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LEUPHANA
UNIVERSITY OF LÜNEBURG

 **Steinbeis Innovation Center**
Logistics and Sustainability

“DIGITALISATION LEADS TO MORE SUSTAINABLE BUSINESS PRACTICES!?” LEARNING MODULE

**NOTES FOR
TRAINERS/TEACHERS**



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CONTENTS

NOTES FOR TRAINERS/TEACHERS

Learning module context	3
Contents of the learning module	3
Summary of the learning module	6



LEARNING MODULE CONTEXT

The following learning task relating to “Digitalisation leads to more sustainable business practices!?” forms an interdisciplinary topic that addresses several occupational profile positions in the general training plan for vocational education and training in the occupation of agent for forwarding and logistics.

Within the scope of this cross-sectional function, the learning task addresses various impacts of digitalisation on daily life and on the world of work and considers possible ways of dealing with these effects. The trainees mainly address the areas of potential and the opportunities that could arise as a result of digitalisation leading to more sustainable business practices.

The focus of this learning module is on the issues of how the possibilities of increasing digitalisation could be rendered utilisable for the creation of more sustainable business practices. The trainees deploy the “design thinking” ideas development method in order to generate innovative possible solutions. They begin by reflecting upon different perspectives and points of view adopted towards digitalisation at their own training company and then use these as a basis for the development of digital ideas for more sustainable business practices at the company.

CONTENTS OF THE LEARNING MODULE

“The term digitalisation may be interpreted in a number of different ways. The technical interpretation is the traditional one. On this account, digitalisation is designated as being the transfer of information from an analogue to a digital form of storage and also refers to the transfer to the computer of tasks previously carried out by humans.” (Hess 2016, p. 1)

As the above quotation already indicates, a precise definition of the term “digitalisation” is virtually impossible, similarly as it is difficult to specify exactly what “sustainability” means. Whereas this multitude of possible interpretations may be construed as a symbol for the extremely wide-ranging opportunities that digitalisation affords, it also leads to a lack of terminological clarity within the framework of a discussion that requires greater exactitude.

In the first instance, digitalisation of company processes simply denotes the replacement of analogue service provision by digital performance. Nevertheless, such an approach is very narrow by dint of the fact that the focus is merely placed on the automation of processes. A more open definition is offered by the Federal Ministry for Economic Affairs and Energy, which describes digitalisation as: “The change of business models brought about by the fundamental modification of internal company processes, of their interfaces to the customer, of products, and of services via the use of information and communication technologies” (BMWi 2017, p. 9).

Digitalisation as a shift

If we turn our attention away from seeking to arrive at an interpretation of the concept of digitalisation and instead devote our thoughts to common notions associated with the term "digitalisation" on a daily basis, then we are able to ascertain that change is the fundamental aspect involved. Digitalisation creates a shift, and this shift calls upon us to address the possibilities, chances, and risks that digitalisation brings in its wake. Against this background, the process of digitalisation is now also known as the "digital transformation". The concept of digital transformation describes fairly accurately what people understand by digitalisation, especially within a company context. "The term digital transformation designates considerable changes in everyday life, in the economy, and in society that are occasioned by the use of digital technologies and techniques and by the impacts of these." (Pousttchi 2017, p. 1)

Innovations in the field of digital technologies are causing existing products and services to alter and even disappear from the market entirely in some cases. One good example of this is the smartphone, which has become an integral part of most people's normal lives ever since the first device was launched in 2007. The Internet itself is a further notable instance of this. Another example of the change in work processes resulting from digital technologies is the use of video conferences. These save the CEO of a multinational group many hours of flying per year, because their physical presence is no longer absolutely necessary.

The challenge of rebound effects

As demonstrated by the example above, striving for greater efficiency frequently represents an essential motivation for the development of new technologies. This may sound like a reasonable objective at first, but it also produces drawbacks that may lead to a conflicting relationship between digital technologies and sustainable business practices.

The keyword rebound effect is applied to this conflict. The issue at play here is "an increase in efficiency that initially saves energy and resources but also creates the possibility of a rise in demand that will in turn lead to a greater requirement for energy and resources. The result is a kind of zero-sum game. The best-case scenario is that small savings will continue to be made. But, if the worst comes to the worst, the whole thing will go through the roof, and demand will be even higher than before" (Santarius 2018, p. 12). Streaming platforms are a current example that illustrates the problem of the rebound effect. CDs, DVDs, or Blu-Ray discs and the packaging in which they are contained are generally made of plastic. The manufacture of such a material becomes superfluous as soon as films and music tracks are accessed via download. The resources consumed by transporting these picture or sound media are also no longer required, and a time saving is not the least of the advantages in this regard. However, a lesser degree of consideration is accorded to the circumstance that streaming causes a PC to be turned on more frequently. The consequence of this is that streaming service providers operate so-called server parks. The increase in the need for electricity thus causes more consumption of resources.

Digital transformation in the transport and logistics sector

Digital transformation in the transport and logistics sector is revealed in the shape of increased requirements regarding transparency, delivery capability, and supplier reliability and via a desire for individualised products or services. The effects of new products and services on the company organisation can be described via the following three dimensions:

Value creation model

The main focuses here are on the efficiency of company processes and especially on the potential for optimisation offered by newly acquired opportunities from digital technologies. It was recognised as early as the end of the 20th century that the deployment of digital technologies normally represents an organisational challenge rather than a purely technical hurdle. Existing potential for improvement from the integration of IT elements alone (e.g. the introduction of emails as a means of communication) can only be accessed to a very limited extent. It is frequently only possible to exploit potential completely if the procedures and structure of the company and of the company environment are adjusted to new service provision processes. In the transport and logistics sector, for example, automated driving constitutes an innovation that shows that the introduction of digital technologies is often

dependent on the corporate environment. Automated and semi-automated driving functions can only be used reliably if all the information for the driver assistance systems is pooled in order to enable communication to take place between vehicles and with the infrastructure itself.

Value proposition model

The emphasis in this case is on new types of products and services that a company is able to offer because of digital technologies. These include products and services that may not necessarily be new but which can be provided under more favourable conditions due to the opportunities created by digital technologies. Within this context, the transport and logistics sector faces the challenge of a rising demand on the part of customers for individualised products and services. This leads to an increased delivery of individual parts ("one-off components"). In addition to this, customers are requesting more and more same-day delivery services whilst also calling for these to take place in a climate-neutral way wherever possible. The planning and pooling of requirements of this sort means greater deployment of cloud systems and the establishment of so-called smart city solutions.

Customer interaction model

The customer interaction model concerns the influence of digital technologies on the way in which clients and companies work together. In the transport and logistics sector for example, bar code scanners, vehicles that are fitted with GPS, and digitally recorded process chains all ensure that customers are able to discover the precise status and location of their freight at any time by making an online enquiry. This also results in an increased flow of information between the (potential) customer and the company. The term big data technologies is used within this context to describe the process of collecting or acquiring a large amount of end customer data (e.g. relating to purchase behaviour) and then evaluating this information for inclusion in offers (such as in the form of personalised advertising). Both of these opportunities for "communication" between the customer and the company are today already being realised via so-called "tracking" and "tracing". "Tracking" allows the transportation of goods to be monitored in real time, whereas "tracing" facilitates the identification of weak points in the delivery process by allowing the flow of goods to be viewed in retrospect.

These three dimensions of digital transformation especially illustrate the economic opportunities and risks that may arise for sectors such as transport and logistics as a result of digital technologies. However, as well as producing the rebound effect stated above, digital transformation also exerts specific impacts on the design of jobs and workplaces. Against this background, there is a need for a type of digital transformation that facilitates and fosters more sustainable business practices both in the transport and logistics sector and elsewhere. The challenge facing the companies, therefore, is to help shape the process of digital transformation in a sustainability-oriented way.

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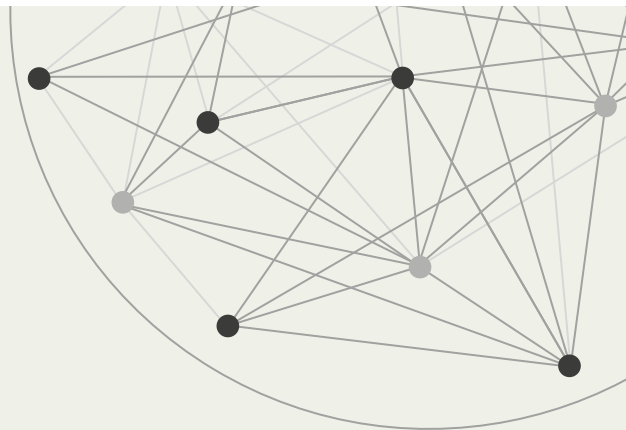
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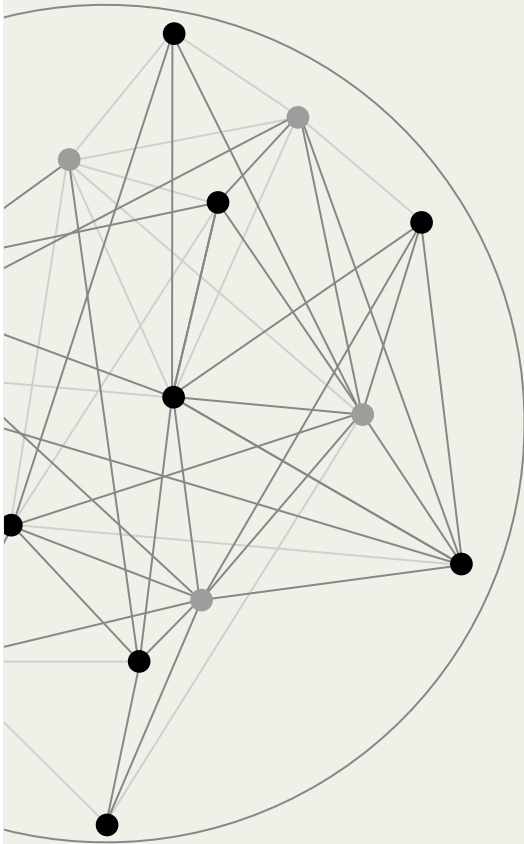
SUMMARY OF THE LEARNING MODULE

Classification under training regulation:	Interdisciplinary topic
Topic:	Digitalisation leads to more sustainable business practices!?
Type of learning task:	Expansion learning task
Learning venues:	Company or classroom
Learning arrangements:	Group work
Target competencies:	<ul style="list-style-type: none">- The trainees identify company perspectives on the topics of “digitalisation” and “sustainability” in the workplace.- The trainees develop ideas regarding the question of how the opportunities afforded by digitalisation can be utilised in order to operate in a more sustainable way.
Brief description and module context:	<p>Against the background of sustainable business practices, the trainees begin by considering the opportunities created by increasing digitalisation in the workplace. They conduct interviews with their colleagues for this purpose. Applying the design thinking method, the findings obtained are used to develop ideas in a structured way in respect of the question as to how the opportunities afforded by digitalisation can be made utilisable and thus allow more sustainable business practices to be adopted.</p>
Contents and tasks:	<ul style="list-style-type: none">- Introduction to the design thinking method- A consideration of the opportunities provided by digitalisation in the workplace- A consideration of workplace-based notions of sustainable business practices- Implementation of a “design thinking process” relating to the question of: “How can the opportunities offered by digitalisation be utilised in order to operate in a more sustainable way?”
Materials required:	<ul style="list-style-type: none">- Flip chart, flip chart paper, and flip chart markers- Various differently coloured pens- Adhesive notes in different colours and sizes (e.g. Post-it® notes)- Sticky dots- Various arts and crafts materials (e.g. sticky tape, scissors, glue, coloured cardboard, parcel string, Lego® bricks, wooden blocks, Plasticine™, balloons ...) – you are free to use your imagination



LEARNING PHASE	SEQUENCE OF ACTIVITIES FOR LEARNERS	EXPLANATION OF LEARNING METHODS AND TECHNIQUES	NOTES ON RESOURCES
 THE DESIGN THINKING PHASE IS WELL-SUITED TO BE WORKED ON IN GROUPS			
DESIGN THINKING PHASE	<p>The trainees use the design thinking method to address the question of how the opportunities offered by digitalisation can be utilised in order to allow more sustainable business practices. They begin by conducting interviews with colleagues with the aim of identifying company perspectives on the topics of “digitalisation” and “sustainability” in the workplace. The findings acquired are then used as a basis for the structured development of answers to the initial question.</p>	<p>Both the trainer and the trainees are provided with method cards that give detailed instructions on how to conduct the design thinking method (see Material 1)*.</p>	<p>A large room is required to carry out the design thinking method. The following further material is needed.</p> <ul style="list-style-type: none"> - Flip chart, flip chart paper, and flip chart markers - Various differently coloured pens - Adhesive notes in different colours and sizes (e.g. Post-it® notes) - Sticky dots - Various arts and crafts materials (e.g. sticky tape, scissors, glue, coloured cardboard, parcel string, Lego® bricks, wooden blocks, Plasticine™, balloons ...) – you are free to use your imagination at this point

* see Notes for Trainees/Students



IMPRINT

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