted digital marketing strategy.

ADDITIONAL MATERIAL

• Leeflang, P. S. H., Verhoef, P. C., Dahlström, P., & Freundt, T. (2014). Challenges and solutions for marketing in a digital era, European Management Journal, 32(1), 1-12

• Chaffey, D., & Ellis-Chadwick, F. (2019). Digital marketing. Pearson UK. https://www.pearson.com/uk/educators/higher-education-educators/program/Chaffey-Digital-Marketing-7th-Edition/PGM2199960.html?tab=formats

• Kannan, P. K. (2017). Digital marketing: A framework, review and research agenda. International Journal of Research in Marketing, 34(1), 22-45. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3000712

LEARNING OUTCOMES

• *Understand what digital marketing consists of*

• *Understand the differences compared to traditional marketing*

How to understand "your" market

PILL 40

SUMMARY

To understand "your" market you need to identify:

1. *Who is (are) my (profitable) customer segment(s)?*
2. *What are their needs and value expectations?*
3. *What is their consumer behaviour/their respective customer experience and journey?*

In the digital age – data collection and advanced analysis can support all these steps.

LEARNING OUTCOMES

- *Major steps for understanding your market*
- *Current trends in this process*

TOPICS

- What are the major steps of understanding your markets: segmentation – targeting – positioning
- Which current trends support these steps

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Use data analytics to support digital marketing strategies.

ADDITIONAL MATERIAL

- Kotler, P., Keller, K. L., Ancarani, F., & Costabile, M. (2014). Marketing management 14/e. Pearson

- Brynjolfsson, E., Hu, Y. J., & Rahman, M. S. (2013). Competing in the age of omnichannel retailing. MIT. https://sloanreview.mit.edu/article/competing-in-the-age-of-omnichannel-retailing/

- Big data: What's your plan?. McKinsey Quarterly (2013) https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/big-data-whats-your-plan

Brands & Patents - Intellectual Property Rights

SUMMARY

In essence, our economy is based on the principle of 'freedom to copy'. However, that right is not unlimited as contracts and legal provisions can ensure that you cannot simply copy certain things. Important legally regulated restrictions are the intellectual property rights (IP rights) on "intellectual creations". Nevertheless, only the concrete elaboration of these creations can be protected, ideas and concepts that have not been processed cannot be protected. The main industrial property rights used in furniture industry are:

- *Trademark right (brands): signs that companies use to distinguish their goods or services (eg. Cradle2cradle)*

- *Drawing or design right: a drawing in 2D (eg. the pattern of a fabric) or design in 3D (eg. the design of a chair)*

- *Patent right: technical inventions (eg. lift chair / recliner)*

LEARNING OUTCOMES

- *You will know the scope of different IP rights and related topics*
- *You will be able to recognize which are relevant to your company*

TOPICS

- What is intellectual property?
- Different intellectual property rights and related topics
- Related topics

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

After completing this pill you will know the different intellectual property rights and their scope. This will allow you to recognize which rights are relevant to your company. In addition you will know what you can do with third party products or which right of them you might be (unvolontarily) violating. You will be able to determine the best possible way to protect your products and services, hence obtaining commercial benefits.

Several patents related to the furniture industry can be found via Espacenet.com

ADDITIONAL MATERIAL

- Intellectual Property Rights, Innovation and Technology Transfer: A Survey
  https://www.econstor.eu/handle/10419/203953)

The people within the digital transformation

PILLS

TOPICS

- *Working in team: HR-practices in a digital environment*
- *Culture and mindset in a digital company*

Digital HR Practices

SUMMARY

In this pill we examine the importance of assessing the current situation before we start the process of digital transformation. There is a set of conditions which will help us prepare for HR transformation. Those conditions start with a thoughtful assessment of why we are doing it.

We need to reflect on the following questions:
Are the conditions right for HR transformation?
Will the investment in HR help us better serve customers?
Will it help us better build the investors' confidence for future earnings?
Will it help us respond to the external conditions- the social, political and economic changes we face?

LEARNING OUTCOMES

- *Understand why HR is transforming*
- *Learn what are the desired outcomes*
- *Learn how and who will implement it*

TOPICS

- Digital transformation of Human Resources

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

A true HR transformation is an integrated, aligned, innovative, and business focused approach to redefining how HR work is done within an organization so that it helps the organization deliver on promises made to customers, investors, and other stakeholders.

In this pill, we propose a four-phase model for HR transformation to ensure that HR drives business success and avoids the common pitfalls of such efforts.

ADDITIONAL MATERIAL

- 8 Focus Areas for HR best Practices
- Readiness Assessment

Getting the right Employees:
Hiring & training

SUMMARY

When hiring employees from the company's point of view, technology helps eliminate hiring bias, it increases the accuracy of hiring decisions and it can reduce the cost per hire. Analyzing data helps reducing employees' turnover.
From the candidates' point of view, technology can make the application process easy and less time consuming, an engaging process that helps managing expectations and interacting with the future employer.
Training through Blended Learning, the company can save time and money for training the employees, create a learning organizational culture for them to grow and evolve, through having easy access to information and interacting with each other and the company. Using learning management systems/platforms, the creation of multimedia learning content becomes easy and advanced reporting allows the company to have a clear view of the employees' progress as well as use learning as an instrument for improving performance and productivity.

LEARNING OUTCOMES

- *Learn that technology improves hiring processes*
- *Understand that technology can be **integrated in the company's** learning processes to increase productivity*

TOPICS

- Hiring: covered in the key resource
- Training: covered in the key resource

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Related to recruitment platforms, managers can examine several providers and adopt options that are more suitable for their company, their recruitment needs as well as their internal processes.

Regarding employees' training and development activities, using a blended learning approach is a better option compared to traditional training since it offers a high level of flexibility, interaction as well as accurate progress measurement.

ADDITIONAL MATERIAL

- Heineken Case Study

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Assessing the need for organizational change

SUMMARY

Organizations are information processing systems and the information processing capacity has to meet information processing demands.

A digital transformation changes information processing capacity and demand related to the way you produce and sell products. Increasingly products will be embedded in technological ecosystems. Digital transformation and sustainability are tightly connected. The changes educed by the digital transformation changes customer touch points, supply chain and logistic, the IT infrastructure and design of business models. Overall, organizations need to engage in platform organizations, mobile and cloud solutions, change the basic structure and incentives within organizations e.g. by use of AI and robots.

LEARNING OUTCOMES

- *Design an organization that performs efficiently and effectively*
- *Assessing the need for organizational change*
- *Evaluate the changes of the digital transformation*
- *Assess the overall need for change*
- *Assess the need for change of the organization mindset and culture*
- *Assess the information processing demand*
- *Assess the information processing capacity*
- *Decide the processing demand has to be lowered or capacity increased*

TOPICS

- Information processing system
- Ecosystem and Business Models
- Sustainability
- Organization design and incentives supporting it

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

A digital transformation changes information processing capacity and demand related to the way you produce furniture, the ecosystem, the way you sell furniture e.g. by using augmented reality, the customer does not need to show up in the store. Customers might not buy but rent furniture and demand furniture with IOT eg. smart beds.
Digital transformation and sustainability are tightly connected

ADDITIONAL MATERIAL

- Organizational change: a crucial component of digital transformation, Logical Design Solutions (2019)
  https://www.lds.com/pov/organizational-change-crucial-component-digital-transformation/
- Change Management, CMS (2018)
  https://www.cmswire.com/digital-workplace/change-management-the-key-to-successful-digital-transformations/
- How the implementation of organizational change is evolving, McKinsey (2018)
  https://www.mckinsey.com/business-functions/mckinsey-implementation/our-insights/how-the-implementation-of-organizational-change-is-evolving
- Burton, Richard M., Børge Obel, and Dorthe Døjbak Håkonsson. *Organizational design.* Cambridge University Press, 2020.
- Burton, R. M., & Obel, B. (2018). The science of organizational design: fit between structure and coordination. *Journal of Organization Design*, 7(1), 1-13. (Open Access)

Managing the organizational change

SUMMARY

Managing organizational change is the process of planning and implementing change in organizations in such a way as to minimize employee resistance and cost to the organization while simultaneously maximizing the effectiveness of the change effort.

LEARNING OUTCOMES

- *Managing change in a digital transformation*

- *Organizational Audit and Design*

  - Gather information

  - Make diagnostic analysis and determine the misalignments

- *Action Plan*

  - Assess the process and content costs for a proposed sequence

  - Decide which misalignments to fix for a new design

  - Determine the sequence of fixing the misalignments

- *Implementation Plan*

  - Allocate responsibilities and resources

  - Decide milestones and deadlines

  - Communicate the plan

PILL 25

TOPICS
- Resistant to changes: Refreeze, change and freeze
- Change process
- Clearly define the change and align it to business goals
      Determine impacts and those affected
      Develop a communication strategy
      Provide effective training
      Implement a support structure
      Measure the change process
- Digital transformation
- Follow up on milestones and deadlines
- Top management engagement
- Speed of change
- Continuous change

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Digitalization will inevitably lead to changes when trade with furniture moves from physical stores to online. Nevertheless, a lack of digital competences is limiting the possible benefits that the industry could achieve.

ADDITIONAL MATERIAL

- Overblik over 'key considerations' når det kommer til at planlægge og implementere store, organisatoriske ændringer, SHRM (2020) https://www.shrm.org/resourcesandtools/tools-and-samples/toolkits/pages/managingorganizationalchange.aspx

- Burton, Richard M., Børge Obel, and Dorthe Døjbak Håkonsson. *Organizational design.* Cambridge University Press, 2020.

Change of Culture and Mindset in the Company

PILL 26

SUMMARY

It is important to acknowledge that change processes are complex and in order to overcome the dominant logic inertia three major steps are important:

1. *Envisioning of the disruptive potential*
2. *Assessment of the magnitude of firm-related capability gaps*
3. *Investment to implement responses and strategies*

Based on these aspects, the use of digital technologies leads to changes in value creation paths and these might have, with regard to their disruptive potential, positive as well as negative impacts on internal and external aspects of the company.

LEARNING OUTCOMES

- *Assessment of need for change*
- *Assessment of capabilities to change*
- *Assessment need for education or new types of employees*
- *Assessment of employees need for help to change*

TOPICS

- Change process
- Capability gaps
- Behavioural aspects of change of culture and mind-set

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Strategy matters

Recognize behavioural aspects (i.e., inertia, overconfidence, status-quo bias) of employees and management.

Learn and unlearn new capabilities.

Recognize the continuous process and potential strategy changes on this way.

ADDITIONAL MATERIAL

- Why Culture Change is Essential for Digital Transformation, MIT Sloan (2020) https://www.cmswire.com/digital-workplace/why-culture-change-is-essential-for-digital-transformation/
- Ross, J. W., Beath, C. M., & Mocker, M. (2019). Designed for Digital. MIT Press.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. Journal of Strategic Information Systems, 28(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003

Change of culture and mindset in the company. Case study- Van Hoecke

SUMMARY

The Belgian family-owned company Van Hoecke, based in Sint-Niklaas, has been a partner to the furniture industry since 1967. As a distributor to kitchen and interior builders of hinges, lift systems and drawer systems for the Austrian brand Blum, they have been the market leader for years. In addition, with ORGALUX, they have created an in-house brand of inner divider systems and kitchen aids.

In the video the IT manager shares his thougts, experiences and findings on the introduction of a new ERP package.

Since 2014, Van Hoecke has been marketing its own industrially-made wooden drawer system, under the brand TA'OR. The plant manager gives you a unique insight into the creation and development process of the system.

LEARNING OUTCOMES

- *Learn from award-winning experts*

- *Explore opportunities to expand your business*

TOPICS

- Implementing a new ERP package
- The creation of a new industrial-made wooden drawer system

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Taking the digital transformation seriously can be rewarding in many ways. The company has won several national and international awards and has growing business figures. The insights and realisations of the company can certainly be a source of inspiration for other companies in the furniture sector. Every company is different, copying and pasting is usually not a good idea, yet looking at the neighbours can be inspiring and motivating.

ADDITIONAL MATERIAL

- https://www.vanhoecke.be/en

- https://www.taorbox.com/en

Quality, risk and safety in digital transformation

PILLS

TOPICS

- *Quality: automation and standardization*
- *Implementing a digital strategy with regards to Risk and Safety*

Automating tasks performed by human vision - Case study: TrackTech

Jonas Beyer
Co-founder, TrackTech

TOPICS

- Machine learning
- Computer vision
- Customer behaviour
- Automatization

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The design of furniture houses is essential for the customer experience. The exhibitions that the customers pass by and examine during their shopping trip serves as an indirect interaction between the company and their customers. But how do we know if the exhibitions are any successful?

The combination of machine learning and computer vision is a great tool for collecting and analysing large amounts of data, which can guide important decisions.

SUMMARY

The efficiency and responsiveness of machine learning have already substituted countless simple processes previously managed by humans. This video shows how we combine computer vision and machine learning to create value for commercial fitness centres, and how the same technology can be applied to the furniture industry. In general, machine learning and computer vision are great tools for collecting and analysing data that allows for better understanding of customer behaviour.

LEARNING OUTCOMES

- *Collect data using machine learning and computer vision*
- *Understand customer behaviour from real data*
- *Automate simple tasks that require human vision*

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Digitalization of Organizational Processes

SUMMARY

People talk about the work of human resources as activities, systems, processes, decisions, or initiatives. In order to capture the potential of digital opportunities, organizations need to make fundamental design choices along three dimensions: Structure, People and Processes.

The flows or processes central to organization success: Flow of People, Flow of Performance Management, Flow of Information and Flow of Work.

Key digital technologies: automation, Artificial Intelligence, advanced analytics, the Internet of Things, and augmented and virtual reality.

LEARNING OUTCOMES

- *Make changes happen fast*
- *Innovate in both content and process*
- *Keep things simple*

TOPICS

- Human resources
- Digital opportunities in organizational processes
- Key digital technologies in human resources

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Keep strategies, processes, and products simple.
The quality, Six Sigma, and lean manufacturing movements have helped organizations reduce variance and reengineer processes.
HR transformation is incomplete unless alignment, integration, and innovation occur for all four categories of HR processes (activities, systems, processes, decisions/initiatives)

ADDITIONAL MATERIAL

- MicroStrategy Case Study

- 5 Ways to Help Employees Keep Up with Digital Transformation by Deb Henretta and Anand Chopra-McGowan

From an Analog Safety Management System to a Digital System?

SUMMARY

A safety management system (SMS) is a management system designed to manage safety elements in the workplace. It includes policy, objectives, plans, procedures, organization, responsibilities and other measures.
A safety management system provides a systematic way to continuously identify, monitor hazards and control risks, while maintaining assurance that these risk controls are effective.

LEARNING OUTCOMES

- *The digitalization of processes will affect all three imperatives of a safety management system – people, processes and technolgy*
- *The digitalization of former analog processes put a high demand on digital competences and the capabilities to manage digital processes*
- *It implies reframing the organization, including structures, processes and culture*

TOPICS

- A SMS has to address: people, processes and technology.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

In Denmark, the safety management system within wood and furniture industry are set out in the Industry Community for working environment in the industry BFA-I (Denmark). Beside general rules to avoid that employees are injured or worn out or have an accident, the regulation also include rules about interior design, fabrics and materials, machine operating, and tests to be passed to be allowed to work with the different tools and machines. Most companies still primarily use analog safety management systems, however due to many potentially dangerous tools and machinery within the furniture industry, digital relay etc. might be appropriate. Also in relation to an increased online sale, documentation of a good working environment and sustainability, digital systems might be supportive. Further, the emerging contract market and the need for improving the internal processes across companies would benefit from more digital systems.

ADDITIONAL MATERIAL

- Strategies for Digitized Safety, Digital Intensity (2020)
  https://virtualconsulting.com/blog/strategies-for-digital-safety/

- World-Class Safety – Support through Digitalization, Willerth coaching & Consulting (2020)
  http://www.wccsb.com/world-class-safety-support-through-digitalization/
- Fremtidens video-sikkerhed er en blanding af analog og IP, Security Worldmarket. Com (2020)
  https://www.securityworldmarket.com/dk/Nyhedsarkiv/fremtidens-video-sikkerhed-er-en-blanding-af-analog-og-ip
- Guidelines on occupational safety and health management systems, ILO-OSH 2001, International Labour Organization (2020)
  http://www.ilo.org/safework/info/standards-and-instruments/WCMS_107727/lang--en/index.htm
- Work Safely in the Furniture-Making Industry Learner's Guide, Government of Western Australina Department of Traiding and Workforce Development (2013)
  https://www.dtwd.wa.gov.au/sites/default/files/teachingproducts/BC2012_CCBY.PDF
- OiRA Tools

Ecosystems and transactions: security implications

SUMMARY

Digitalisation can bring fundamental changes in industries and organisations. Whilst majority is progress, it also brings threats and vulnerabilities that challenge security and thus, overall stability. Loss of integrity, confidentiality or availability of data and operational technologies can be consequences of cyber-attacks.

Successful attacks may be a result of social engineering methods; loss or theft of mobile devices; insider accidents, or lack of security preparedness by the business. In the digitalisation process, security cannot adopt a traditional 'fortressed city' strategy but calls for innovative measures that includes management, legal, technical as well as behavioural changes.

LEARNING OUTCOMES

- *Security Threats*
- *Security Vulnerabilities*
- *Security Controls*

TOPICS

- What are security threats, vulnerabilities and controls.
- Security in the automotive industry
- Security in the mobile industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

As the furniture industry moves towards digital processes, there is a need to take a new, holistic approach towards security. With the right technology and a focus on best practices, it's possible to monitor and mitigate security risks and achieve operational resilience. This can be achieved by identifying critical operational and information assets, assessing threats and vulnerabilities and implementing the appropriate controls in place.

ADDITIONAL MATERIAL

[Steelcase Cyber Attack Should Be a Wakeup Call](#)

Intro to Risk management in the Digital area

SUMMARY

Digital risk management is the process that companies follow to assess what the most likely digital risks are, which hold the potential to create the largest financial impact for a company.

Assessing the impact of risk and defining your risk appetite is very difficult, which is why effective risk management in the digital age is essential to the continuity of an organization and its ability to generate income. As industries move towards digitization, risk response may need to be revised to fit the changing landscape.

LEARNING OUTCOMES

- *Risk Assessment*
- *Risk Appetite*
- *Risk Response*

TOPICS

- How to perform a risk assessment
- How to define the risk appetite of the organisation
- Risk management in the electric power industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

You cannot protect against risks that you don't know, therefore a proper risk assessment in the first digitalisation steps is crucial for the success of your digital journey. And the most important elements of this process is the engagement and involvement in the risk assessment of all stakeholders in the organisation, as they are the one who will be facing the risks.

ADDITIONAL MATERIAL

Managing cyber risk in the electric power sector

A vision for the Digital risk: the seven building blocks

SUMMARY

The future is a moving target. It is imperative for the risk function to accelerate its digitization efforts, since it will be increasingly hard to stay analogue while customer-facing activities and operations race ahead into digital. Organisations can harness the seven building blocks of a digital transformation to construct a successful digital risk program.

These building blocks are: data management, process and workflow automation, advanced analytics and decision automation, cohesive, timely, and flexible infrastructure, smart visualization and interfaces, external ecosystem, talent and culture.

TOPICS

- Why risk management needs to be digitalised
- What are the seven building blocs of digital risk
- Risk digitalisation in the financial industry

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Given the high value at stake and the future of the industry, the furniture industry should start the digital risk transformation journey as soon as possible. Most risk functions have at least some of the building blocks existing that can be the foundation for the transformation. They can harness these for short, agile initiatives that build momentum toward the necessary digital risk vision.

LEARNING OUTCOMES

- *The digitization of risk*
- *The seven building blocks of digital risk*
- *The future of risk management*

ADDITIONAL MATERIAL

Five Accelerating Digital Trends That Will Impact Risk Management in 2021

Implementing a Digital Strategy with Respect to Safety

SUMMARY

A safety management system (SMS) is a continuous improvement process that reduces hazards and prevents incidents. It protects the health and safety of your employees and should be integrated into everyday processes throughout the organization.

An effective Safety Management System as one that:

- Reduces the risk of workplace incidents, injuries and fatalities through data-driven measurements and improvements.

- Involves engaging people and working in partnership to make safety a shared responsibility, recognizing the value of cross-level teamwork.

- Is organized and structured to ensure organizations are able to achieve and maintain high standards of safety performance.

- Is proactive, preventive and integrated into the culture of your organization.

LEARNING OUTCOMES

- *Leadership*
- *Integrated systems approach*
- *Performance measurement*
- *Alignment to core organizational initiatives*
- *Corporate citizenship and off-the-job safety*

TOPICS

- Digital Intensity Assessment – understand your starting point and what your needs are based on People, Process & Technology.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

For the furniture industry is very important going from more manual processes to automation and use of robot.

In the implementation you should:

1. Get rid of paper. Make inspections easier and faster.
2. Be able to work offline: the app is fully functional, even without connectivity.
3. Workflow automation: answers can trigger follow-up and notifications.
4. Use rich data: Dash boards with figures and video.
5. Engage your workers by giving them a tool that makes the work easier, faster and more fun.

ADDITIONAL MATERIAL

- Inspired Thinking: Digital Safety Strategies to Encourage Engagement, Corvex Blog (2018) https://www.corvexsafety.com/blog/digital-safety-strategies-to-encourage-worker-engagement
- SAFETY AND RISK MANAGEMENT IN THE AGE OF IIoT AND DIGITAL TRANSFORMATION, LNS Research (2020) https://literature.rockwellautomation.com/idc/groups/literature/documents/wp/safety-wp037_-en-p.pdf
- Burton, Richard M., Børge Obel, and Dorthe Døjbak Håkonsson. *Organizational design: A step-by-step approach*. Cambridge University Press, 4th edition 2020
- Pell, Doug: *Strategies for Digital Safety*, Virtual Consulting USA

Prevention Policy, Risk Assessment

Stefan Hinnekens
expert risk & safety bij Woodwize

SUMMARY

Whether the digital transformation in a furniture company is just in an early state or already advanced, production will continue to involve sawing, drilling, milling, moving heavy loads, using and storing solvents, and so on.

Buildings and installations must meet regional and national requirements, workers must be able to carry out their tasks in good and safe conditions. Organising and setting up a pleasant and safe workplace is not an easy task. Legislation can be complex, the interests of the employer and the employee can differ.

WoodWize, based in Belgium, has built up over the years a great deal of expertise in occupational health and safety, both at national and European level.

TOPICS

- Getting started
- QuickScan (Dutch & French only)
- Oira-tool
- Machinery risk analysis tool and Machinery documentation (Dutch & French only)

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Hear it from an expert!
Prevention Policy and Risk Assessment may vary from country to country. National trade unions can assist you in this. This example from Belgium can be a guide to roll out a valuable prevention policy. The Oira-tool is a European initiative.

LEARNING OUTCOMES

- *Learn from an expert*
- *Explore the OiRA-tool*

ADDITIONAL MATERIAL

- https://www.woodwize.be
- https://oiraproject.eu/en

Social and environmental impact of digitization

TOPICS

- *The Good, the Bad and the Ugly in a digital transformation process*
- *Digital tools in times of emergency (i.e. healthcare, COVID-19)*
- *Connecting sustainability with digitalization*

Digital Transformation - The Good, Bad & Ugly

PILL 66

SUMMARY

A successful Digital Transformation process takes time. Most companies have already embarked on the journey and some have already reaped significant benefits from their transformaion. What makes for a successful transformation, what will likely go wrong, and what should you definitely try to avoid. Many companies underestimate the importance of data and fail to understand that structured, accessible data is the foundation for machine learning and AI. With increasing amounts of data you also need to be aware of the risk of cyber security breaches and non-compliance (ex. GDPR) - otherwise your digital transformation can quickly become an ugly affair.

LEARNING OUTCOMES

- *Importance of strategy*
- *Diversify your efforts*
- *Understand the importance of data*

TOPICS

- Digital Transformation Strategy
- Four most important areas of Digital Transformation
- Data as enabler

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Companies in the Furniture Industry can learn do's and don'ts of digital transformations from other companies and industries. The importance of having a strategy based on your current digital maturity is key. The journey involves investments in both customer experience, operational efficiency and new business models. All areas are important and no area should be left untouched. The efforts should be underpinned by new ways of working bringing business and IT closer together. Companies should also prioritize having a strategy for data handling if they want to be able to reap the benefits of machine learning and AI.

ADDITIONAL MATERIAL

- Book: Leading Digital (McAfee, etc.)
- https://sloanreview.mit.edu/article/digital-maturity-not-digital-transformation/
- https://www.mckinsey.com/business-functions/operations/our-insights/enabling-a-digital-and-analytics-transformation-in-heavy-industry-manufacturing
- https://www.hgsdigital.com/blogs/cyber-security-in-the-era-of-digital-transformation

Digital tools in times of emergency – Covid 19

SUMMARY

The Covid-19 pandemic has learned us the importance of being digital. With all physical stores closing, it became even more important to be present online. The stores with an online presence saw an increase in customers, where physical stores income dropped to zero in a day. DecorRaid is an online marketplace for interior brands that launched their app just four months before Denmark went into lockdown due to the Covid-19 crisis. With their digital strategy they managed to increase their app activity with 60%, as every consumer sought their inspiration and furniture purchases online. This crises definitely showed the importance of being digital.

TOPICS

- Introduction to DecorRaid
- How did covid-19 affect the furniture industry
- The importance of being digital

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The furniture industry has to evolve and become digital else it will become too fragile to crisis as seen with the Covid-19 crisis. A digital strategy is necessary no matter where you are in the supply chain. With an online store you can work remote and serve your customers even in a lockdown, making the company more adaptable to change.

LEARNING OUTCOMES

- *Understand the importance of being digital*
- *Learn how to adapt to crisis*
- *Get insight into DecorRaids approach*

ADDITIONAL MATERIAL

- www.DecorRaid.com

Digital tools in times of emergency – Covid 19 (part 2)

SUMMARY

In a time of crisis, living ecosystems, humanity, markets and organizations are presented to struggles at large scale and with no luxury of time. If before a digital change in the companies would be mapped in 2-3 years of progress, in a time of crisis, like that of Covid-19 Virus Lockdown, the need for fast solutions is in a matter of days or weeks. Such pressure leaves no space for testing the ground with regards to the changes to come, on the contrary it demands for bold actions and fast learning. To be mentioned here briefly, are the new ways of serving customers or working with suppliers, while maintain a healthy work-life balance for employees who are being introduced to totally new circumstances. While such activities present a monster task for the companies, the devil is in the details – and there are a few that might slip, if not taken care properly. For example: is the company prepared for data security, during the remote working; if a digital change presents a new business model, to what scale can we serve our customers, employees and business partners; as the crisis leaves no other option but the digital offerings, are we providing user friendly offerings that stand out?

LEARNING OUTCOMES

- *Accept the intensity of the Digital transformation in times of crisis*
- *Reflect of the company culture needed in times of crisis*
- *Respond to the market needs with all what it takes in times of crisis*

TOPICS

- Types of consequences in the times of crisis that can be approached by digital tools;
- Differences in consumer demands in ties of crisis and how in impacts furniture companies
- How digital tools are influencing other areas like sustainability, healthcare, etc.

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Insight in this pill will be of reference to the Furniture industry post COVID-19. In focus here we have the changes on consumer behaviour, manufacturing trends and the new ways of working. While almost everyone is at home, consumers ask for socially active brands and more personalized offerings, especially on offerings that can improve one's lifestyle habits for a healthier living. Such a change in preferences, impacts the companies in the furniture industry, by dictating them to changed the manufacturing choice, say to produce more eco-friendly furniture, with a sensible choice of materials use. These consumer trends inspire and empower the consumer to put emphasis on the importance of home and the ambitions to improve their living space, which now has to be organized as a working space at the same time.

ADDITIONAL MATERIAL

- https://www.lectra.com/en/library/the-furniture-industry-post-covid-19
- https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-strategy-in-a-time-of-crisis#
- https://www.cnbc.com/2020/03/27/how-firms-should-market-themselves-during-the-coronavirus-crisis.html

Connecting Sustainability (i.e. social & environmental impact) with Digitalization

SUMMARY

The sustainable firm or organization is an organization designed to have a minimal negative impact on the global or local environment, community, society, or economy: a business that strives to meet the triple bottom line – social, environmental (or ecological) and financial.

ORGANIZING PRINCIPLES FOR SUSTAINABILITY:

- *The value of enterprise activities for realizing survival and purpose must concord*

- *The value of enterprise activities must concord among hierarchical levels*

- *The culture must support the value*

TOPICS

- Sustainability and Digitalization

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Information systems (IS) systems can reduce cost and optimize the use of resources and CO_2 emission in production.

IS systems can make the use of resources transparent.

Digitalizing products to services make activities more sustainable.

Modern technology makes it possible to operate in the virtual world.

In the furniture industry digitalization enables new sales processes.

ADDITIONAL MATERIAL
- Sustainable digitalisation - the challenge of our time, Green Talents (2019) https://www.greentalents.de/sustainable-digitalisation.php
- Sustainable Digitalization, Forum for Environment and Development (Forum Umwelt und Entwicklung) https://www.sustainable-digitalization.net
- Digitalisation as Key for a Sustainable Europe: Our call to action for the EU's strategic agenda 2019-2024, DigitalEurope 2020 https://www.digitaleurope.org/wp/wp-content/uploads/2019/06/Narrative_Sustainability_0620_WEB.pdf

How '**servitization'** facilitates for longer lifetime of products

SUMMARY

Based on the service-dominant logic (SD logic), servitization is described as the transformational process of shifting from a product-centric business model and logic to a service-centric approach.

Servitization goes beyond service infusions and means that a company commits to improving customers' value, by being responsible for the overall value-creating process as compared to product-centric, transaction-based business models.

Therefore, key aspect of servitization is a strong customer centricity.

LEARNING OUTCOMES

- *A need to reconfigure capabilities and structures*

- *Must redefine mission statement to mirror a servitization*

- *Need for revamping routines, shared norms and values*

- *Must develop a customer centric focus*

TOPICS

- Servitization
- Service business model
- Customer centricity

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

The development of a contract marked where the office environment no longer just consist of traditional office furniture, but also to a large extend of home furniture are transforming the value created for the customers and the appropriate business models to deliver the right atmophere.

ADDITIONAL MATERIAL

Servitization: Extended Business Model for more Revenue and Profit, Effektivitet.dk (2020)
http://effektivitet.dk/magasin/servitization/servitization-extended-business-model-for-more-revenue-and-profit/

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Full cycle reusability of the Products

SUMMARY

The European furniture industry is currently facing a variety of economic, regulatory and environmental challenges. Increasing global competition with manufacturing growth in emerging markets, improved logistics and declined tariffs on foreign trade puts increasing pressure on EU-based companies. In the domestic market, increased demand for low-cost items makes it difficult for companies focusing on long lasting and quality products to compete. Moreover, increased raw material, labor and energy costs within the EU also challenge business as usual practices. In order to face these existing threats, new practices and out of the box thinking are needed to renew the sector and make it more sustainable.

The circular economy provides a promising avenue to create more value in the sector by addressing simultaneously resource constraints, consumer value and profitability challenges. The transition from linear to circular however requires significant changes at micro, meso and macro levels, from innovation at business model and value chain level to the introduction of supporting policy measures. A digital transformation goes hand in hand such changes.

LEARNING OUTCOMES

The circular economy is based on three principles:
1. Preserve and enhance natural capital
2. Optimize resource yields, that is to say design for remanufacturing, refurbishing, and
3. Foster system effectiveness by designing out **"negative external impacts"**

TOPICS

- Design of the information system
- Make resource use visible and support coordination for better resource usage
- Sustainable organization starts with the goals and the scope that drives the design of structure and coordination to support a sustainable strategy

TAKEAWAYS RELATED TO THE FURNITURE INDUSTRY

Six key cycles can be highlighted to make furniture more circular:
1. Maintain – using preventative maintenance to maximize product lifetime, e.g. a chair remains a chair
2. Repair – corrective maintenance , e.g. a chair remains a chair
3. Reuse – redistributing products through a change in ownership, e.g. a chair remains a chair
4. Refurbish – remanufacturing the product to optimize lifetime, e.g. by resizing a desk or changing the appearance of a chair through re-upholstering to extend 'fashion' service life, or resizing desks
5. Re-purpose – change functionality of the product, e.g a desk becomes a table
6. Recycle – recovering the value of components

ADDITIONAL MATERIAL

- Circular economy in the furniture industry: overview of current challenges and competences needs, EU, (2018) https://circulareconomy.europa.eu/platform/en/knowledge/circular-economy-furniture-sector-overview-current-challenges-and-competence-needs
- Neligan, A. (2018). Digitalisation as enabler towards a sustainable circular economy in Germany. *Intereconomics*, *53*(2), 101-106. https://www.intereconomics.eu/contents/year/2018/number/2/article/digitalisation-as-enabler-towards-a-sustainable-circular-economy-in-germany.html
- THE CIRCULAR ECONOMY Enabling the transformation to circular business, The new economy (2020) https://www.theneweconomy.com/business/the-circular-economy-enabling-the-transformation-to-circular-business
- SAWYER project (holistic approach for the identification of Skills and sAfety needs towards a groWing sustainability & circularitY of furniturE sector)

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