



Empowering SMEs for the digital transformation

#SMEsGoDigital

P.R.I: Design of #SMEsGoDigital tool

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PR Coordinator	Luca Reitano for ECIPA
Contributing partners	Institouto Mikron Epichiriseon Genikis Synomospondias Epaggelmaton Biotechnon Emporon Ellados (IME GSEBEE), Mathesis For Future Citizens PC (Mathesis4FC), ENAIP Veneto Impresa Sociale (ENAIP), PIMEC Petita I Mitjana Empresa De Catalunya (PIMEC), Association Europeenne Pour La Formation Professionnelle (EVTA)
Authors	(ECIPA), (IME GSEVEE), Jennie Kallergi (Mathesis4FC), Vassilis Antonopoulos (Mathesis4FC), (ENAIP), (PIMEC), (EVTA)
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Acknowledgments and Disclaimer

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Executive Summary

The current project result is led by ECIPA partner. It includes the design of the online platform including the supportive orientation programme, the competence-based course, the three-level roadmap and the blueprints of the technological aspects of the portal hosted on the platform following the findings of the stakeholders needs.

The design of the #SMEsGoDigital online platform will be derived after the reviewing of existing state-of-the-art literature and case studies available together with focus groups discussions. The three-level roadmap towards digital transformation will be defined including basic, standard and advanced, with incremental stepwise benchmarks. A thorough need analysis of the stakeholders involved qualitative and quantitative data for a bottom-up approach of the functionalities of the #SMEsGoDigital tool fulfilling their needs. The blueprint for the technological aspect of the tool are in the very initial form of mock-ups defining the user's journey and experience within the online portal.

The design of the supportive orientation programme will be based on the three-level roadmap approach starting from simple technologies such as e-commerce, e-invoicing and e-payment to more interconnected systems such as e-platforms and digital marketing and further forward to the new generation of technologies such as Big Data, Internet of Things, Artificial Intelligence, Machine Learning, Cloud Computing, Blockchain, Augmented Reality and Robotics and will provide the digital solution potential description next to its benefits for each stage of digital transformation. It provides the design of a toolkit with resources for measuring the readiness of SMEs for their digital transformation.

The e-course design for the incremental stepwise micro-learning experiences and skills will follow the micro-learning approach with an emphasis on the formulation of micro-learning outcomes. This is a shift from the conventional e-learning approach as micro-learning is a new research area aimed at exploring new ways of responding to the growing need for lifelong learning or learning on demand of members of our society, such as knowledge workers. It is based on the idea of developing small chunks of learning content and flexible technologies that can enable learners to access them more easily in specific moments and conditions of the day, for example during time breaks or while on the move. The research literature shows that this approach indeed promotes higher quality learning. The need for paradigmatic change stems from technological transformations and from the status of knowledge as belonging to everyone.

The methodology for this PR follows the constructivism paradigm with a scaffolding development taking into consideration the situational contexts of the stakeholders' needs for the need analysis through the desk research and focus groups discussions. The innovation of this approach lies on putting the target group, the SMEs stakeholders, in the epicenter of attention and their feedback. As the foundation of the development of the #SMEsGoDigital tool, which will incur high organisational impact. The innovative constructivist bottom-up methodology for the stakeholders' needs to be fulfilled by our tool can serve as an exemplary approach for a paradigmatic organizational change. This approach clashes with the to date top-down approach impacting heavily on our target groups as the



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design of the tool is from them towards them, which has transferability potential for the design of similar tools of synergies for clusters.

The design of the #SMEsGoDigital tool consists of:

Task 1: Design of the #SMEsGoDigital online platform based on the need analysis findings / Task leader: IME GSEVEE, Partners: all

Sub-task 1.1 Definition of requirements with focus group discussions & extant research identified through literature review

Sub-task 1.2 Blueprint of the online portal functionalities answering the stakeholders' needs as mapped

Task 2: Design of the supportive orientation programme / Task leader: PIMEC, Partners: all

Sub-task 2.1 Definition of three-level roadmap towards digital transformation, basic, standard and advanced, with incremental stepwise benchmarks

Sub-task 2.2 Definition of digital transformation mapping criteria and design of digital readiness self-assessment questionnaire to help SMEs find out how digital-ready their business is and the steps to take to further their digital efforts

Task 3: Design of incremental stepwise microlearning experiences / Task leader: Mathesis4FC, Partners all

Sub-task 3.1 Competence-based course design for the SMEs professionals (management & employees) continuous professional development of digital skills & awareness of current trends based on bite-size, practical, real-life examples, scenarios and best practices.



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List of Abbreviations

DT	Digital Transformation
DTC	Digital Transformation Capacity
DTLs	Digital Transformation Levels
QM	Quality Monitoring
RQ	Research Question
SMEs	Small and medium-sized enterprises



TASK 1: DESIGN OF THE #SMESGODIGITAL ONLINE PLATFORM BASED ON THE NEED ANALYSIS FINDINGS

Task 1 focuses on the design of the #SMEsGoDigital online platform, which will arise through the literature review and existing good practices, in conjunction with focus groups' discussions (sub-task 1.1). The second sub-task (1.2) includes the blueprints for the technological aspect of the platform, representing at an initial level the expected user interface and the available services for the SMEs. Detailed description of both sub-tasks follows in the next sections.

SUB-TASK 1.1: DEFINITION OF REQUIREMENTS WITH FOCUS GROUP DISCUSSIONS & EXTANT RESEARCH IDENTIFIED THROUGH LITERATURE REVIEW

1.1. RESEARCH IDENTIFICATION

The aim of this section is to examine and evaluate research on digital transformation with a two-fold purpose: construct a conceptual foundation and investigate our research questions formulated upon it. The former will lead to common construction and understanding of the basic concepts involving the project's deliverables while the later will contribute to depicting the current situational context in the academic arena. For that, we will investigate the definition of Digital Transformation (DT), Digital Transformation Levels (DTLs), Digital Transformation Capacity (DTC) with a view to constructing the core concepts lying at the heart of the research questions to be articulated since concise articulation of research questions signposts the whole literature review process. (Paré, Trudel, Jaana & Kitsiou, 2015).

In this vein, we will investigate the following research questions:

1. How is DT defined by Academia, Institutions and Business?
2. How are the DTLs defined and distinguished?
3. Which capabilities build upon DTC?
4. How Digital Transformation Strategy (DTS) is related to DT?
5. What support do SMEs (especially small & micro-ones) need for their DT?

1.2. LITERATURE REVIEW METHODOLOGY

There are many different types of literature review which mainly depend on the purpose of the review, as well as the data under research, such as systematic, semi-systematic, meta-analysis, meta synthesis etc. In the context of the #SMEsGoDigital project, the **semi-systematic approach** has been selected to be applied in sub-task 1.1.

A semi-systematic approach provides an overview of the research in the review area and tracks development of time, replies to broad questions (in #SMEsGoDigital project the definition of concepts relevant to digital transformation and SMEs) and uses both quantitative and qualitative data where

necessary (Snyder, 2019). Ward, House, & Hamer (2009) mention that a semi-systematic approach can be useful for detecting themes, theoretical perspectives, or common issues within a specific research discipline.

In order to present the state-of-the-art literature review of the current situational context worldwide in #SMEsGoDigital project, existing research articles will be analyzed (quantitative), while a focus group with representatives from SMEs of the consortium countries will also be conducted (qualitative). The thematic areas revealed will finally be triangulated, in order to define the levels of digital transformation as well as the guidance and support necessary for SMEs to reach these levels.

The phases to implement the literature review of #SMEsGoDigital project are based on Gaß, Ortbach, Kretzer, Maedche & Niehaves (2015) and Morakanyane, Grace & O'reilly (2017) approaches, as presented in the figure below.

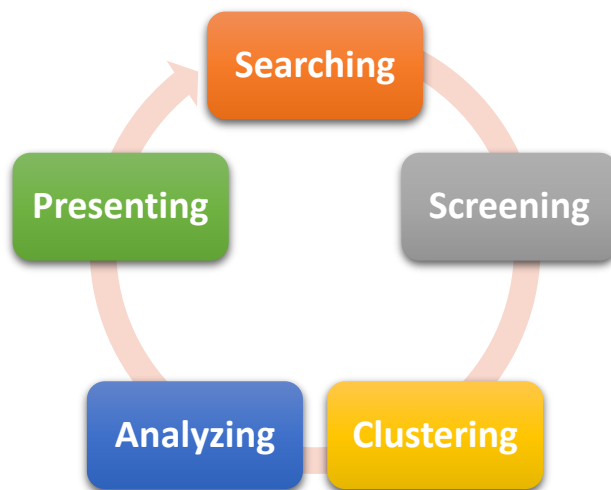


Figure 1: Literature review phases

It is important to add that after the completion of the literature review described above, which focuses on the academic and research state of the art, additional resources will be integrated to the final documentation including reports and legislation documents, published by national organizations and institutions in each country (e.g., IMEGSEVEE in Greece) or European organizations and institutions (e.g., smeUnited). Although these reports have not been peer-reviewed they consist of important data presenting the current situation in each country or at European level.

1.2.1. SEARCHING

During the searching phase, specific keywords are necessary to reach the expected results. In #SMEsGoDigital project partners could use as a main search engine the Google Scholar (<https://scholar.google.com/>), a huge repository of academic/ research journals and conference publications in all fields. For the search process, the following keywords are suggested to be used:



“Digital transformation”, “SMEs”, “enterprise transformation”, “SMEs digital strategy”, “SMEs guidance”, “SMEs counselling”. In order to retrieve more relevant results, it would be of additional value to use Boolean operators, such as AND, OR, NOT. For example:

“Digital transformation” AND “SMEs” NOT “Large Companies”

“SMEs digital strategy” AND “SMEs guidance” OR “SMEs counselling”

1.2.2. SCREENING

In order to focus on specific results, screening conditions have been defined by the #SMEsGoDigital project consortium, such as:

- Research articles should be written in English
- Research articles should be published between 2015 and today
- Research articles should include at least one of the searching keywords in their abstract
- Research articles should be cited at least once (not including self-citation)



Besides the abovementioned quantitative criteria, Henriette, Feki & Boughzala (2015) suggested some quality criteria to be assessed with a Likert scale. For each of the quality questions, a range of four options will be available between 1 and 4 – 1 for an issue not mentioned at all, 2 for mentioned a little, 3 for an issue adequately addressed and 4 for issues addressed appropriately. **Publications with an average score lower than 2 (score < 2) should be removed** before proceeding with the clustering and analysis phases. The following questions were included in the qualitative papers’ assessment, as suggested by the consortium:

- Is there a clear statement of the research aim(s)?
- Is there a clear statement of the research question(s)?
- Is there a clear statement of the research findings?
- Is the study valuable for future research or practice?
- Does the paper clearly discuss limitations or validity?

To enhance the assessment process as well as to keep all data gathered, a [Google Form](#) (see Appendix I) has been prepared for the publications’ selection based on specific criteria (clear aims, research questions, findings, etc.).

The consortium members, after completing the searching and in order to proceed with the clustering and analysis phases, should confirm all the quantitative as well as the expected average of the qualitative criteria. The final “quality score” for each publication will be taken into consideration to include or exclude a publication from the process.

1.2.3. CLUSTERING

In #SMEsGoDigital project the following clusters have been defined, based on the expected results of the process and the input necessary to define the levels of digital transformation as well as the guidance and support necessary for SMEs to reach these levels:



- Digital Transformation Definitions
- Digital Transformation Levels
- Digital Transformation Capacity Building
- Digital Transformation Strategy
- SMEs support requirements

1.2.4. ANALYSIS

The thematic analysis in #SMEsGoDigital project will include both quantitative and qualitative data, as already mentioned. More specifically:



- a) After completing the searching-screening phases, the consortium will reach the initial aspects as adopted within the project for each cluster named in the previous phase. The conceptual definitions will be constructed through a synthesis process, based on the data collected from the different articles. Partners will keep the aspects that best meet the project's needs. These definitions will consist of the base for the roadmaps, platforms functions and services as well as the upcoming trainings on Digital Transformation concerning SMEs.
- b) After completing the focus-group, additional changes will be integrated in the existing aspects, based on the qualitative data collected, where and if necessary.



1.2.5. PRESENTING

The final phase of the Literature Review in #SMEsGoDigital project includes the results' presentation. Initial results will be presented during the project consortium meeting so that all partners are aware of the theoretical background of the project. Any additional feedback and/or comments will be discussed, to be integrated into the existing processes and results and reach the final deliverables.

1.3. BEST PRACTICES IDENTIFICATION AND EVALUATION MATRIX

As defined in the Merriam-Webster dictionary, best practice is *"a procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption"*.

The Best Practice selection process was based on the comparison of the criteria characterizing each practice, which are the following:

1. **Sustainable** – This practice can be maintained on the same standards or level by the consortium even during the post-funding period.
2. **Repeatable** – This practice has shown replicability on a limited scale and/or may work effectively in more than one context.

3. **Proposal Compliant** – This practice complies with our project’s deliverables.
4. **Deemed Essential** – This practice coincides with our project’s deliverables and cannot be excluded sources (Robin, 2011; National Resource Center, 2010).

Practices placed in the upper left of the matrix are those that have a lower ranking, whereas those placed in the lower right of the matrix are those ranking highest. The following table was employed to rate each practice by mapping the fulfilled criteria onto the matrix (Swart, 2011)). The reasons for the resulting classification could then be justified based on the criteria met and also, indicate criteria that need more development in order for the practice to receive a higher classification. For the purpose of our project, a practice qualified as “best practice” when achieving 6-7 points in the above scale. The Quality Monitoring (QM) team of the #SMEsGoDigital project evaluated the practices suggestions collected by the partners and indicated a number of best practices.

Table 1: Best practices evaluation table

	Innovative practice	Promising practice	Effective practice	Best practice
Sustainable	1	2	3	4
Repeatable	2	3	4	5
Proposal compliant	3	4	5	6
Deemed essential	4	5	6	7

The criteria that were adapted to closely fit the needs of our project’s PR1 deliverables, are explained in the table below in detail.

Table 2: Criteria explanation (horizontal axis)

Horizontal Axis		
Criteria	Definition	Related Questions
Innovative practice	<ul style="list-style-type: none"> - New suggestion addressing the problem - Not yet tested in wide context - Limited supported data 	Does this idea break new ground? Is it unique? Does it significantly enhance existing practices?
Promising practice	<ul style="list-style-type: none"> - New suggestion already put into practice in a limited scope - Replicated in limited scale - Enough supporting data with positive results 	Has this practice been implemented in one or two organizations? Are the results or its evaluation either subjective or not validated enough yet?
Effective practice	<ul style="list-style-type: none"> - Proven effectiveness - Long-standing solutions - Replicated in broad scale 	Has this practice been a long time in operation?

	- Conclusive data with positive results	Have its results been objectively evaluated and externally audited positively?
Best Practice	- Innovative practice with proven effectiveness - Newly presented solution - Replicated in sufficient scale - Conclusive data with positive results	Is it an idea different from dominant practices? Has it proved its operational value as highly effective?

Table 3: Criteria explanation (vertical axis)

Vertical Axis		
Criteria	Definition	Related Questions
Sustainable	- It is inexpensive - It delivers stable results	Does it require more effort than it is worth? Is it dependent on an individual? Does it have sponsorship? Is it funded?
Repeatable	- It can be replicated	Is it restricted for any local reasons? Can it be replicated?
Proposal compliant	- It complies with the proposals' IOs	Is it within our proposal's IOs? Does it exceed or reduce our expected results?
Deemed essential	- It is included in our deliverables	Is it something we cannot do without? Is it embedded in all training interventions?

In the context of #SMEsGoDigital project, after indicating the best practices, the partnership aims to search for and get familiarized with supportive portals for SMEs digitalization which could be considered as best practices and adapt the core characteristics in the #SMEsGoDigital platform, as well as the microlearning experiences. The following diagram represents the steps followed to reach the final decisions.

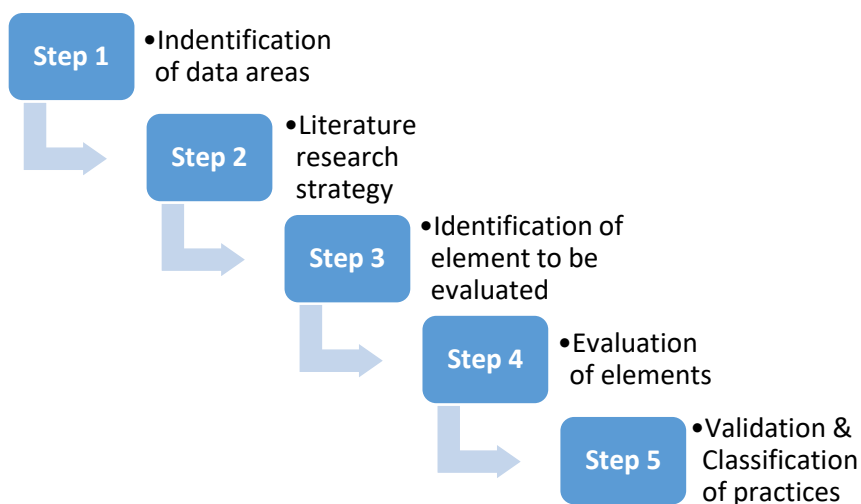


Figure 2: Steps to reach the best practices

The Quality Monitoring (QM) team of the #SMEsGoDigital project evaluated the best practices suggestions collected by the partners with the following decision-making matrix (Drucker, n.d.). After distinguishing a number of best practices among the total suggestions (1-3), the consortium during the second project meeting, discussed their details as platforms in order to adopt them in the #SMEsGoDigital project’s online portal.

Table 4: Best practices evaluation matrix – platform details

Dimension Practice	Menu Items	UI friendly	Easy navigation	DT steps clarity	Services/ Support provided	Total Score
Best Practice 1						
Best Practice 2						
Best Practice 3						

Score Scale: 1 – Poor, 2 – Below Average, 3 – Average, 4 – Above Average, 5 – Excellent

1.4. FOCUS GROUP PROTOCOL

After completing the analysis of the literature review, the partners suggested some open questions to form the focus group protocol. The questions decided are described as follows, per research question.

RQ1: How is DT defined by Academia, Institutions and Business?

- What comes to your mind when you hear “Digital Transformation (DT)”?
- Do you think that you have already been part of a DT process at your company or somewhere else in your everyday life? If yes, please describe.
- What are your feelings towards DT? Does it provoke stress, curiosity, anxiety, impatience, uncertainty, expectation to you? Any other feelings?

RQ2: How are the DTLs defined and distinguished?

- When starting a Digital Transformation Process, do you know which are the levels/areas to proceed with?
 - o If you do, in which have you find more difficulties to implement the transformation?
- Of all the 9 Subdivisions the DT could focus, which are the areas your business has more interest to digital transform and why? Do you know the benefits that could result from this implementation?
- Do you know the impact a Digital Transformation Process will have in the Consumer Experience, Operational Processes and Business Model of your company?

RQ3: Which capabilities build upon DTC?

- Imagine that we meet at least 6 months from now and you tell us that your work has changed dramatically for the better as a result of your digital transformation. What does

your work look like? What skills and capacities have you developed? Who benefits from the changes, and in what way?

- What needs to happen and what needs to be in place to build digital capacity:
 - o a. For an individual?
 - o b. For an organisation?
 - o c. For a network?
- What examples of best practice in digital transformation, or building digital capacity for, are you aware of?
- What role could or should #SMEsGoDigital play in this new reality?

RQ4: How Digital Transformation Strategy (DTS) is related to DT?

- Do you have a plan for your DT? If not, what tools could help you make it?
- Can you assess your digital readiness?
- Do you know where to start with your DT and where you can find help, advice and funding?

RQ5: What support do SMEs (especially small & micro-ones) need for their DT?

- What kind of support would you find useful for the DT at your organization/ company?
- Do you already have support for the DT at your organization/ company? If yes, what kind of support? If no, why?
- Can you identify a factor that works as a deterrent for proceeding with DT at your organization/ company?

1.5. LITERATURE REVIEW & FOCUS GROUP DATA ANALYSIS

The following units present details about the data analysis process applied by the #SMEsGoDigital project partners for each research question, including data both from the literature review, as well as the focus group implementation. For each research question, partners discussed the existing literature to reach an initial definition. Then, the definitions were discussed with the participants of the focus group to highlight common topics and axes and finally, the definitions were reframed based on the triangulated data. The process is described in the following sections for each research question.

The detailed tables for each RQ are included in the Annexes section to enhance the reading process.

1.5.1. RQ1: How is DT defined by Academia, Institutions and Business?

As described in the literature, there is lack of a unified and overarching definition of Digital Transformation (DT) as well as inconsistencies in the existing definitions. Following the methodology described in the relevant output, the #SMEsGoDigital partners have collected a number of definitions for DT, as presented in the relevant table in Annexes section.

Taking into consideration the definitions described as well as the data collected during the focus group, the #SMEsGoDigital project adapted the following as the project’s definition for Digital

The COVID Pandemic has forced business to go digital in a massive way. So, what started as a crisis response has become the **new normal**, with big implications for the ... for how businesses will perceive customer experience. [...]

It's a new, task for the businesses. It requires **innovation**. It requires **leadership**, **technology**, and **vision**, this is my opinion.

It's, more than technical game you know. [...]

Transformation.

It should be pointed out that DT is not only about the implementation of innovative technologies but is considered in a broader context as “SMEs change”, “cultural transformation” and “moving towards customer-centric approach”, with the element “human” playing a crucial role in the transformation process.

During the focus group the factor of speed was mentioned, with the participants highlighting that DT is “**fast**” or even “**rapid**” and thus, sometimes difficult to follow. Moreover, “**innovation processes**”



DIGITAL TRANSFORMATION (DT) OF SMEs COULD BE DEFINED AS “THE PROFOUND AND ACCELERATING PROCESS OF SHIFTING IN A STRATEGIC AND PRIORITIZED WAY SMEs’ ACTIVITIES, PROCESSES AND MODELS TO FULLY LEVERAGE THE POTENTIAL OF EMERGING TECHNOLOGIES AND THEIR IMPACT ACROSS THE LABOR MARKET AND MORE WIDELY, ACROSS THE SOCIETY.”

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and “**technology**” were mentioned. This showed that the consortium agreed with the focus group participants, that digital transformation has to do with the “**upgrading**” and “**upscaling**” of the processes that already exist in SMEs and of course, integrating innovative technologies in these processes and using the appropriate tools to do so. Some other words highlighted by the participants were (see more in Appendix) **innovation**, **automation**, **business change**, of course, **behaviors**, **time**, **material**. Finally, skills turned to be a very important concept that has to do with SMEs’ digital transformation. Some sayings during the focus group that are of additional value to refer are the following:

1.5.2. RQ2: How are the DTLs defined and distinguished?

The literature review refers to the digital transformation levels in many different forms. As it is an abstract and rather new concept, it lacks descriptors agreed upon by all specialists demarcating the conceptual divisions of DT levels. However, following the methodology described, all partners have

reviewed the literature to construct descriptors of the levels, based on a three-level framework suggested in our proposal, as presented in the Table below.

As a result of the literature review, it was noted that the concept of Digital Transformation Levels was somewhat abstract and, therefore, different authors referred to DT levels in different ways. Reis, Amorim, Melão, and Matos classify digital transformation into 3 different categories/ levels: technological, the DG is based on the use of digital technologies such as social media, mobile, and analytics; organizational, digital transformation requiring a change in organizational processes or the creation of new business models; and lastly, social - digital transformation is a phenomenon that is influencing all aspects of human life by, e.g., enhancing customer experience.

Schwertner defines these levels of DT in 3 different areas: The transformation of consumer experiences, in terms of customer behaviour, communication with costumers in the sales processes, etc; the transformation of business processes, with the automation of R & D, production, and distribution processes; and lastly, the transformation of the business model, by adding digital content to existing products and services. However, he also specifies 7 different elements that compound the DT, business model, organizational structure, digital skills of employees, digitization of business processes, IT infrastructure, digitization of products/services, and digital channels for interaction with clients (3).

There is another article that describes Digital Transformation on 3 levels. Westerman, Bonnet, and McAfee state that there are 3 main levels: customer experience, operational processes, and business models. But then they divide these 3 main levels into 9 different categories. Regarding customer experience, three major blocks have to be taken into account: 1) customer understanding, 2) top-line growth, and 3) customer touch. Regarding the operational processes, the transformation of internal processes goes through 1) process digitization, 2) worker enablement and 3) performance management. And lastly, regarding the transformation of Business Models, since companies have to redefine their functions, they can 1) Modify digitally the business, 2) Create a new digital business, or 3) enter into digital globalization.

Garzoni, De Turi, Secundo, and Del Vecchio refer to the levels in other ways. They based the distinction on the level of engagement SMEs have in the adoption of digital technologies. Being the digital awareness, digital equipment, digital collaboration, and digital transformation.

Lastly, Azhari Faraby, Rossmann, Steimel, and Wichmann explain the DT levels considering 8 different dimensions: strategy, leadership, products, operations, culture, people, governance, and technology. The first level includes the companies that don't have a strategy or don't have the competencies needed to transform the eight dimensions named before. Then, the next level includes the SMEs that offer a few digital products but are still without a digital strategy. And lastly, are the companies who can consolidate experiences gained from pilot implementations into partial strategies.

Reaffirmed by this literature review, is that there are different classifications of the levels to be followed in Digital Transformation. Depending on the sector in which the company operates, the level of its digital transformation varies. It is noticeable that the level of digital transformation is also

influenced by the changing needs of consumers, the level of application of high technologies, the position of the company's leadership, by the size of the company (Tarutė, et al. 2018).

However, most of the literature agrees on the existence of a human/social level regarding the customer experience; a more technological level focusing on the transformation of business processes with the use of digital technologies; and lastly, an organizational or technical level, concentrating in the transformation of the business model through the use of digital content in the products or services already existing.

Therefore, the classification presented in the focus group, as the second part of the research, was the next one, where the main levels of Digital Transformation are:

1. Consumer Behaviour/Experience

- Customers understanding.
- Top-line growth.
- Customer touch points.

2. Business/Operational Processes

- Process Digitalization
- Worker Enablement.
- Performance Management.

3. Business models

- Digitally Modified.
- New digital businesses.
- Digital Globalization.

Focus Group analysis findings



#SMEsGoDigital project

The literature reviewed has been complemented by the results obtained from the comments made by the participants during the focus group.

The classification in 3 levels as proposed by our project proposal was agreed upon mostly by the participants, complemented by attempts of their demarcation. One participant commented that:

“the levels for digital transformation in my mind are technology, second demand, and third is behavior”

However, the problem SMEs are facing is not knowing from what level to start. Many businesses have problems understanding what is first to take care of.

*“I think **a main critical point** for small medium enterprises we're talking about digital transformation, **is to understand where to start**. Should you start rethinking your business model, implementing digital solutions? Should you care more about how you're talking with your customers and managing your customers, or you should take first care of your internal processes and how eventually an optimization on that, on of that aspect might lead to an improvement to your business. **I think many businesses have problems understanding what is best to first tackle**, a problem also because many times it's really just something that you don't really know what is best to do”*

In response to the question about the need to have a guide to orientate in this digitization process, it was found that many of the companies are lost when starting the DT, thus it would be helpful to have a guidance tool to follow up with the digitalization process.

“When we work on DT in our company we try to imagine a path and try to follow it. It's not easy to do it just because we don't have clear skills that can handle it”

“A roadmap it's definitely needed! First it should point out best practices and lesson learned thanks to other DT projects in different contexts and sectors. Moreover, it a should give framework defined on level of complexity of the area and levels achieved by the target organization.”

“Yes, it is always a useful approach having a guide. Specific steps and milestones”

SMEs demand a roadmap for guidance, they have to imagine a path, but they do not have the skills to do it. They need support with a framework with defined levels. In this way, our initial proposal the supportive orientation program, compounded of a roadmap and a self-assessment questionnaire is justified by the need that the Focus group participants felt for a guide.

Moreover, during our literature review and focus group analysis we attempted to classify our finding under three levels Basic – Standard - Advanced, as proposed in our project proposal, in order to conceptualise the descriptors demarcating them. The following table presents our final analysis.

Table 5: Three-level demarcation analysis for SMEs DT

	BASIC	STANDARD	ADVANCED
	digital awareness digital enquirement	digital collaboration	digital transformation
LITERATURE REVIEW	<p>“unaware”, describes companies in which there is no strategy for digital transformation, nor are there any digital competencies available.</p> <p>Companies classified by the “conceptual” level, are those which offer a few digital products, but are still without a digital strategy.</p>	<p>Those with a “defined” level of digitisation, are the companies who are able to consolidate experiences gained from pilot implementations into partial strategies. At this stage, a culture of digital thinking is taking root in the company. The profitability of these partial strategies and the effects of the pilot implementations are assessed and used to develop an overall digital strategy. At this point, where a clear digital strategy is developed, the company falls into the “integrated” maturity level.</p>	<p>Only once this strategy has been implemented across all products and business processes, can the company be classified as “transformed”. The now-defined digital strategy will have transformed the business and operations models of the company.</p>

	Digitization	Digitalization	Digital Transformation
	The conversion of products to digital format and the concomitant inventions that ensue.	The innovation of business models and processes that exploit digital opportunities.	The systems-level restructuring of economies, institutions, and society that occurs through digital diffusion.
	their micro-foundations impacting individuals and teams' behaviors ("micro-level")	the implications of this type of macro-level changes on firm-level capabilities, processes, routines, and business models ("meso-level")	The changing nature of the relationships among the innovation ecosystems actors) and the emergence of new competitive dynamics ("macro-level")
	customer touch points. Customer service can be enhanced significantly by digital initiatives. For example, a bank established a Twitter account to answer client complaints quickly	customer understanding, Companies are starting to take advantage of previous investments in systems to gain an in-depth understanding of specific geographies and market segments. companies are learning to promote their brands more effectively through digital media.	Process Digitization Automation can enable companies to refocus their people on more strategic tasks. A manufacturer has begun to centralize the HR function, allowing economies of scale through self-service while freeing HR people to "focus on enlarging manager skills, rather than counting days off."
	top-line growth. Companies are using technology to enhance in-person sales conversations. For example, financial services companies are using tablet-based presentations instead of paper-based slide decks to make sales pitches.	Worker Enablement. Individual-level work has, in essence, been virtualized — separating the work process from the location of the work. The tools that virtualize individual work, while implemented for cost reasons, have become powerful enablers for knowledge sharing.	the creation of new digital businesses. Companies are also introducing digital products that complement traditional products. Other companies are changing business models by reshaping their boundaries through digital
	Digitally Modified Businesses. The company is finding ways to augment physical with digital offerings and to use digital to share content across organizational silos.	Performance Management. Transactional systems give executives deeper insights into products, regions and customers, allowing decisions to be made on real data and not on assumptions.	digital globalization. Companies are increasingly transforming from multinational to truly global operations. Digital technology coupled with integrated information is allowing businesses to gain global synergies while remaining locally responsive no company we studied is transforming all nine areas at once
FOCUS GROUP	<i>PV participant: So, it's not just about, if we're not just talking about digitization and basic level of digitalization, [...]</i>	<i>PV participant: Digitalized to an extent, but to really benefit from digitalization, to start using digital marketing, expand your market internationalize and so on. [...] to really benefit from companies so the companies can internationalize, expand the sales of their products and so on.</i>	

	<p><i>I think that a big step has been the increasing use of LinkedIn as a way to show our professional life to the world.</i></p>	<p><i>R participant: The correct use of this social media can have huge impacts in how businesses interact with each other. Another big change has been the use of digital project management</i></p>
	<p>Elements – Dimensions - Steps</p>	
<p>LITERATURE REVIEW</p>	<p>Reis et al. (2018) categorized digital transformation into three distinct elements: 1) technological – digital transformation based on the use of new digital technologies such as social media, mobile, analytics or embedded devices; 2) organizational – digital transformation requiring a change in organizational processes or the creation of new business models; Depending on the sector in which the company operates, the level of its digital transformation varies. It is noticeable that the level of digital transformation is also influenced by the changing needs of consumers, by the level of application of high technologies, by the position of company’s leadership, by the size of a company.[...] 3) social – digital transformation is a phenomenon that is influencing all aspects of human life by, e.g., enhancing customer experience.</p>	
	<p>According to Azhari et al. the model for the digital transformation is include eight dimensions of digitisation, namely strategy, leadership, products, operations, culture, people, governance and technology.</p>	
	<p>The Digital Transformation Framework describes the cornerstones of the transformation along four dimensions: use of technologies, changes in value creation, structural changes, and financial aspect</p>	
	<p>One of the approaches to exploring digital transformation is the grouping of changes in three areas: consumer behavior, business processes and business models (</p>	
<p>FOCUS GROUP</p>	<p>Step 1, preparing for GCM Step 2, generating ideas Step 3, structuring items Step 4, estimating and analysing concept maps Step 5, interpreting concept maps and results</p>	
	<p>four steps to create high business value by implementing measures to see what happens in a company (visibility), to understand why something happens (transparency), to forecast what will happen (ability to forecast) and to self-optimize the whole production system (adaptability)</p>	
	<p><i>PV participant: We should really talk about digitalization on different stages of company development.</i></p>	
	<p><i>LS participant: Yes, at every level the organizations I work what are transforming at different levels the relation with digital technologies, at process levels, team management level, communication levels but also in relation to skill enhancement level, throughout e-learning environment.</i></p>	
	<p><i>Anonymous participant: yes, we have been working from distance since COVID, something which remains as an option in our organization</i></p>	
	<p><i>T participant: The levels for digital transformation is my mind is technology, second demand, and third is behavior. So the consumers impact the behavior with the expectations while when they shop and are more engaged you know and it drives the demand of a business.</i></p> <p><i>This is these are the three levels, first technology, the demand, and the behavior. Because customers are the ones who demand, and sorry. Customers are the ones who demand and they now expect a shopping experience that is unique. So it gives comparison about that to a company to be unique in this way.</i></p>	
	<p><i>PV participant: So digitalization is the best way to actually calculate your materials, the best and, reduced waste of resources. So actually the, and the demand comes from the customers. I didn't really see in the model that you showed there, the fact that there is actually a push because of the ... of the climate change.</i></p>	
	<p><i>R participant: it is as much important as first to know what your company needs and how you should implement it. And then the why is extremely important because often you might feel that it's right to do something, but you also have to do a little bit of fact checking because not all the changes, digital changes are right at certain stages of your company.</i></p>	

Based on the above analysis the three levels of DT for SMEs could be conceptualised and describe as follows:

1. **Basic level: Existence (in vivo code: “show our professional life to the world”)**
2. **Standard level: Growth (in vivo code: “really benefit from digitalization”)**
3. **Advanced level: Evolvement (in vivo code: “digitally transformed”)**

We must considerate that the SMEs included in this first level “basic” are getting ready for the digital transformation, and so they have barely developed their digital channels. They do not extract the full potential of the webpage, nor offer all its products or services through this channel, and it is not so common to have mobile applications or have a little use. The level describes companies that don't have a strategy for digital transformation or the necessary competences.

In this second level, considered standard, the companies are moving towards a complete experience across channels growing in the digital economy. However, there are still some elements missing, such as data-driven intelligence or Big Data. At this phase, the digital thinking has taken root in the company and a Digital transformation strategy has been developed. They are learning how to promote their brand through digital media, gaining a better understanding of different market segments, among many others.

Lastly, SMEs located in this last level are considered “advanced” meaning that the company has already developed fully their business digital channels and is undertaking transformative initiatives. At the same time, the collection of advanced data analysis is already integrated, and the strategy has been implemented across all products and processes.

1.5.3. RQ3: Which capabilities build upon Digital Transformation Capacity (DTC)?

With point of departure the lack of a universally accepted definition of DT exploring the capabilities for building DTC would be expected to be a daunting task, surprisingly, however, it presented converging themes in our state-of-the-art literature review (see Annex). During our subsequent focus group data analysis these converging themes were confirmed and enriched.

Literature review analysis findings

Regarding SMEs' DTC conceptualisation the [UN definition](#) was adapted as the process of developing and strengthening the skills, abilities, processes and resources that SMEs and their manpower need to adapt and thrive in a fast-changing digital market. These skills involve the ability to use digital tools and apply them successfully to certain tasks leading to competencies which define the level of digital literacy, that is, the capabilities to understand and apply digital practices and processes within professional contextual situatedness.

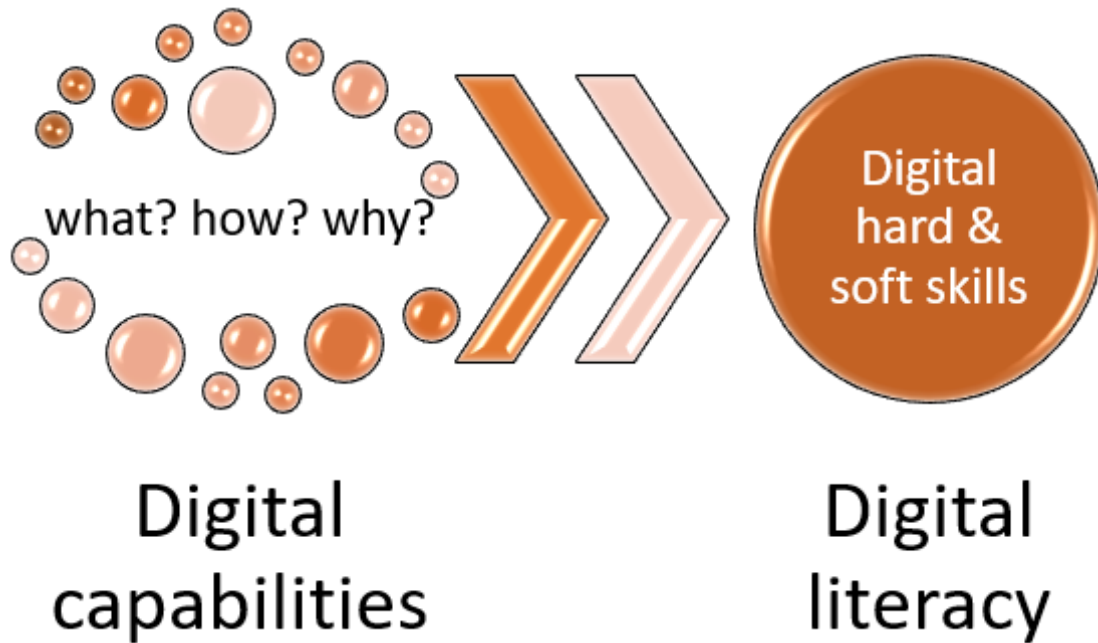


Figure 3: Understanding and performing digital activities lead to levels of digital literacy

This ability to understand and perform digital activities necessary for benefitting professional situations and context encompassed by digital culture and mindset impacts the stage of digital maturity of a SME along their digital transformation trajectory.

Digital maturity

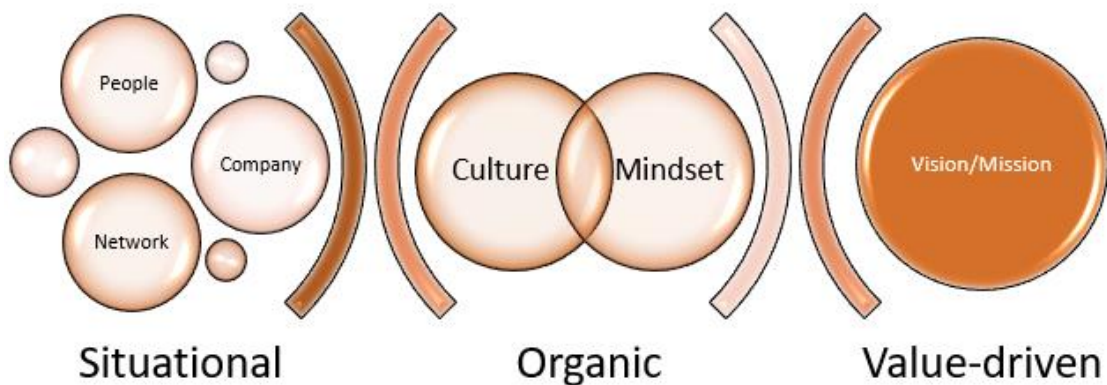


Figure 4: Digital maturity stage relates with situational, organic and value-driven digital literacy

DIGITAL TRANSFORMATION CAPACITY (DTC) OF SMEs AND THEIR MANPOWER COULD BE DEFINED AS “THE DIGITAL MATURITY STAGE FACILITATED BY THE DIGITAL LITERACY ORIGINATING FROM CAPABILITIES TO UNDERSTAND AND APPLY DIGITAL ACTIVITIES IN A SITUATIONAL, ORGANIC & VALUE-DRIVEN WAY”.

#SMEsGoDigital project

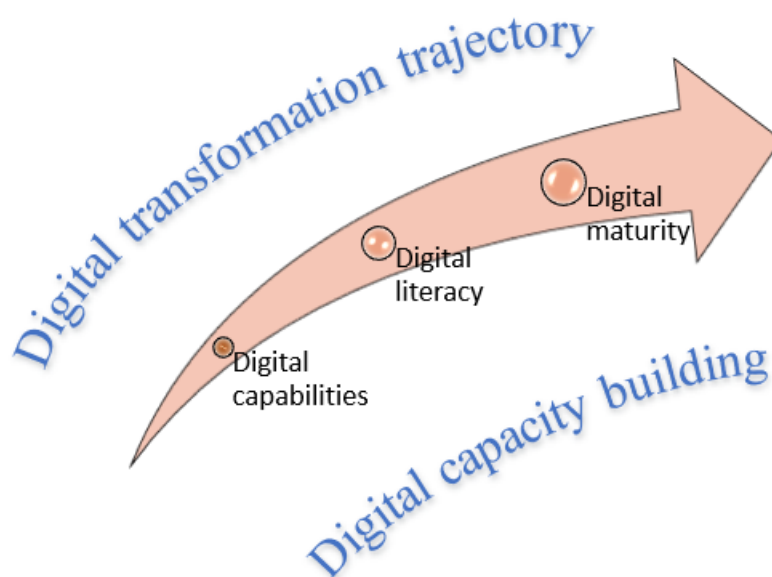


Figure 5: DTC building & DT trajectory parallels

Our exploration on the required capabilities for building DTC to empower the SMEs DT journey yielded interesting findings (see Table below). Our interpretation following the constructivism paradigm detected the following emerging themes:

1. Need for support for change resilience skills

- The topic of “change” has been an omnipresent theme - often externally driven by new technologies or other processes beyond SMEs immediate control.
 - Change processes, including how to approach behavioural changes within a SME, how to change standards and practices across many SMEs in a sector seem to be challenging. SMEs are thought to be recipients of change, rather than creators or architects of it. SMEs professionals should become more knowledgeable about change, and more expert at making change envisioning, leading, and managing successful change strategies at a variety of levels (behavioural change, sector-wide).

#SMEsGoDigital project should consider the role it can play in capacity building around change processes for SMEs manpower.

- Professional roles and responsibilities are changing rapidly. This phenomenon calls for the need to build SMEs capacity in a holistic modality involving all people and not only in terms of knowledge and skills but also in terms of attitudes and behaviours, for example, need to learn new things, as well as learn to learn.

2. Need for support for networking & collaboration capabilities

- Important factors for digital capacity building are support and guidance for inter- & intra-network of knowledge exchange and peer-to-peer learning which aims at facilitating and updating SMEs manpower capabilities, as well as teachers educating the next generation of digital SMEs professionals.
- There is an apparent shift to a new concept of “digital capacity” that includes both technological capabilities and a full spectrum of soft skills needed to work with diverse teams and audiences, build and lead coalitions, and collaborate with a wide variety of stakeholders — sometimes in risky and uncertain environments, for example leadership, and change-management skills.

3. Need for support to deal with digital divide

- It refers not only to the divide regarding digital access and infrastructure to web and its technologies but also to discrepancies between levels of digital use and digital understanding. Even where access is available it is equally important not only to know how to use new technologies but also how to create value aligned to professional mission, vision and values.
- The divide also refers not only among sectors but also within sectors even within the same SME. It is vital to build capacity for bridging such divides by investing to people not only technologies in order to have more digitally fluent SMEs manpower with digitally mature relationships, for example soft skills such as team working, leadership and empathy.

4. Need for support to tackle with fear and negativity

- The theme of resistance to change was manifested in the literature referring to both SMEs owners and staff. Empathising with fear-based narrative and tackling it by challenging critically assumptions is crucial to foster new meaning orientations and transformative thinking for absorptive capacity empowerment.
- Anxiety for the negative aspects this new emerging digital world holds in store is justifiable and attention must be paid on the psychological and emotional needs for well-being.
- SMEs are caught in a “catch-22” — a paradoxical puzzle — regarding the relationship between digital transformation initiatives and the capacity or funding needed to create them. It is vital to build skills across the network for how to jump-start new initiatives when both money and know-how are scarce.

5. Need for support fit for SMEs situational context

- Heterogeneity is a critical characteristic of SMEs differentiating them from larger enterprises but, also, impacting their DTC building since the same heterogeneity emerges from their needs and point of departure for their DT trajectory with discrepancies in their levels of digital literacy and digital maturity stages. It is important to enable SMEs with capabilities to map the changes fit for their situation and needs (situational context), analyse the challenges for building digital culture for both people and company (organically) and signpost the stages of digital development aligned with the priorities as set in their vision and mission of the SME (value-driven).
- Dynamic functional idiosyncrasies of SMEs such as entrepreneurial mindset and flexibility have to be taken advantage of and help to build upon them the ability of SMEs to be more innovative, creative, and agile; develop new digital business models and sources of revenue; drive innovation and be a creative hub for actions and initiatives. These special features of SMEs fabric comprise SMEs unfair advantage which needs to be enriched further.

Focus Group analysis findings

The Focus Group transcript (see Annex) was analysed complying with the agreed methodology with a view to grounding the involved concepts and processes in a bottom-up approach.

DTC interpretations

Our DTC conceptualisation was presented to our Focus Group participants with a view to understanding and adopting a shared way of approaching, thinking about, discussing and planning DTC building, as we deem important to share a common language when we are set to accommodate the multiple, complex and layered perspectives and contexts that exist across the SMEs sectors in order to assess and understand challenges, align objectives, and build capacity.

A participant almost identified DT concept with DTC when asked to write “What comes to your mind when you hear Digital Transformation?”:

*PV participant: **Cross-sectoral skills***

The theme of skills and both their lack and urgent need kept recurring during the discussion for the participants conceptualisation of DT before even introducing the RQ for DTC:

*PV participant: There's really **a lack of education training provision for professionals**, for instance, in the marketing area who would be able to digitally market the products for different companies in different sectors of the economy. Especially when we're talking about cross-sectoral areas like ... like, biochemicals or digital solutions for agri food, the digital **marketing skills are really lacking**.*

Adult education, EQF 4 and 5 levels in jobs that cut across sectors are lacking

Education and training has not kept up with digitalisation. Companies DT process is blocked due to lack of skilling, upskilling and reskilling opportunities.

This recurrence of the theme of skills when asked their interpretation of the concept of DT illustrate how participants frame digital skills within DT activities and processes confirming our conclusions that hard and soft skills necessary to use and apply digital tools and systems to perform certain professional digital tasks successfully comprise the digital capabilities for DT. Without the skills to understand what to do digitally, how to do it and why DT trajectory is “*blocked*” as mentioned by our participants confirming, also, the parallel trajectories of DT & DTC as our literature review depicted.

When the discussion of our focus group came to RQ3 and our DTC concept was presented and explained the majority of the participants expressed their juxtaposition to it (see Fig. below) with the concepts of digital capabilities and digital literacy being unanimously agreed:

*R participant: I think that **digital maturity is a concept that is a little bit derivative of the first two concepts that are the real ones that I think are important, which are the digital capabilities.***

[...] there is digital capabilities and digital literacy, and I understand these two concepts and I think that there are already very good in understanding the gap that there is between a company, because one thing is to understand what you need. Another thing is to under, to know how to implement that.

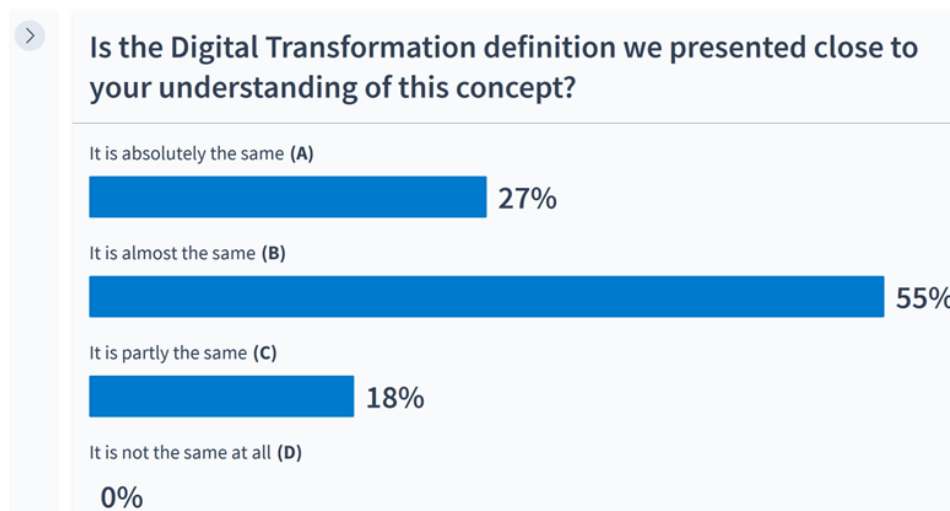


Figure 6: Focus Group poll on our DTC conceptualisation

While the concept of digital maturity was debated since two participants were wavering:

And then the problem of the maturity, I understood is the element of at which level of their, of the organization that being able to understand why digital techno digital technology is implemented, is relevant for the organization or. Or not? I don't I'm not sure to understand the digital maturity as a concept.

*PV participant: I think **capacity and maturity I would not put them in the same.** A company can have the capacity to do much more, but for one reason or another, they're not at level yet. So that's why I don't think that putting the two words into a sense, I think that's where R (participant) is also having the issue that he finds it maybe a bit not as positive, the statement,*

because capacities can be there, there can be financial reasons, there can be other reasons why the company hasn't reached the maturity yet.

Evidently digital maturity concept induced some perplexity to two participants which however was resolved by the same participants:

*R participant: If I may, I think that **what you write down is. It's just right** because I think that perhaps it is as much important as first to know what your company needs and how you should implement it. And then the why is extremely important because often you might feel that it's right to do something, but you also have to do a little bit of fact checking because not all the changes, digital changes are right at certain stages of your company.*

Here the participant affirms that only digital literacy is not enough to define DT since not all digital activities may suit the context, the values & mission or the culture & mindset of a company confirming that situational, value-driven and organic perspectives are positive change drivers supporting DTC building holistically and, thus, grounding digital maturity as a conclusive element of DTC.

In conclusion, a shared understanding for the following key terms securing a solid foundation for our DTC building:

- **Digital activities**

Professionally-oriented tasks and achievements involving the use and application of digital tools and technologies (what & how) as well as the experience of digital behaviour and culture (why).

- **Digital skills**

Hard and soft skills enabling digital activities.

- **Digital capabilities**

Skills required to achieve digital activities effectively.

- **Digital literacy**

The ability to evaluate digital capabilities within professional contextual situatedness.

- **Digital maturity**

The ability to act and behave in a digitally literate way which is befitting their unique context and need (situational), involves holistically processes, people & culture (organic) and fine-tunes with professional vision & mission (value-driven).

- **Digital transformation capacity building**

The process of developing and strengthening the skills, capabilities, literacies that SMEs and their manpower need to adapt and thrive in a digitally mature way within a fast-changing digital market.

DTC capabilities need analysis

Our focus group interview advanced with the presentation of the DTC building needs required to empower the SMEs DT journey as emerged in our literature review. Interestingly, our findings were entirely confirmed as all five needs detected as converging themes during our state-of-the-art literature review appeared also in our focus group findings (see Fig. below).



Figure 7: Word cloud with the required skills for DTC building constructed by the FG participants

Needs 1 & 2 were widely confirmed appearing with high frequency in our focus group poll regarding the skills the participant felt are required for their DTC building as the table below shows.

Table 6: Frequency of convergences between responses and needs

Focus Group response	change resilience skills	networking & collaboration capabilities
share knowledge		X
collaboration		X
communication		X
adaptability	X	
change - adaptability - soft - communication	X	X
Resilience	X	
resilience	X	
Flexibility	X	
Digital skills, team working skills, business development skills, communication skills.		X
adaptability	X	

Regarding Need 4 emerged also during our focus group:

DR participant: I don't know which skills you exactly need. And this is an issue itself. A part from this I feel that you need to be creative, open minded and not scared by a new world we are all thinking and creating

JC participant: So the fact is that as someone, someone else have said already SMEs are mostly operated with people that are non-technically skilled. Okay. And that is a fact. That also can be a barrier for adopting digitalization both ways, like top down and bottom up, because there is a resistance for this.

However apart from the resistance theme our participants added their work & private life balance fears which DTC may disturb:

R participant: And this might be in conflict with part of the academic literature about the work life balance and is okay, we are telling on one side that people should differentiate between working life and private life, and they should respect the boundaries. But at the same time, we're living in a world where, as we say, you have to be always develop yourself, and you cannot do this in eight hours a day if you have to dedicate those eight hours of work a day to keep the business moving. At the same time, you also have to develop yourself as a person.

Moreover Need 5 emerged constantly with the participants stressing the idiosyncrasies of SMEs the strong points of which should be prioritized instead of focusing on the weak points:

PV participant: talking about SMEs, lumping them all together is actually is ... is putting together apples and oranges in a sense when we're talking about digitalization, because the vast majority of the companies that fall into this category are very small. And then some, and some are quite large because when we come to the upper end of the medium sized companies, then we are talking about pretty sizable companies already.

T participant: I, think that the SMS are are more flexible to go digital.[...] So the SMEs are more flexible to do this, to go digital instead in comparison with the big companies, which are slow moving.

Apart from confirming the literature review findings regarding their DTC building needs our Focus Group participants highlighted certain parameters affecting these needs. Specifically,

1. E-learning environment

LSA participant: Yes, at every level the organizations I work what are transforming at different levels the relation with digital technologies, at process levels, team management level, communication levels but also in relation to skill enhancement level, throughout e-learning environment.

2. Time limitations

R participant: there is also clash between the time that SMEs have. Often I find that companies have to do their daily operational tasks and they know that they should still have someone in training to learn new digital tools.

3. Open learning resources unification

APA participant: Then **SMEs have a lot of scattered tools** because there are a lot of tools that cover certain needs, but they are scattered and **they don't have a global operating vision**. And that makes it comp... more complicated for them.

4. Lifelong learning

APA participant: I would say **the ongoing and learning experience, keeping up to date** with what are those digital activities. Maybe you can have this capacity in a specific point of time, but you know digital transformation we will have **constantly new channels, new digital ways of communicating of working**. So I think it's so important also the, capacity of, **keeping up to date learning** and that comes with managing, measuring and being capable of **optimizing constantly the continuous improvement**.

5. Funding for learning opportunities

C participant: DT is not a, as we say, a pie in the sky. **It needs some investments and it needs some resources** to adopt some new technologies or to change some business processes, even **to gain some new skills**. [...] resources might be **funding skills** [...]

1.5.4. RQ4: How Digital Transformation Strategy (DTS) is related to DT?

Our literature review purpose was to explore academia's aspects on the DT strategy construct and its importance for SMEs DT endeavour (see Annex). This is significant since our project seeks to develop a dedicated tool for SMEs to facilitate their DT and the findings will impact #SMEsGoDigital tool design. During our subsequent focus group data analysis these converging themes were confirmed and enriched.

Literature review analysis findings

- The complexity arising from DT due to the interaction of various factors requires to be addressed and optimised, which leads to the conclusion that a **DT strategy is a sine qua non for this multivariate process** and this fact applies also for SMEs. It is a supportive blueprint signposting SMEs journey towards their DT in order to compete and survive in a market with an accelerating change pace.
- DTS for SMEs is a process that **fuses IT and business strategies** while being equally **business-centric, customer-oriented & technologically-enabled**.
- SMEs DTS is **situational and personalised** due to their idiosyncrasies and should be **contextually based and grounded on their strengths**.
- It is a **holistic & dynamic process** involving all people and parts of a SME, since it **affects competition-related activities, products and services** but also **changes people's identities and roles assigning new digital-related ones**.
- SMEs need a **customised DTS in their micro scale** with **episodes leading to 'quick wins'** in an **iterating modality** since **DTS is a never-ending process**.
- **SMEs lack of DTS** due to the fact that **their resources are limited** in contrast to larger enterprises which hire experts to plan, implement and evaluate their DTS while SMEs **innate reluctance to share control** hinders them from the benefits of a DTS.

- **SMEs need contextual & holistic support to plan, implement & evaluate micro-DTS to harness the potential of DT and thrive.** Academia and institutions provide DTS frameworks and resources but it seems there is more to be done to support SMEs for their DT.

Focus Group analysis findings

After analysing our Focus Group transcript (see Annex) the following emerging themes could be detected.

Micro DTS as a must for SMEs

SMEs are left stranded without support and guidance to deal with the “new normal” as T participant described the current situation they experience:

*T participant: The Covid Pandemic has forced business to go digital in a massive way. So, **what started as a crisis response has become the new normal** [...]*

While realising they have no other option but to go digital:

*APA participant: **It's no longer optional. It's a need.** DT is an ongoing process to continuous improvement. Otherwise, organizations will be left behind.*

SMEs are fumbling around to find their way towards DT to survive lacking, however, the required knowledge, staff and resources to plan, implement and evaluate a DTS:

*R participant: I think **a main critical point for small medium enterprises we're talking about digital transformation, is to understand where to start.** Should you start rethinking your business model, implementing digital solutions? Should you care more about how you're talking with your customers and managing your customers, or you should taking first care of your internal processes and how eventually an optimization on that, on of that aspect might lead to an improvement to your business. I think **many businesses have problems understanding what is best to first tackle** has a problem also **because many times it's really just something that you don't really know what is best to do** [...]*

*I think it is because many times **companies don't really have a lot of budget or a lot of professionals within their company, especially because we're talking about small, medium enterprises.** So many times, even the marketing manager usually is someone old or someone that doesn't have the necessary experience to implement the changes that we know are necessary. But, and also they know that they are necessary. **They just lack the time, the financial resources and the, knowledge to implement these changes.***

The obvious lack of any DTS for SMEs DT trajectory while deemed essential for their professional survival leads SMEs to resort to improvisation. This reaction confirms the Structuration Theory (Canary & Tarin, 2017) where individual agents take initiative to act in a self-organised, ad hoc agency in lieu

of the non-structural DT process, the absence of any systemic provision to prepare them or equip them with a DTS. As a result, SMEs decide to initiate the construction a provisional structuration of a process to enable them to continue their professional activities in the new context. For this structuration process they resort to previous experiences and practices reproducing previous structures in an adaptive modality fit for their current situation securing their professional survival. This structural re-creation involves ad hoc technologies such as ameliorating their professional identity to deal with their new digital roles and responsibilities or following their customers' demands simulating previous experiences from actions and interactions of similar system structures reaffirming the agency of subject over structure as stipulated in Structuration Theory (Canary & Tarin, 2017, pp. 2282-2284).

*PV participant: So, the really, **the demand from customers and how that is driving digitalization. So digitization might not be a choice per se, but the only way to survive was something that.** [...] the green side would be nice to see **how that is driving digitalization.***

*T participant: So the **consumers impact the behavior with the expectations** while when they shop and are more engaged you know and it drives the demand of a business. [...] **Customers are the ones who demand and they now expect a shopping experience that is unique.***

*DR participant: When we work on DT in our company **we try to imagine a path and try to follow it. It's not easy to do it just because we don't have clear skills that can handle it.***

What is emerged from our focus group was that based on what structures enabled or constrained SMEs in the past (consumers demand, customer experience, self-training) to yield a positive professional outcome, the same are re-created (structured) to fill in the gap of any DTS provision.

To this vein, this can lead us to the conclusion that the fact that SMEs resort to self-structuring activities this implies the necessity and urgency of a DTS provision deemed as a must for their professional survival in a digital context but taking into consideration the idiosyncrasies of the SMEs this should be a micro DTS adapted to their needs and requirements.

Micro DTS fit for SMEs needs & requirements

During our Focus Group participants expressed prolifically not only their need for a DTS provision but also their envision of this process.

- ✓ Need for multi-approach perspective

Participants pointed towards both business-driven & people-centred approaches while context should be taken into consideration due to SMEs idiosyncrasies:

*JC participant: **a multi-strategy here that is needed not only both top down, like a strategy coming from the organization itself, but also bottom up coming from the way people can really interact with digital tools.***

APA participant: [...] **SME's it is such a big classification. Both because of size but of kind of business (it's not the same a craftsmanship than a B2B services company than a restaurant...)**

- ✓ Need for business digital readiness assessment and identification

The participants expressed their need for expertise to guide them through their DT journey as some of them have no idea where to start or for those who already are aware of their needs do not know how to proceed for tailored solutions:

APA participant: [...] **But a general approach would be AS-IS and TO-BE processes. Identify the gaps and start an action plan.**

LS participant: **A roadmap it's definitely needed!**

- ✓ Need for a step-by-step guidance with short-term "quick-wins"

Simple roadmaps with clear "steps and milestones" leading to immediate benefits were recommended by participants:

AA participant: **Yes, it is always a useful approach having a guide. Specific steps and milestones.**

LS participant: [...] **it a should give framework defined on level of complexity of the area and levels achieved by the target organization.**

- ✓ Need for knowledge exchange networking

Provision of success stories was deemed essential by participants:

LS participant: **it should point out best practices and lesson learned thanks to other DT projects in different contexts and sectors.**

- ✓ Need for digital consultants for in-depth advisory and project management services.

Some SMEs are lacking senior staff resources in charge of their DTS internally leading them to seek support externally, which, however, is not customised to their needs:

DR participant: **Nope, unfortunately no support at all. It's a too complicated and time-consuming process to find a support.**

EC participant: **Yes, we have a software house that follow us in our process of digitalization.**

R participant: **We already have support, both internally and externally. Internally is our PM and CTO that scout and suggest new tools to implement to optimize our processes. While externally we use training and educational tools such as Udemy and UNA Forma.**

The figures below show the ranking the DTS tools we suggested received by the participants during our Focus Group online poll.

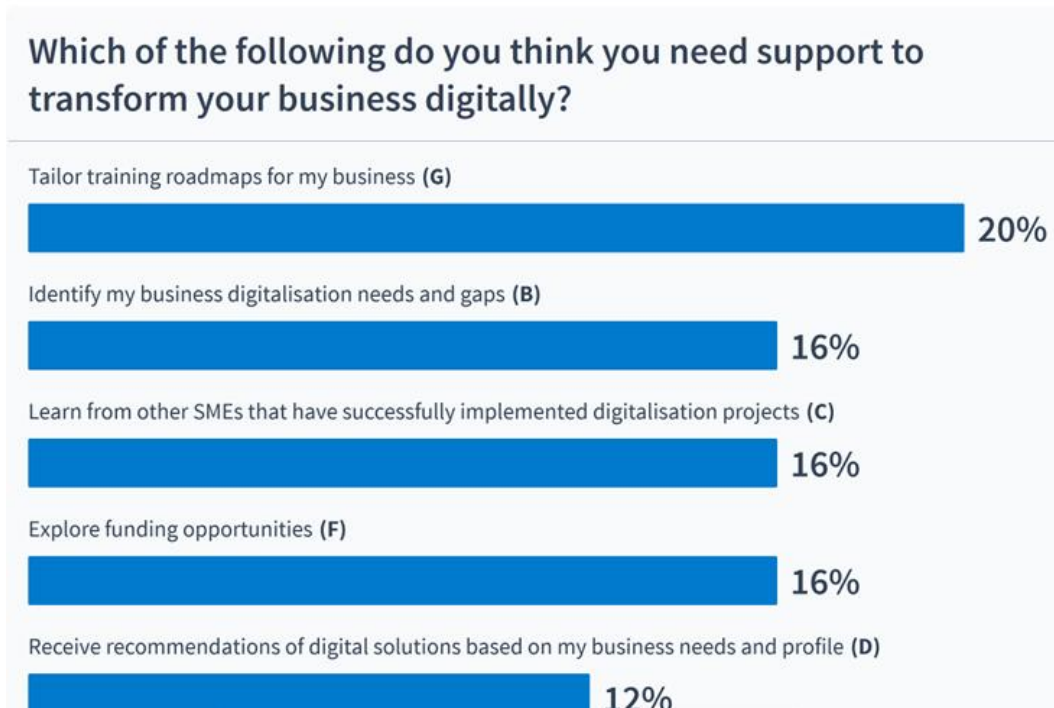


Figure 8: DTS supportive tools ranking by the participants

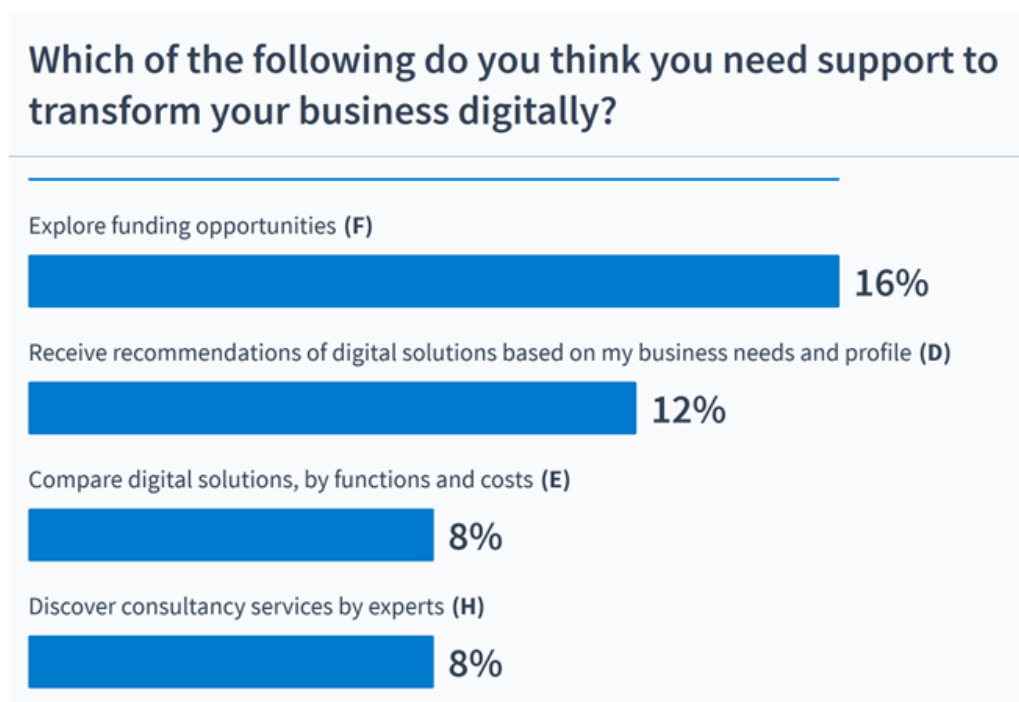


Figure 9: DTS supportive tools ranking by the participants

As has been demonstrated by the findings of our Focus Group data analysis a CTO as a Service (CTOaaS)



- **GOVERNMENT SUPPORT**
- **FINANCIAL SUPPORT**
- **SKILLS DEVELOPMENT**
- **ACCESS TO KNOW-HOW CENTERS & MATERIAL**
- **APPROPRIATE INFRASTRUCTURE**
- **STANDARDIZATION**
- **SMEs COMMUNITIES (NATIONAL & INTERNATIONAL)**

#SMEsGoDigital project

to plan, implement and evaluate micro DTS for SMEs guiding them through their DT trajectory is deemed as an ultimate supportive tool. This CTOaaS should integrate;

- ✓ Self-assessment of digital readiness
- ✓ Simple stepwise roadmaps of 'quick wins'
- ✓ Digital consultants' access for customised engagement

1.5.5. RQ5: What support do SMEs (especially small & micro-ones) need for their DT?

Following the methodology described in the relevant output, the #SMEsGoDigital partners have collected a number of support factors SMEs need for their DT, as presented in the table in the Annex section.

Taking into consideration the support factors described as well as the data collected during the focus group, the #SMEsGoDigital project highlighted the following support factors SMEs (especially small & micro-ones) need for their DT (also illustrated in the figure below). It is important to mention that during the focus group, the participants highlighted the need for support, since it is time consuming and much more expensive for them to proceed with their DT on their own. Training seems to be critical for SMEs while many do not know where to turn to ask for any kind of support.

In detail, the support mentioned above could be analyzed as follows.

- **Government Support:** it refers not only to financial support by the government but also, simplification and enhancement of the existing legislation and bureaucracy concerning SMEs.

- **Financial Support:** it could include government and other fundings, loan facilities and other means of direct or indirect financial support.
- **Skills Development:** Upskilling and reskilling staff on DT of SMEs through appropriate training programs (funded and/or provided for free) on relevant topics, focusing not only on the technologies but also, the cultural transformation and the “human” factor (as stated in the definition of DT). Moreover, this could be extended to the education and training systems, which need to adapt to respond to nowadays labor markets’ needs. Curricula need to be updated not only with digital skills but also, transversal skills such as adaptability and readiness to develop new skills through the course of the working life.
- **Access to Know-How Centers & material:** Centers with experts providing up-to-date services and/or repositories with information, initiatives, resources that could enhance SMEs in tackling the DT. These centers could also organize supportive activities such as webinars and/or seminars, workshops on specific DT topics etc. Such centers could provide support at a European level; however, local centers would be of additional value, especially for DT topics focusing on local products, localization, insularity, etc.
- **Appropriate Infrastructure:** SMEs need to have equal access to qualitative digital infrastructure provided in logical prices. Such infrastructure includes high-speed internet network (e.g. 5G connection), qualitative telecommunication networks, cybersecurity and safety equipment in cases of black-outs.
- **Standardization:** Standards in processes, digital platforms, technical specifications, legislation, etc. work as rules and/or guidelines, maximizing the reliability, the quality as well as the safety of the provided services/ products. The DT needs to be standardized at different levels, so that it becomes feasible by all SMEs and measurable.
- **SMEs Communities (National & International):** Communities are of critical importance for exchanging knowledge, experience, expertise, best practices. Moreover, participants are more encouraged and have higher levels of self-esteem when acting in communities. Thus, SMEs Communities in international, national or even local level, could contribute to the support of SMEs for their DT.



Figure 10: SMEs support levels

During the focus group the factor of “**financial support**” was mentioned, with the participants highlighting that DT needs “**fundings**” and “**investments**” and thus, horizontal support by the government and/or other public organizations. Moreover, “**news skills**” and “**upgraded skills**” were mentioned. This showed that the consortium agreed with the focus group participants, that digital transformation support has to do with the “**upgrading**” and “**upscaling**” of the existing skills of the human resources, integrating innovative technologies and attending the appropriate training programs to do so. Some other words highlighted by the participants were (see more in Appendix) **scattered information, balance between professional and personal time, personal development, time**. Finally, training and boundaries between personal/ professional life turned to be a very important concept that has to do with SMEs’ digital transformation support. Some sayings during the focus group that are of additional value to refer are the following:

It needs some **investments**, and it needs some resources to adopt some new technologies or to **change some business processes**, even to gain some **new skills**. For, as an organization representing some micros, small companies, this is the major issue or the major obstacle that our companies are facing in their efforts to digitize themselves or to, go through the digital transition. [...]

[...] Then SMEs have a lot of scattered tools because there are a lot of tools that cover certain needs, but they are scattered and they don't have a global operating vision. And that makes it more complicated for them.

[...] they know that they should do this in office time, but at the same time, they cannot they don't have the chance to dedicate that time during office hours and they ask their employees to do it on their private life hours [...]

Differentiate between working life and private life, and they should respect the boundaries. But at the same time, we're living in a world where, as we say, you have to be always develop yourself, and you cannot do this in eight hours a day if you have to dedicate those eight hours of work a day to keep the business moving

[...] Yeah it, should be like something that has to be very surgical. Like for specific individuals within the companies and then scale it up from there. Yeah. And it's still difficult to manage. Yeah. But it has to be addressed, I think...

SUB-TASK 1.2: BLUEPRINT OF THE ONLINE PORTAL FUNCTIONALITIES ANSWERING THE STAKEHOLDERS' NEEDS AS MAPPED

The following screenshots have been initially discussed by the consortium as draft blueprints of the platform. Professional mockups are expected to be prepared by the platform developer during the project's next phases.



Figure 11: Indicative menu items

This application was NOT submitted
Fill in all the required form sections to submit your application.

Status: Draft
Started 39 minutes ago by @e_iona [Show history](#)

Digital Assessment

Step 1: Are you ready for your DT?

<https://restartsmes-assessment.fundingbox.com/>

Use existing tools and adapt them on our project's needs and target group

Section	Status
1 ABOUT THE COMPANY...*	Not filled
2 DIGITAL STRATEGY*	Not filled
3 DIGITAL READINESS*	Not filled
4 DATA AND CONNECTEDNESS*	Not filled
5 INTELLIGENCE AND AUTOMATION*	Not filled
6 GREEN DIGITALIZATION*	Not filled
7 HUMAN CENTRIC DIGITALIZATION*	Not filled

* Required sections. Fill in all marked sections to submit the application.

[Export this application as PDF](#) [Delete this application](#)

IME GSEVEE Small Enterprises Institute of GSEVEE

IKY European Union Erasmus+ 6

Figure 12: Indicative self assessment

<https://www.imda.gov.sg/How-We-Can-Help/smes-go-digital/industry-digital-plans>

Apply

Step 2: How can you get started with your DT?

Provide directions for all economic sectors, possible differences among consortium countries etc.

<p>Accountancy Download the IDP (3,99MB) Download</p>	<p>Construction and Facilities Management Download the IDP (5,46MB) Download</p>	<p>Early Childhood Download the IDP (4,27MB) Download</p>
<p>Environmental Services Download the IDP (3,92MB) Download</p>	<p>Food Manufacturing Download the IDP (4,09MB) Download</p>	<p>Food Services Download the IDP (5,54MB) Download</p>
<p>Hotel</p>	<p>Land Transport</p>	<p>Logistics</p>

IME GSEVEE Small Enterprises Institute of GSEVEE

IKY European Union Erasmus+ 7

Figure 13: Indicative roadmaps

<https://restartsmes.eu/cluster-associated-partners/>

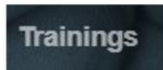


LOGO	NAME	DESCRIPTION
	AVIA	AVIA is the Automotive Cluster of the Valencian Community, the multi-sectoral reference entity that brings together a wide network of companies, suppliers of the automotive sector in the Valencian Community. The aim of AVIA is to work for the companies' competitiveness, increasing the effectiveness and efficiency in their processes and the sector's value. Besides, AVIA also aims to maintain its leadership position and dialogue with the different social agents. AVIA brings together 116 companies related to the automotive sector, of which 60% are SMEs. Companies from the metal-mechanical, plastics, engineering, services, logistics, packaging and consultancy sectors. Thanks to this multi-sectoral nature, AVIA brings together the entire value chain of the sector. Currently, the combined turnover of the associated companies is more than 12,200 million euros, which represents 18% of the industrial turnover of the Valencia Region. The group of companies in the cluster directly employs some 24,300 people. According to the data compiled for the preparation of the AVIA Strategic Plan, this figure represents 9% of industrial employment in the Valencia Region.

A list of support tools for SMEs which could be filtered with specific keywords
Support tools could be categorized based on our literature review (RQ5)
SMEs could also search for support based on their location (country/ region) and field

Figure 14: Indicative support tools

<https://restartsmes.eu/trainings/>



Provide trainings on hot topics for SMEs DT in a user-friendly way

<p>Cloud Technology for Industry 5.0</p> <p>Level Beginner</p> <p>About Data and connectedness, software architecture, edge computing</p> <p>Description This webinar provides an introduction to cloud concepts and the network edge. The high-level differences between off- and on-premise clouds are explained, as well as the costs and benefits of edge computing. Well-known cloud infrastructure providers are introduced, and a three step process is explained to move from</p>	<p>Artificial Intelligence for Industry 5.0</p> <p>Level Beginner</p> <p>About Intelligence and automation, artificial intelligence, cloud, edge computing, industry 5.0</p> <p>Description This webinar provides an introduction to practical AI applications for Industry 5.0. The different uses of cloud AI and edge AI are elaborated, highlighting their respective benefits and potential for synergy. Predictive applications are shown to reduce downtimes, optimize</p>	<p>Connectig data, AI and Blockchain in manufacturing</p> <p>Level Beginner</p> <p>About Data and connectedness, DLT, data, Machine Learning, AI, Blockchain</p> <p>Description This training will start by providing an overview of the current data market to further explain the role of AI and Blockchain in connecting data and unlocking its potential, especially in the manufacturing sector. The expert will also give an insight into CoLearn, a decentralized</p>
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Figure 15: Indicative trainings

In the next phases of the project, the platform developer prepared the following mock-ups.

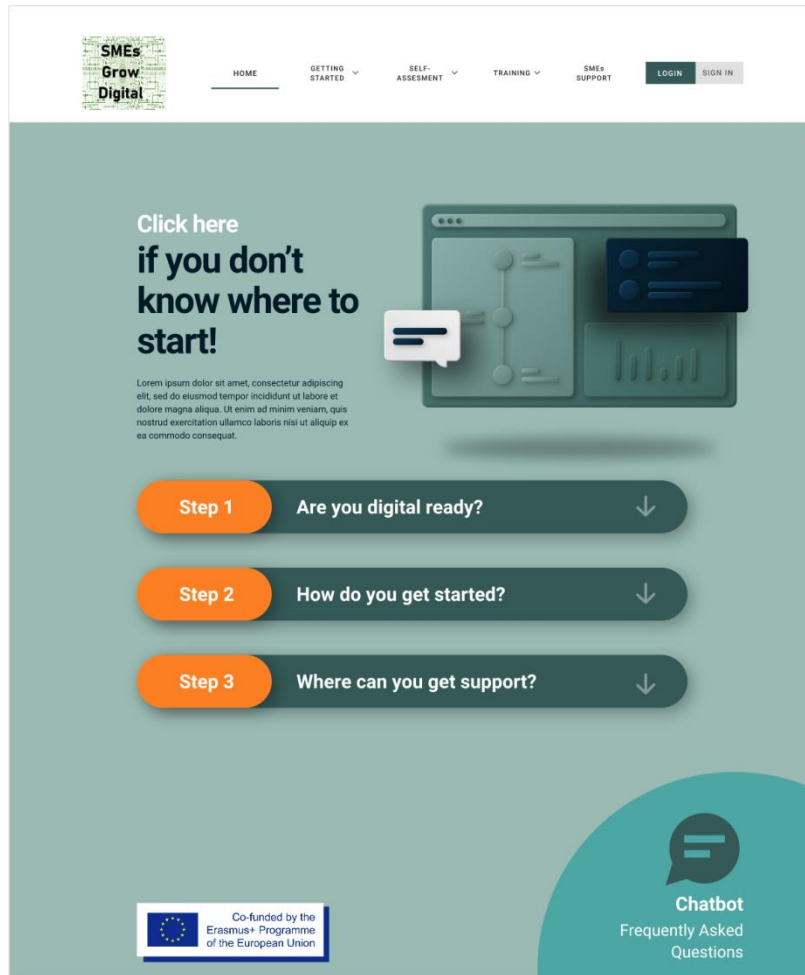


Figure 16: Homepage 1

Figure 17: Homepage 2

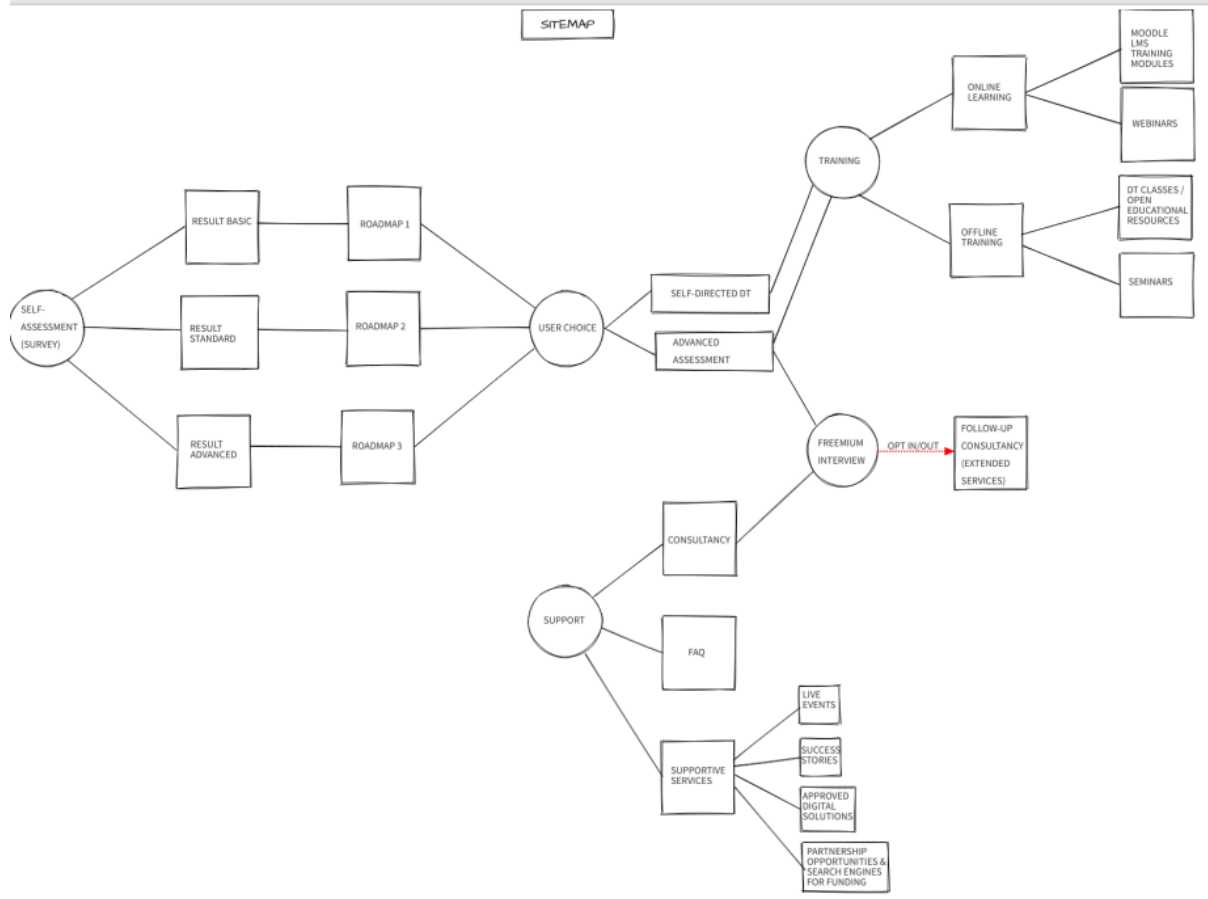


Figure 18: Sitemap

TASK 2: Design of the supportive orientation programme

1.1. DT roadmaps

In alignment with our approved proposal, an orientation & support programme will be developed considering 3 levels Basic – Standard - Advanced - since each stage requires different resources. At the same time, these 3-level roadmaps will be elaborated from a cross-sectoral perspective based on the literature review and best-practices research. Specifically, the methodology for the development of the cross-sectoral 3-level roadmaps followed the strategy of a scaffolding development. In this vein, desk research and focus groups of expert stakeholders within and outside the consortium were the methods and tools to construct this task deliverable, namely, the DT roadmaps. Our project's collaborative virtual workspace together with our project's google drive cloud-based sharing documents facilitated the cooperation of the consortium and the exchange of their complementary expertise for the process of building a scaffolding step by step to construct the DT roadmaps which involved:

- Understanding the conceptualisation of the 3 levels (Basic-Standard-Advanced) of the DT roadmap based on a thorough state-of-the-art literature review
- Analysing DT levels developed worldwide as elicited by the evidence-based systematic review of best practices undertaken during Task 1 to determine the benchmarks per level and sector
- Evaluating and synthesing common benchmarks to frame the newly emerging cross-sectoral 3-level roadmap.
- Validating the findings with peer reviews and other experts

Against this backdrop, each level of the 3-level roadmap will integrate the corresponding benchmarks with sufficient information for SMEs clear understanding of what key benefits each benchmark incorporates and what necessary competencies and skills to acquire for the new emerging roles required to implement and use the corresponding resources needed for the tasks and responsibilities the digital transformation stage they wish to achieve involves.

The **Basic Level** will initiate with the basics of going digital and will include the use of e-commerce and cloud accounting with e-invoicing, and e-payment as well as basic digital tools to use for their professional processes regarding inventory, sales, workforce, production, customer experience, staff collaboration and training management online. Lastly, this basic level will cover an introductory level of data analytics complemented with the competences necessary to implement and use data analysis. These benchmarks will provide the guide for SMEs digital existence needed to initiate and keep up with their transformation journey at Basic level.

In the second place, the **Standard Level**, will address professional processes such as the use of e-platforms and digital marketing, which focus on profiting from the SMEs initiation of digital existence at a basic level linking this level to the previous one. The Standard level benchmarks will consist of Digital Marketing, B2B trade platforms, e-procurement, crowdsourcing and tools for an integrated smart workplace and it will provide the competencies to end up using sectoral data analytics and advanced sectoral management.

Last, the **Advanced Level** will address the use of new generation technologies such as Big Data, Internet of Things, Artificial Intelligence, Machine Learning, Cloud Computing, Blockchain, Augmented Reality and Robotics.

1.2. DT readiness self-check

After an intensive research, and according to our proposal, the design of the self-assessment readiness questionnaire adapted the above-mentioned methodology for the development of the DT roadmaps so as to ensure that it will address its objectives, be in a useful order, and have the appropriate method for administration.

As of this, we concluded about some aspects which our questionnaire must include. In terms of length and time, several studies have demonstrated that the length plays a crucial role in the quality of data obtained. Data shows that the longer a questionnaire is, the less time respondents spend answering each question (H. Sharma, 2022). For this reason, the questionnaire should be able to be completed in between 10 to 15 minutes.

Regarding the sections the questionnaire should address, and based on existing models, we carried on best-practices research. As a result, the following table has been compiled with a selection of the models that best suit our requirements according to our project’s needs and objectives.

Questionnaire	N questions	Time	Sections
Digital Readiness Assessment Tool https://restartsmes-assessment.fundingbox.com/edit/e7ab72646d0b9eb4d5c7b300/readiness	17	-	1. About the company 2. Digital strategy 3. Digital Readiness 4. Data and connectedness 5. Intelligence and automation 6. Green Digitalization 7. Human Centric Digitalization
SELF4.0, test di autovalutazione della maturità digitale https://www.puntoimpresadigitale.camcom.it/selfdigitalassessme/index.php/358529/lang/it/token/tsJiXS Kj5nkYaNE	47		1. Personal data 2. Accounting, Finance and Decision Making 3. Customers and markets Marketing Sales Assistance 4. Technologies Information systems Design, Research and Development Intellectual property Digital and enabling technologies. 5. Human resources Personnel management (Digital support) 6. Purchases Suppliers Purchase of raw materials, goods and services. 7. Logistics 8. Product Implementation/Service Delivery 9. Environmental sustainability

			10. Data confirmation and reporting
Digital maturity assessment	13	6	<ol style="list-style-type: none"> 1. Business information 2. Technologies used in the business 3. Tools for customer service 4. Business decision process 5. Cloud systems (do you back up) (Digital support) 6. Technologies to support business processes 7. Systems integrations 8. Action Plan to achieve the goals 9. Management strategy 10. knowledge about technologies to help you achieve your goals. 11. Support of change in the organization 12. Tools for employees to help them with changes 13. Cybersecurity best practices
https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/business-assessments/digital-maturity/digital-maturity-assessment			
Accelerapyme	26		<ol style="list-style-type: none"> 1. Introduction 2. Digital culture (7) 3. Persons - Competencies of the workers (4) 4. Products (any technological component in it) (2) 5. Digital marketing (4) 6. Digital suport (5) 7. Cibersecurity (2) 8. Data orientation/analitics (2)
https://www.oapbarcelona.com/			
Test de diagnóstico digital - Kit Digital	13	10	<ol style="list-style-type: none"> 1. Training for employees about cybersecurity (Cybersecurity) 2. Measures about cyber security (Cybersecurity) 3. Speed of internet 4. Technology, software, etc
https://www.uup.es/blog/test-de-diagnostico-digital-kit-digital			

https://www.aceлераpyme.gob.es/test-diagnostico-digital			5. Social Media (Digital Marketing) 6. Goal of Social Media (Digital marketing) 7. Tools. CRM 8. % of workers that have an electronic device with internet (digital competencies) 9. 5 of workers that have a phone (Digital competencies) 10. Online selling (Digital selling) 11. B2C 12. Eu Market (Digital selling) 13. % of ecommerce (Digital selling)
DiagnosTIC	27		1. User Data (7) 2. Digital Culture (5) 3. Persons - Competencies of the workers (3) 4. Products/services (any technological component on it) (2) 5. Digital Marketing (3) 6. Technology (5) 7. Data orientation/analytics (2)
https://diagnostic.cat/ca/hospitalet/transformacio-digital-hospitalet/test			

From this table, the partnership has agreed on the sections the questionnaire should have. In the first place, there should be a first **introductory section** where the business is asked about its characteristics, such as: number of workers, operating sector, company's turnover, years of existence, etc. Then, there is a section about the **digital culture**, regarding the knowledge and the implementation of new technologies in the business. We also have a section about the level of **digital competencies of workers**. Next, the business is asked about the **technology used in the selling** of their products or services (ex: online selling). Further on, the questions are about the **digital marketing** (presence online, social media, etc). Then, the business is asked about the technologies in terms of **digital support**, what technologies does the company use for its management of the internal operations. For example: integrated management solutions (CRM), Teamwork tools (zoom, teams), Cloud systems etc. Another section is talking about **cybersecurity**, measures, and procedures. Lastly, the questionnaire ends with questions regarding **data orientation and analytics**. This includes advanced data analysis tools, decision-making, etc. During the development phase, the number of sections could slightly change agreed by the partnership to re-direct the questionnaire to reach its target.

Moreover, there should be also included a part where the concepts of Digitalization, Digital Transformation, etc., are defined. Additionally, in each section of the questionnaire, there will be a short paragraph explaining what the following questions will address, and what the answers means. The respondent should be provided with sufficient feedback so as to be aware of the questions, their replies and their meanings.

It is also important, that the users and participant of the survey have a visual element describing in which section they are, how many questions are, and which are the following sections with their correspondent number of questions.

Hypothetical example with the sections proposed:

*(The user is now on the Technology section)

INTRODUCTION (4 questions)	DIGITAL CULTURE (7 questions)	DIGITAL COMPETENCIES (3 questions)	TECHNOLOGY (3 questions)	DIGITAL MARKETING (2 questions)	CYBERSECURITY (5 questions)	DATA ORIENTATION (2 questions)
-------------------------------	----------------------------------	---------------------------------------	------------------------------------	------------------------------------	--------------------------------	-----------------------------------

Lastly, and after presenting each of the sections, the results will include graphics, with the pertinent explanations. This should include what level of the mentioned before the respondent's enterprise is at: Basic, Standard, Advanced, why and what are the next steps to continue with the process.

Example:

Then, an example of self-assessment questionnaire will be:

BUSINESS INFORMATION

In this section, you are going to be asked about your business characteristics for benchmarking purposes

1. How many employees does your business have on its payroll?

- Self-employed
- Between 1 and 9
- Between 10 and 49
- Between 50 and 249
- More than a 250

2. What is your company's total annual revenue? (e.g.: 1875000)

3. What is your business's main sector of activity?

- Accomodation adn food services
- Agric, forest, fishing, hunting
- Arts, entertainment and recreation
- Construction
- Educational services
- Finance and insurance
- Health care and social assistance
- Manufacturing
- Mining, oil and gas
- Professional, scientific and technical services
- Public sector
- Real estate, rental and leasing
- Retail
- Technology, information and cultural industries
- Transportation and warehousing
- Wholesale trade
- Other services

4. Years of activity

- **Less than 3 years**
- **Between 3 and 10 years**
- **Mora than 10 years**

5. Please indicate in which market the undertaking operates. Choose only one of the following items

- Business to Consumer (the sale is made directly to the end customer)
- Business to Business (sale to other companies)

DIGITALIZATION

[We could include here the definitions that are necessary to understand the questionnaire]

Ex: Digitalization: ...

6. Which of the following technologies do you use in your business, or plan to adopt during this year?

- Basic collaboration tools (e.g., video conferencing, messaging, file sharing and editing)
- Basic website (informational) **BASIC LEVEL**
- CRM (customer relationship management technology) **STANDARD LEVEL**
- ERP (enterprise resource planning software) **STANDARD LEVEL (?)**
- Transactional website (Ecommerce) **BASIC LEVEL**
- Personnel management **STANDARD LEVEL**
- Accounting software(s) **STANDARD LEVEL**
- Manufacturing software (MRP) **STANDARD LEVEL**
- Project management software **STANDARD LEVEL**
- Data visualization and analysis software (e.g., dashboard) **ADVANCED LEVEL**
- Digital technologies such as artificial intelligence, virtual/augmented reality, 3D Printing **ADVANCED LEVEL**
- Cibersecurity
- None of the above

***Here it is important to establish how to relate the answers of the business and the level of digitalization the Enterprise has. Example: If they get 3/3 basic, 4/6 standard and none Advanced, it means they in this question are on the Standard.**

6. What tools do you use to improve the customer experience?

- Social media that customers engage with
- Company blog that customers engage with
- A transactional website where customer can place orders or book an appointment
- Customers have a space where they can consult purchase history, track current order(s) and manage their contact information
- Personalized and relevant content for customers (in a chatbot for instance)
- Personalized and proactive offers based on online behaviours
- My company uses other customer service tools to improve customer experience (quoting tools, etc.)
- None of the above

7. Next year, I plan to invest in:

- Hardware
- Software
- IT Services
- Business Services
- Telecommunications
- I will not invest
- Other

8. Rate the next sentences from 1 to 4 (Maybe 1 to 3 , so it is easy to count?)

Digitalization in your business:

	1	2	3	4
I am well aware of the possibilities and advantages of digitization.				
I allocate significant resources to digitizing the business.				
Employees are prepared for the digital development of the company.				
The degree of process automation is high.				
We use digitalization in the organizational management of the company.				
Our company regularly organizes training on digital transformation.				

9. What are the difficulties your business is facing in adopting more technology?

DOES IT PROVIDE US WITH INFORMATION ON THE LEVEL OF DIGITIZATION TO ASK ABOUT THE DIFFICULTIES?

- Insufficient broadband connection
- Lack of financial resources
- High investment costs
- Lack of well-qualified personnel, difficult to find and retain
- Lack of knowledge about technology suppliers
- High IT security requirements

No need to adopt more technology

Maybe it could be possible to approach it in the following way

4. What are the concerns about implementing digital technology in your organization?:
- a. Not enough resources (time/money)
 - b. Cybersecurity
 - c. Privacy
 - d. Benefits are not clear, my company is operating fine without digital technology in my opinion

10. Rate the next sentences from 1 to 4 (Maybe 1 to 3 , so it is easy to count?)

Level of agreement on the digitization strategy

	1	2	3	4
There is a clearly established digitalization strategy				
There is a clear version of the strategy to be followed to remain competitive in the medium and long term				
The digital strategy is constantly being evaluated and adapted				
Investments are made according to the subsidies available from public administrations.				

11. What are the current pains of your organization, which could be solved by using digital technology? DOES THIS QUESTION PROVIDE US WITH VALUE?

- Re-Planning and deviations in delivery time
- Low quality: bad pieces, reprocessed, customer not conformities ...
- Unscheduled production stops: due to machine problems, human errors ...
- Warehouse: stockouts, immobilized stock, (expiration, obsolescence), lack of space
- Other

12. Do you do regular backup of your organization's information?

- Yes, cloud
 - Yes, physical offsite
 - Yes, physical onsite
 - No
 - I don't know or prefer not to answer
- a. How often do you test your backups operations?
- Never
 - Rarely
 - Sometimes
 - Often
 - All the time

13. Do you have an actionable plan to achieve your business goals?

- Yes, documented
- Yes, not documented
- No

14. Do you have a change management strategy to achieve your business goals?

- Yes, documented
- Yes, not documented
- No

15. Do you know how digital technologies can help you accomplish your business goals?

- Yes
- No

16. Does your organization have a profile on any social network?

Yes

No

17. Do you use social networks for any specific purpose (e.g., to advertise or publicize your business)?

Yes

No

FINAL RESULTS

<https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/business-assessments/digital-maturity/digital-maturity-assessment>

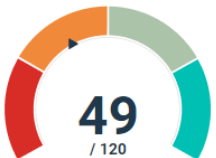
(Sum of the punctuation of each question will lead to the results)

In this section it should appear something like this:

And a little explanation/feedback saying why the result is what it is, and what they can start doing to improve their digitalization.

Also, there could be an indication on going to the roadmaps and follow the indication to arrive the next level of digitalization

If you want to include here also a direct link to the “external consultant” so the SME can contact them to implement the strategy...



Your business profile: **Beginner**
Competitors' average score: 39

What does your status mean?

Your status as a beginner indicates that you've started work on digitizing your business but still need to do a bit more work to really pick up momentum.

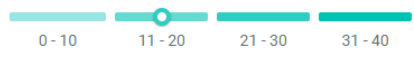
Digital intensity score
34 / 80



What is it?

Digital intensity measures the use of digital technologies in the company's operations.

Digital culture score
15 / 40



What is it?

Digital culture measures the ability to implement change in the company.

Chart legend

- **Latecomers** have little to no use of digital technology.
- **Beginners** generally use digital technology in customer-facing activities, primarily in sales and marketing, but integration across company functions is low.
- **Developing** companies have begun using digital technologies across the entire business.
- **Advanced** businesses use digital technologies to transform themselves.

Why is my business a beginner?

Beginner businesses are in the process of improving their digital intensity and digital culture. A typical company in this category is in the process of transforming its culture and investing to make greater use of digital technology. Beginners have what it takes to reach the next level. What they need is a clear digital vision, a formal digital strategy and the investment to back it up. They will also need to find ways to promote innovation in the business as well as collaboration between employees.

In term of digital intensity, beginner businesses most likely use technology for sales and marketing, administrative, finance or human resources tasks. Some back-office operations may be using digital technologies, while other are still completed using paper or basic tools such as Excel or Word. Some level of integration exists between IT systems, but employees seldom make decisions based on data.

In term of digital culture, beginners could still do more to encourage a digital-ready culture that favours collaboration, risk-taking and innovation. Employee involvement in decision-making could be improved and training should be offered to improve their skills. Management may be supportive of change, but investment levels in digital technologies remain low compared to more advanced businesses.

Why does digital maturity matter?

Our research shows that digitally mature businesses enjoy faster sales growth, are more resilient, export more and can access financing more easily.

For a company, moving up into the BDC digital maturity categories increases the odds to:

- grow rapidly (at least 10% in annual revenue) by 81%;
- export abroad by 54% and
- be very resilient by 241%!

Therefore, this self-questionnaire will guide the respondents to the correspondent roadmaps depending on the level they are at and the benchmarks they have already reached, and subsequently to the supporting orientation programme for their facilitation to reach the next benchmark.

1.3. Advanced assessment

Once the enterprise has completed the self-assessment questionnaire and has had access to the roadmaps and courses (we will call this last process, the self-directed assessment) the platform will include an option for an advanced assessment.

This advanced assessment will be optional for the user and will consist of a **freemium interview**, where a consultant will voluntarily have an interview with the enterprise to guide them deeply on their digital transformation process.

In this sense, the platform meets all the needs of SMEs, collected from the literature review and the focus group. On the one hand, it offers a route that they can follow at their own pace, and on the other hand, it offers the possibility to reinforce the knowledge acquired autonomously, with the help of an external expert.

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Task 3: Course Design

Introduction

Deriving the theoretical background from Task 1 of PR1, where the definitions of Digital Transformation (DT) and Digital Transformation Capacity (DTC) were constructed fusing academia, practice and stakeholders, and Task 2, where the performance criteria three-level roadmap towards digital transformation, basic, standard and advanced, with incremental stepwise benchmarks were defined, the process of Task 3, which refers to the course design for the SMEs professionals (management & employees) continuous professional development of digital skills & awareness of current trends, had a solid ground to ensure its desired results. With a clear view of the concepts, needs and professional goals of the SMEs professionals based on our state-of-the-art literature review, comparative analysis and bottom-up approach the consortium had a clear understanding of the objectives the course to be designed need to attain.

Task 3 of our PR1 required us to design a competence-based course focused on the desired results, that is, to meet the needs and professional goals delivered and specified by the previous tasks. Backward design approach has the same point of departure, initiating its planning sequence from the identification of the desired results, moving to determining acceptable evidence before starting planning the relevant learning experiences and instruction (Wiggins & McTighe, 2011). Fink's (2013) learning-centred design model blended with the micro-learning concept (Hug, Lindner, & Bruck, 2006), which matches the situational and contextual needs of our target group, and Mezirow's transformative learning approach (Mezirow & Taylor, 2011), which fits perfectly the need for our target group's resilience to change, provides the locus of our course design within the 4Es framework: Enlighten-Enable-Energise-Evolve with a view to underpinning its effectiveness in accomplishing the courses' goals. In this vein, our Task 3 of PR1 describes this hybrid amalgamation for the construction of a learning paradigm shifting from the traditional content-centred ones and apt for the situational context of our target group, the SMEs professionals.

1. Methodology

Based on the conclusions of the triple helix model for the conceptualisation of the theoretical background and the need analysis of our course (academia - best practices - stakeholders), a hybrid

fusion of competence-based backward course design for significant micro-learning experiences following a transformative learning approach embedded in the 4 Es framework (Enlighten - Enable - Energise - Evolve) was adopted.

1.1. Competence-based course design

Our proposal's Task 3 of PR1 indicated a competence-based course as the most fit for purpose to complement and satisfy the objectives of the #SMEsGoDigital tool, Specifically,

“Task 3: Design of incremental stepwise microlearning experiences

Sub-task 3.1 Competence-based course design for the SMEs professionals (management & employees) continuous professional development of digital skills & awareness of current trends based on bite-size, practical, real-life examples, scenarios and best practices.”
(#SMEsGoDigital proposal)

The reasoning behind our proposal's recommendation was that competence-based training (CBT) is an instructional method based upon learners demonstrating their mastery of a task, activity or subject well enough to be assessed as “competent”. Since our course focuses on having our target group, the SMEs professionals (management & employees), “show what they know ” and apply the concepts they have learned to professional goals so as to show they have truly grasped the subject, CBT model integrated the most fit for purpose formats. The key thing about CBT is that you either can or can not (yet) do the thing that you are learning about. A competence-based course (CBC) is a course designed to allow a learner to demonstrate their ability to do something. In other words, they must be successful at the task they are given to complete that unit of work, aligning perfectly both our course's focal point of tangible professional results and our target group's idiosyncratic learning pace as working professionals who benefit from fitting their seamless coursework into their already busy schedules skipping whatever they deem as prior learning since they can show what they know when they know it. Thus, the online CBC format allows for individual learning paths and pace and provides focused training for individual professional goals.

In this vein, our CBC design process initiates with the identification of the competences on the identified areas requiring performance improvement as delivered from Sub-task 2.1 tailoring the three-level roadmap towards digital transformation, basic, standard and advanced, developed during the previous task with the course. This means that the course design will effectively customise the relevant competences to the professional performance goals as defined in the incremental stepwise benchmarks in Sub-task 2.1 creating varied opportunities for SMEs manpower that allows them to demonstrate important skills in authentic contexts. These competences will be organised in a level-oriented model following the three-level roadmaps delivered in Sub-task 2.1 allowing for a self-paced,

personalised and professionally goal-oriented learning model which enables specific performance-related outcomes. This custom-designed training based on our target group's gaps and strengths as defined in our three-level roadmaps allows training to become motivational and empowering.

1.2. Backward course design

The aforementioned emphasis on the formulation of the professional learning outcomes during the initiation of the course design impacted the whole designing process by adopting a learning-centred approach that sees learning as an active process in which learners go through a process of change. The first step in learning-centred course design (Fig. 1) is defining instruction goals: What will trainees know and be able to do, in general, by the end of the course? Once general goals have been defined, learning outcomes will be defined individually. The second step is to decide what significant learning achievements should be achieved by learners. Then, the third step is to choose a means of measuring achievement of the goals, while only the fourth and final step includes deciding how to teach in order to achieve the intended learning outcomes. Dee Fink's (2013) Backward Design paradigm shift provides an explicitly described scaffolding for designing and delivering effective learning-centred courses consisting of sequential steps by a proposed taxonomy of significant learning with a view to creating significant learning experiences.

The term "significant learning experiences" describes a process built upon the learner-centredness which interprets learning on the premise that it is not just a learner's internal process but a contextual negotiation, that is, learning is a process of negotiation between the situated context setting a target and the learner striving to achieve it. As a result, the learner should be the focus of course design when deciding what will enable a learner to perform a task and how this competence will be acquired (Li, 2015, p. 2469) aligning with our CBC learning model while enriching it with the identification of the situational factors with implications on the course such as size, level, environment etc. emphasising on the contextuality of the course and the articulation of powerful learning outcomes

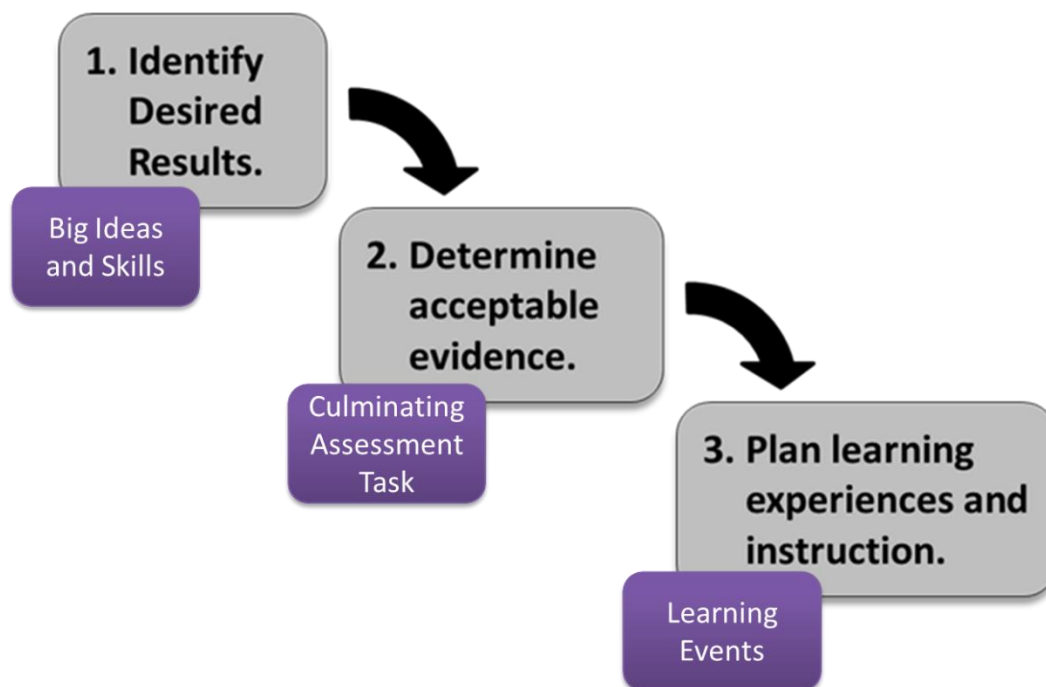
following Fink's taxonomy of significant learning covering six areas: Foundation knowledge, Application, Integration, Human dimension, Caring and Learning how to learn.

Figure 19 Backward design (Kurt, 2016)

1.3. Significant micro-learning experiences

Microlearning approach is a new alternative approach to coping with information abundance and the constant need to learn, which characterises the current professional era. Its basic premise is that people can learn better, more effectively and in an easier, more enjoyable manner if information

Backward Design



Wiggins, G. P., & McTighe, J. (2005). *Understanding by design*. Association for Supervision & Curriculum Development. is broken down into smaller units and if learning takes the shape of small steps (Hug et al., 2005). The micro-learning approach (Fig. 2), a core innovation of this project, is based on a preliminary framework of micro-learning dimensions that fit perfectly the situational context of SMEs manpower such as

- Time: relatively short effort, operating expense, degree of time consumption, measurable time, subjective time
- Content: small or very small units, narrow topics, rather simplex issues
- Curriculum: part of curricular setting, parts of modules, elements of informal learning
- Form: fragments, facets, episodes, "knowledge nuggets", skill elements

- Process: separate, concomitant or actual, situated or integrated activities, iterative method, attention management, awareness (getting into or being in a process)
- Mediality: face-to-face, mono-media vs. multi-media, (inter-)mediated, information objects or learning objects, symbolic value, cultural capital.
- Learning type: repetitive, activist, reflective, pragmatist, conceptionalist, constructivist, connectivist, behaviourist, learning by example, task or exercise, goal- or problem-oriented, "along the way", action learning, classroom learning, corporate learning, conscious vs. unconscious.



Figure 20 Microlearning vs. Macrolearning (Gawas, 2021)

Combining backward design with microlearning approach was deemed augmenting the benefits of our learning model leading to significant microlearning experiences, a hybrid new perspective for the digital transformation professionals' training.

1.4. Transformative learning theory

One of the most influential theories of andragogy (the science of teaching adults, a term coined by Malcolm Knowles), is transformative learning, developed by Jack Mezirow (Fig. 3). By definition, transformative learning is a type of experience that causes a shift in an individual's perspective or attitude. It is based on a learning theory propounded by Jack Mezirow (2000, 2011) and proposes that learning is "the process of effecting change in a frame of reference". A frame of reference includes a student's habit of the mind, as well as a personal point of view. The habits of mind are affected by previous learning experiences and cultural norms, while the points of view are the student's personal beliefs and attitudes. Mezirow identified four processes of learning:

- Elaborate an existing point of view
- Establish new points of view
- Transform previous point of view
- Transform habits of the mind.

What this means is that, rather than focusing on surface experiences, transformative learning challenges the simplicity behind learning. This is done by acknowledging the process of deep, constructive, and meaningful learning. Transformative learning supports critical ways in which learners consciously make meaning of their lives, beyond just learning a concept and leaving it at that.

Since our target group's need analysis for digital transformation capacity building yielded the need for change resilience as top priority in our conclusions, transformative learning theory was deemed essential to reinforce our learning model so as to deal with change resistance (Fig. 4). The SMEs manpower are expected not only to be agile but also change drivers but the psychological barriers are natural and important to take into consideration. The implementation of transformative learning in professional

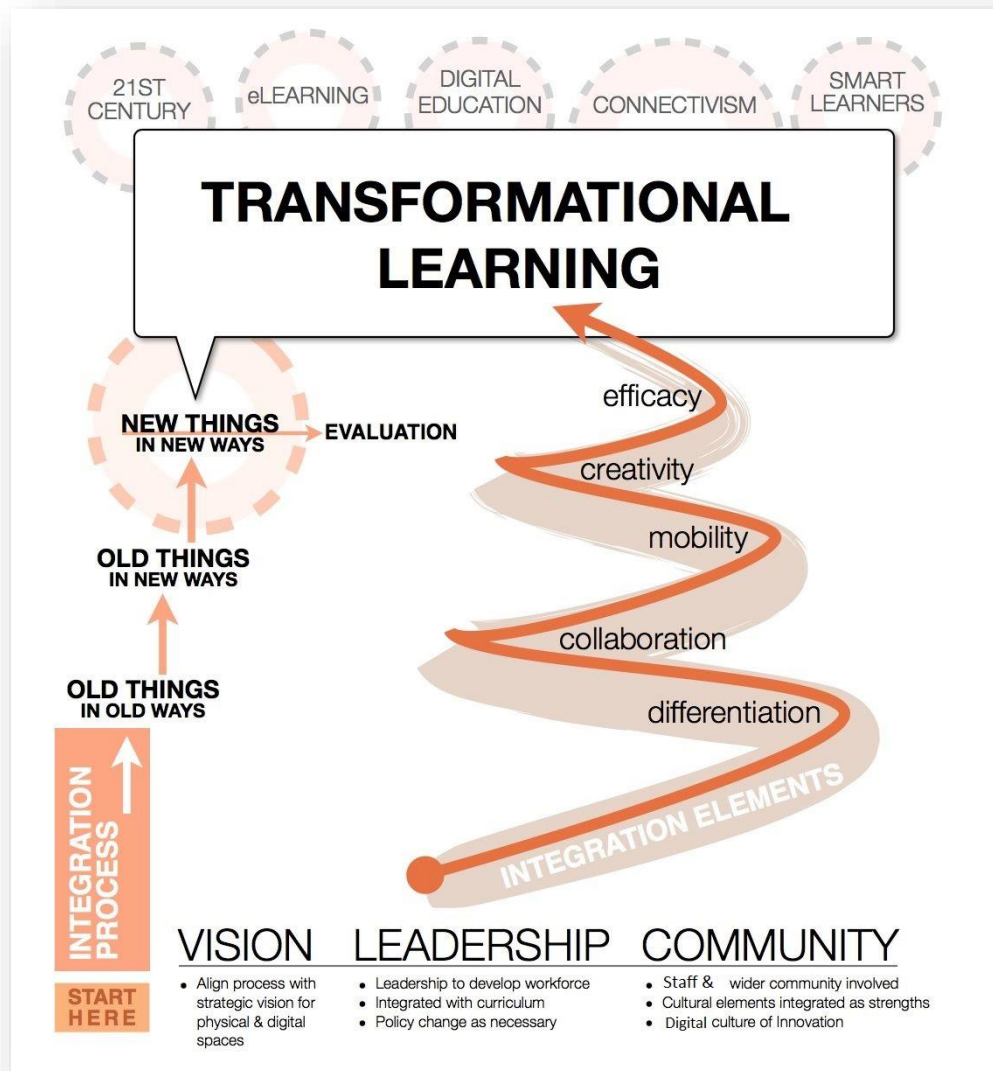


Figure 21 [Intro to Mezirow's transformative learning theory](#)

environments will nurture perspective modelling on change, earning significant benefits on their capacity to adapt to change and become catalysts of digital transformation.

Figure 22 Steps for Transformational Learning (Adapted from Jaipuria, 2018)

1.5. The 4Es framework



Our hybrid learning model for the backward design of significant microlearning experiences integrating transformative learning principles will be embedded within a 4es framework: Enlighten - Empower - Energise - Evolve. Specifically,

- **Enlighten** - At this part learners will be introduced digital-oriented concepts and potential to build awareness on the growth opportunities digital scaling offers based on the developed roadmaps in Task 2 targeting the "know-what" & "know-why" before tackling the

"know-how", as one can only fully understand the functioning of a phenomenon, if one has reached some understanding of its meaning, of its "what?", and/or its finality

- **Empower** - The second part is focused on plugging the digital skills gap complementing the "know-how", that is, understanding and skills they need to be empowered enough to take action.
- **Energise** - During this part learners are required to apply the skills and knowledge they have acquired into task-based professional goals towards their business digital transformation.
- **Evolve** - The final part concerns the nexus with the next step of their digital transformation journey. This part ensures the circularity of the digital transformation which aligns with our need analysis findings for constant advancement in a loop.

2. #SMEsGoDigital course design

Following our aforementioned hybrid learning model conceptualisation our course design proceeded with a consistently articulation of its aim and objectives establishing the professional goals and outcomes in a crystal-clear fashion with a view to satisfying the learner's need to know why they should undertake the task to know something, a crucial variable adult learners exhibit as it is the case with the target group our course addresses to (Gravani, 2012, p. 420; Knowles, Holton III, & Swanson, 2005, p. 64; Woolcock, 2006, p. 12). Aim and objectives are not identical concepts as aims define the general intentions of the training outcome with broad statements while objectives the specific learning goals expressed in a concrete measurable modality and leading to the realisation of the aim(s) (Woolcock, 2006, p. 12; Giannakopoulou, 2006, p. 58).

To this view, aim consists of general and not specifically defined goals of a training course which, when analysed in detail and refer to specific behaviours that are observable and measurable, then, they are transformed into objectives. These objectives must be clear, realistic and linked to the needs and expectations of the trainees (Kokkos, 2003, p. 6). The purpose of a course, essentially, mentions the problem to be addressed, the target group to which it is addressed and which is always general, summarising the existing and desired situation (Karalis, 2005, p. 32).

2.1. #SMEsGoDigital course aim

#SMEsGoDigital course provides essential cognitive, affective and behavioural outcomes acting as a nexus to the previously defined three-level roadmap towards digital transformation, basic, standard and advanced, with incremental stepwise benchmarks. The reasoning behind this was that the participants after self-assessing their DT readiness along their DT roadmap and identifying their competences gaps they could use this course as a tool to tailor their learning and development path

along their DT journey matching their missing knowledge, skills and attitudes with the relevant DT stages they wish to advance.

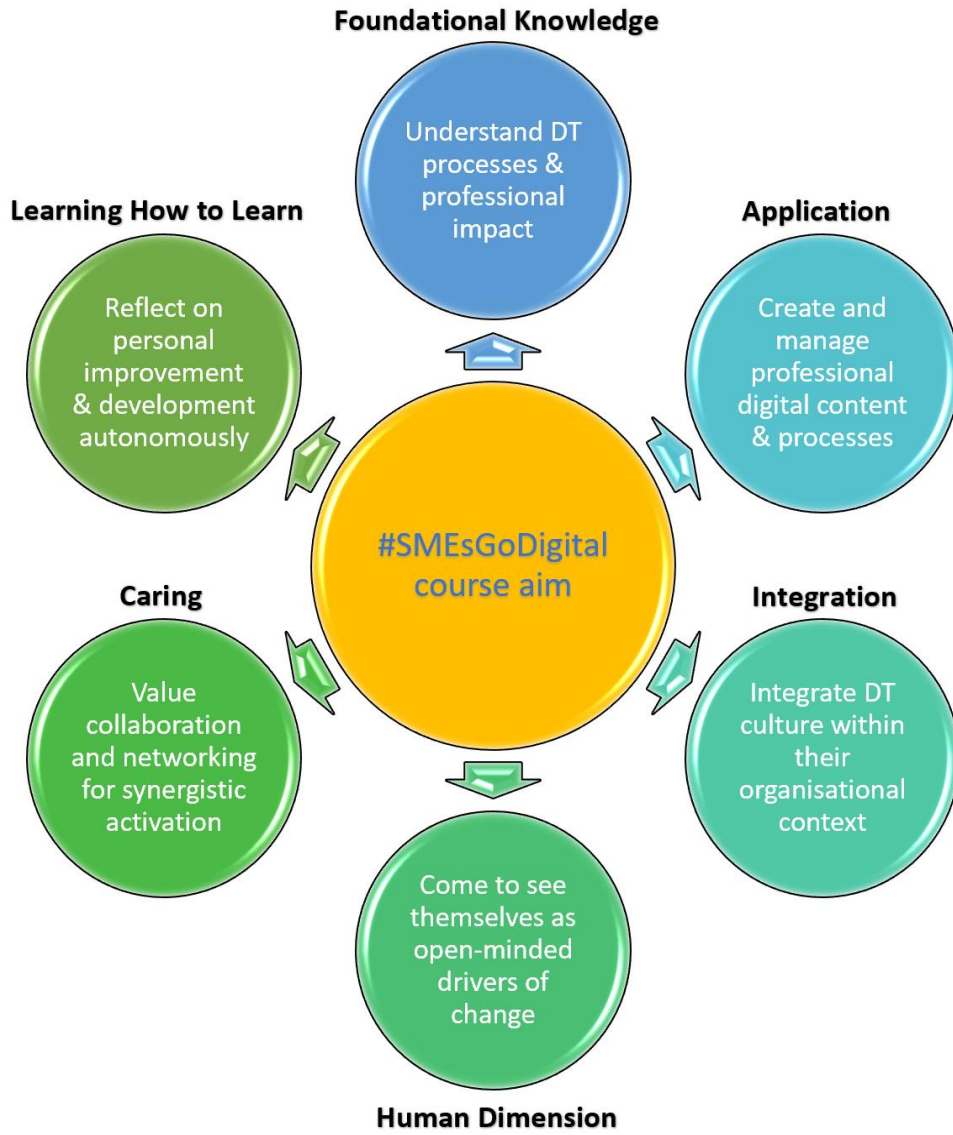
In this context our #SMEsGoDigital course aim can be summarised as following:

The aim of the #SMEsGoDigital course is to raise awareness on the benefits of DT and empower SMEs manpower with the relevant DT capacity building in order to perform the professional services linked to the #SMEsGoDigital three-level roadmap towards digital transformation.

2.1.1. Specific objectives

For the articulation of the concrete objectives which will realise the course aim a balance of quantitative and qualitative objectives were developed for a holistic set of expectations (Woolcock, 2006, p. 13), following the Dee Fink's (2013) taxonomy of significant learning experiences, which is more interdependent than hierarchical model of learning. This methodology was dictated by the learning-centred approach focusing on the learner's behaviour which is to be changed while specifically identifying what is about to be learnt and accomplished by the learners in an observable, measurable and able to be demonstrated way either quantitatively or qualitatively whenever the objectives were not quantifiable (Howard, 2012), such as soft skills, underpinning the need of compromises for what has been known as the paradigm war for a holistic approach welcoming paradigm and methodological diversity (Denzin, 2010). This aligns, also, with our andragogical approach which emphasises on explicit satisfaction of adult learners' need to know why they have to learn something new in order to undertake their own responsibility to learning it (Knowles, Holton III, & Swanson, 2005, p. 64; Gravani, 2012, p. 420). Figure 5 presents the #SMEsGoDigital course learning goals to realise its aim.

Figure 23 #SMEsGoDigital course objectives



2.2. Target groups

The project target groups are professionals in micro & SMEs, who wish to move or have already made the first steps towards transforming their companies digitally and are ready to embrace orientation, support and capacity building via the #SMEsGoDigital tool, self-employed and future entrepreneurs, who wish to enter the digital market. They will be actively involved in their tool design, its functionalities, the support and orientation they need via roadmaps, the e-course of micro-learning experiences, the hub’s piloting and evaluation to identify common and mutually serving must-haves and nice-to-haves (not sector-specific) applicable to all contexts.

2.3. Situational factors

The need for support fit for SMEs situational context was included in the conclusions of Task 1 DTC building need analysis based on our state-of-the-art literature and best practices review which was also confirmed during our focus group discussions with stakeholders within our bottom-up approach. This finding grounded our opting for a backward course design since the initial step for a quality backward course design is to consider the contextual situation carefully with an in-depth Situational Analysis (Fig. 6)

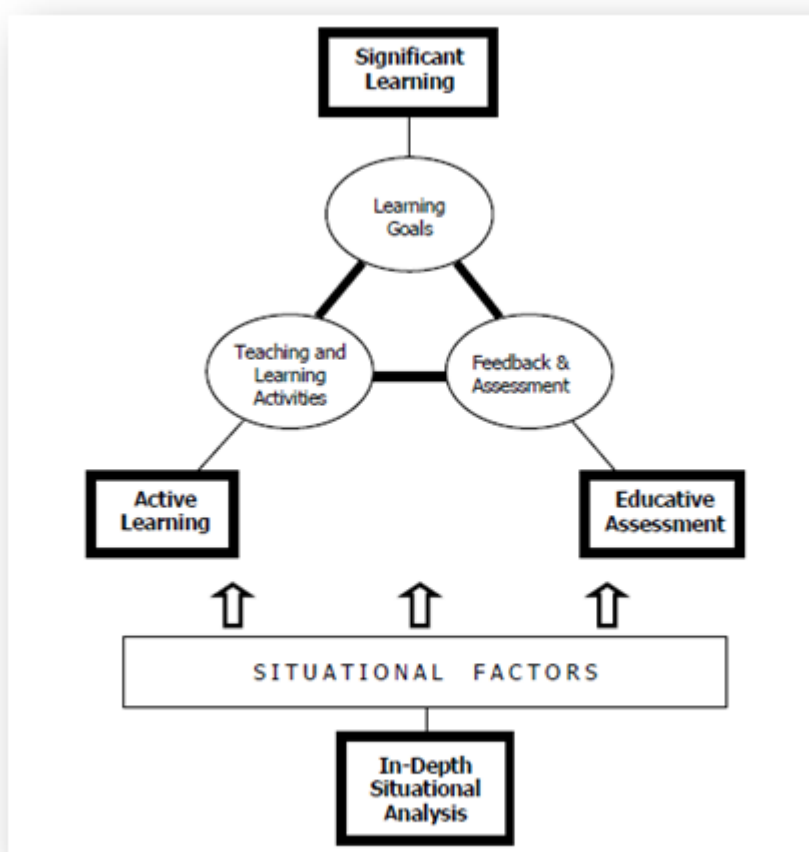


Figure 24 Dee Fink's backward design (Dee Fink, 2003, p. 25)

It is important to gather important information which may impact the teaching learning situation and will affect the important decision on the questions which will follow within the next steps of this initial phase. The general categories Dee Fink (2003) proposes as potentially affecting a course are the following (p. 6):

- Specific Context of the Teaching/Learning Situation
- Expectations of External Groups
- Nature of the Subject
- Characteristics of the Learners

- Characteristics of the Teacher
- Special Pedagogical Challenge

#SMEsGoDigital course will be designed to make going digital simple for SMEs focusing especially on the micro-ones (1-10 employees) and self-employed who are lagging behind the most and lie at the heart of our project. Our target group is the self-employed and the micro & SMEs' manpower: management and employees aiming at meeting their needs for the changing nature of doing business and the skills & competencies needed for the new green, digital and distance economy. Literature suggests that our target groups lack light, simple, easy-to-use, agile, and practical tools and digital competences capacity to guide them through current trends and demonstrate their importance based on practical examples. Our target groups need support with practical guidance and orientation with simple roadmaps to take them from their current stage to stepwise implementations of quick-wins covering incrementally their digital capacity gap. Also, this step-by-step approach to implement feasible and sequential objectives requires digital competence upskilling which takes into consideration the barriers of our partnership's target groups availability timewise. The SMEs manpower, especially the micro-ones and the self-employed our course is addressed to, need small, chunk-size learning units with connection with their working processes and signposts to navigate through the archipelago of available information. This demand fits in very well with the concept of micro-learning, an innovative e-learning technology our project introduces to the professional development arena of VET. A particular challenge our course design should take into consideration is the level of familiarity of the learners in the autonomy they will be ascribed regarding their learning having previous experiences in traditional classroom perspective which is juxtaposed with andragogy and hybrid methodologies. Also, fear and negativity towards DT was an issue which emerged during our need analysis as important challenges in need of support to be tackled. Therefore, potential resistance should be taken into consideration for our course design.

Based on the above, our course is expected to be:

- online (e- & mobile-learning)
- connected with benchmarks as depicted in our 3-level roadmaps
- autonomous for learners to construct their self-tailored learning paths
- focused on core professional processes
- less than 5 minutes per learning unit
- easily searchable
- single professional performance-based learning unit
- motivational content & resources

2.4. Professional microlearning outcomes

In tandem with the backward design model Dee Fink (2003) developed the Taxonomy of Significant Learning with 6 interactive cognitive, meta-cognitive and affective areas to be used selectively depending on the learning outcomes desired. Fink (2007) refers to his significant learning taxonomy as building upon Benjamin Bloom's (1956 as cited in Fink, 2007) traditional six general categories of learning but, instead of having a hierarchical order, he views his taxonomy learning outcomes as interactive and interdependent as depicted in Figure 7 and each one involving learning something significant.

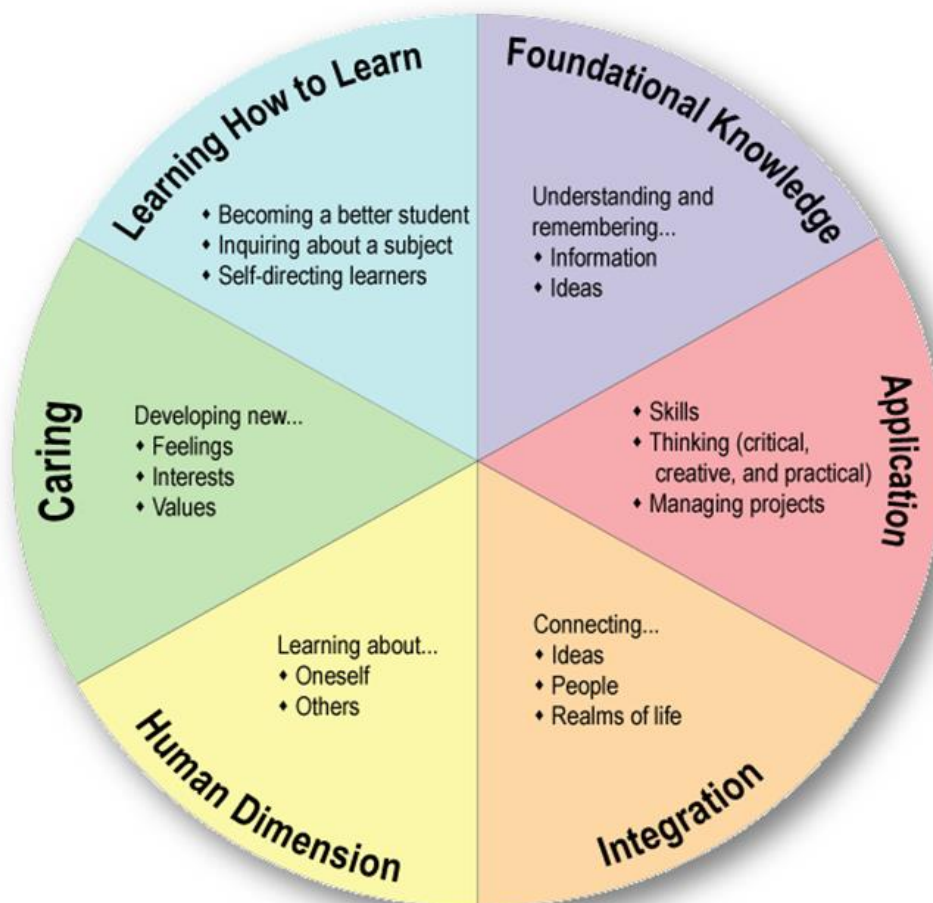


Figure 25 Dee Fink's significant learning taxonomy

This taxonomy suitably integrates both our competence-based and transformational learning models since Foundational Knowledge, Application & Integration cover the competencies, that is, the knowledge, skills and attitudes for the optimal performance of the desired professional goals while Human Dimension, Caring & Learning How to Learn cover the recognition of the need for transformation with the integration of the new perspective into the learners' lives.

Following the explicit description of Dee Fink's taxonomy of significant learning with the clarifying questions and verbs (see Annex A) the formulation of microlearning outcomes for each desired professional goal as derived from the #SMEsGoDigital roadmaps' benchmarks will be elicited as the next step.

2.5. Authentic performance assessment

A learning-centred course calls for a more sophisticated approach to this aspect of course design. A set of feedback and assessment procedures collectively known as "educative assessment" is needed. This process is designed to enhance the quality of student learning.

- **Forward-Looking Assessment** incorporates exercises, questions, and/or problems that create a real-life context for a given issue, problem, or decision. To construct this kind of question or problem, the course developers have to "look forward," beyond the time when the course is over, and ask: "In what kind of situation do I expect learners to need, or be able to use, this knowledge?" Answering this question makes it easier to create a question or problem that replicates a real-life context. The problem should be relatively open-ended, not totally pre-structured. If necessary, certain assumptions or constraints can be given. Formulate one or two ideas by identifying one or more situations in which students are likely to use what they have learned. Then replicate those situations with questions, problems, or issues.
- **Criteria and standards** should be clearly explained determining "What are the general traits or characteristics of high-quality work in this area?" These are the criteria for evaluation. On each criterion, standards must be established to define work that is acceptable, good, or exceptional. For one of your main learning goals, identify at least two criteria that distinguish exceptional achievement from poor performance. Then write two or three levels of standards for each criterion.
- **Self-assessment** is equally important for learners to assess their own performance either in groups or individually with given criteria and later developing their own. Create opportunities for learners to engage in self-assessment of their performance (Fink, 2005).

In addition, our course focuses on whether learners demonstrate they are competent for the certain task or activity they have learned or not yet competent. Therefore, authentic assessment provides direct evidence that they are applying learned knowledge and skills competently in their real professional world. Linking their learning with real professional life tasks derived from our roadmaps'

benchmarks will evidently follow and evaluate their progress and advancement through their DT journey.

2.6. #SMEsGoDigital course content

Our course content is directly connected with the #SMEsGoDigital three-level roadmaps with its stepwise benchmarks delivered in Task 2.1. This is the reason why the content sequencing follows its three levels - Basic, Standard and Advanced - focusing on the core competencies derived from the defined benchmarks so as to best facilitate learners to autonomously proceed constructing their learning path grounded on their self-evaluation of where they are now and where they wish to be.

In this vein, our course content integrates lessons, tools and resources classified by the given levels to maximise the course learners’ capacity.

- **Course:** Modules based on the three-level roadmaps benchmarks
- **Tools:** Live Events, Webinars, Success Stories
- **Resources:** Open and Free Educational & Training Resources

2.7. #SMEsGoDigital course framework

A conceptual framework for determining course goals, activities and assessment is invaluable so that an aligned and integrated course design is delivered. The 4Es framework involves an effective approach to designing learning experiences serving as guidelines. Table 1 below provides explanatory guidelines for our innovative 4Es framework:

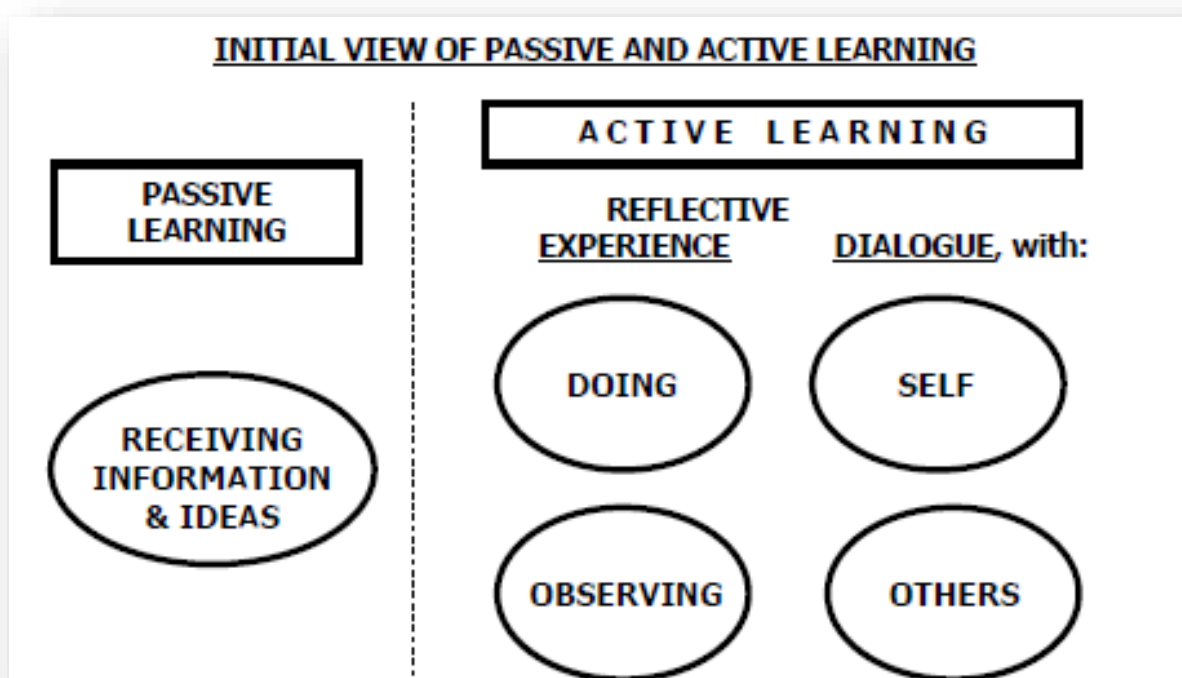
4Es	Enlighten	Empower	Energise	Evolve
What to design	Provide multiple means of engagement to stimulate interest and motivation for learning	Provide multiple means of representation to present information and content in different ways.	Provide multiple means of action and expression so that learners can demonstrate and express their learning.	Provide multiple means of incremental adaptation to progressively continuous available information and

				competencies
Brain networks affected	Affective networks	Recognition networks	Strategic networks	Transfer networks
Learning domain	The “WHY” of learning	The “WHAT” of learning	The “HOW” of learning	The “WHAT NEXT” of learning
Goal	Purposeful and Motivated learners	Resourceful and Knowledgeable learners	Strategic and Goal-Directed learners	Autonomous Learning Agents

Table 7 Adapted from *Universal Design for Learning (About Universal Design for Learning, 2022; Parisi et al., 2019)*

2.8. #SMEsGoDigital course learning activities

Design guidelines for the learning activities to be incorporated in the learning content to be developed in PR2 follow the concept of active learning in line with the backward design model propositions (Fink, 2013). The concept of active learning (Fig. 8) underpins the benefits of “doing things” and engaging learners for their knowledge acquisition and retainment. The main idea is that involving learners actively rather than considering them “empty barrels” waiting passively to be



transfused, the new knowledge and skills enables learners to be involved and engaged with the content resulting in their satisfaction and success in learning.

Figure 26 Passive versus Active Learning (Dee Fink, A Self-Directed Guide to Designing Courses for Significant Learning, 2003, p. 16)

In addition, our target group, as identified during the situational factors analysis which initiated our backward design process, calls for an andragogical approach constituent of which is experiential learning with emphasis on interaction and self-discovery (Knowles, Holton III, & Swanson, 2005, p. 116).

Designing significant learning activities requires a holistic view of active learning which Dee Fink (2003) conceptualizes as depicted in Figure 9 below.

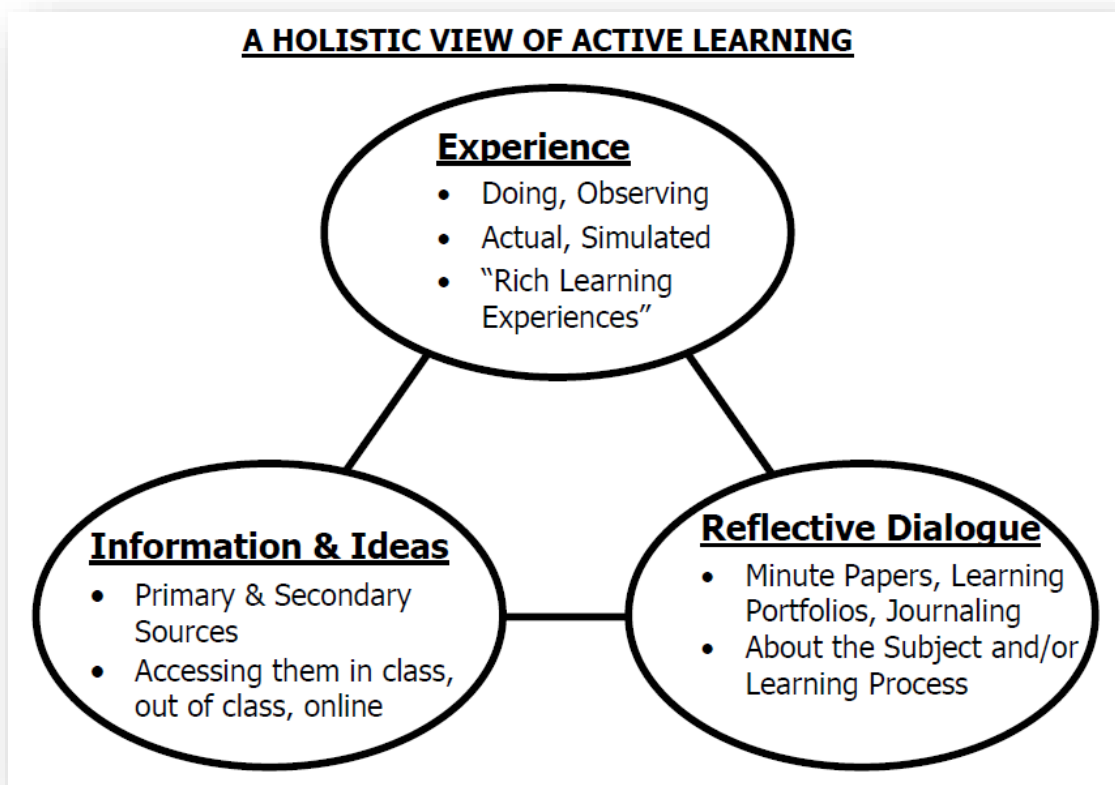


Figure 27 Dee Fink's (2003) conceptualisation of a holistic view of active learning (p. 17)

The Model of Holistic Learning proposes that learners need to acquire the necessary information and ideas often accomplished by either readings or lectures; observe or do experientially providing a rich learning experience such as case studies, role playing, problem solving and decision-

making activities, real experience stories; reflect on the meanings of the concepts and experiences via reflective journals and/or learning portfolios (Dee Fink, 2007).

Alignment of the both the learning outcomes and assessment with opportunities to provide learners with rich learning experiences with a view to both learning new concepts and skills and practising them with hands-on activities while encouraging them to think reflectively served both our project's backward course design model and our andragogical approach and, thus, the design of learning activities for holistic and active learning as depicted in Figure 10 frames the methodology for the learning content development which will take place during PR2.

LEARNING ACTIVITIES FOR HOLISTIC, ACTIVE LEARNING

	GETTING INFORMATION & IDEAS	EXPERIENCE		REFLECTIVE DIALOGUE, with:	
		"Doing"	"Observing"	Self	Others
DIRECT	<ul style="list-style-type: none"> Primary data Primary sources 	<ul style="list-style-type: none"> "Real Doing," in authentic settings 	<ul style="list-style-type: none"> Direct observation of phenomena 	<ul style="list-style-type: none"> Reflective thinking Journaling 	<ul style="list-style-type: none"> Dialogue (in or out of class)
INDIRECT, VICARIOUS	<ul style="list-style-type: none"> Secondary data and sources Lectures, textbooks 	<ul style="list-style-type: none"> Case Studies Gaming, Simulations Role Play 	<ul style="list-style-type: none"> Stories (can be accessed via: film, oral history, literature) 		
ONLINE	<ul style="list-style-type: none"> Course website Internet 	<ul style="list-style-type: none"> Teacher can assign students to "directly experience _____." Students can engage in "indirect" kinds of experience online. 		<ul style="list-style-type: none"> Students can reflect and then engage in various kinds of dialogue online. 	

Figure 28 Course's model of learning activities development (Dee Fink, *A Self-Directed Guide to Designing Courses for Significant Learning*, 2003, p. 18)

2.9. #SMEsGoDigital course modules

Micro-modularity frames the instructional design of the course for the construction self-contained modular blocks of the learning content to facilitate micro-learning consumption bites with a view to applying a constructivist theoretical lens to our digital course. In this vein, micro-modularity enables the splitting of the course into bite-sized, topic-centred packages allowing for their flexible utilisation either independently or interrelated according to the learners' pace and prior knowledge.

In this vein, our course consists of modules linked to our three-level roadmaps benchmarks as defined in Task 2.1 for core cross-sectoral competences. Each module integrates micro-learning units based on the 4Es framework as explained in the previous sections.

Level	Module	Micro-Learning Units			
		Enlighten	Empower	Energise	Evolve
BASIC	Going digital	Why should my business go digital?	Create your e-mail	How do I collaborate remotely?	Ready to turn your business digital?
			What is a Google document?		
			What is Zoom?		
			Are my passwords safe?		
	e-commerce	The rise of e-commerce	How to build your website	Take your business online	Earning money from your online business
			E-commerce with Shopify		
			Your Facebook shop		
			How do I sell my services online?		
	e-payments	Payments in the digital era	What kinds of digital payments are there?	How do I set up an online payment?	How cloud technology can future-proof digital payments?
			Are online payments safe?		
			How do I get paid from my online business?		
	Cloud accounting	Payments + cloud accounting: 4 reasons smart businesses connect them	How to choose cloud accounting or invoicing software	Digitising Small Business Accounting	Digital tools to boost your business
			e-Invoicing - Getting set up		

			to send e-Invoices		
			Staff management made simple		
			Choosing a Payroll System		
Digital tools	Why do small business embrace digital tools?	5 Must-have Free Digital Tools to Help Boost SME Productivity	Look for subsidies for your digital tools	Get more benefits from your digital tools	
		Collaboration Tools			
		Booking systems			
		Creative Tools			
		Productivity Tools			
		CRM Systems			
Data analytics	What is data and why does it matter?	Sales & Channels	How business insights can help you grow	Upskilling your staff	
		Customer feedback			
		Data & Analytics			
		Security & Data Protection			
e-learning	6 Benefits of Upskilling your workforce	A strategist's guide to upskilling	Foster a culture of learning in your business	Profiting from your digitalisation	
STANDARD	Digital marketing	Role of digital marketing in promoting SMEs	Digital Marketing Platforms & Channels	Build your social media channel	Moving your digital transformation forward
			How to develop a social media strategy	Launch your digital campaign	
			Digital Marketing Insights		

ADVANCE D			Best free online tools for smart marketing		
			What is SEO		
	B2B trade platforms	Easy network & trade	Six criteria to look for in a B2B eCommerce marketplace platform	How to make the change to e-procurement	Procurement: Capitalising on the power of crowd
			How does an e-procurement system work?		
	Crowdsourcing	Raising capital for your SME	What is Crowdsourcing?	Crowdfunding Planning	New business models for a changing world
			Crowdfunding for Business		
	Integrated smart workplace	Can I manage my business virtually?	What Goes into a Successful Wearable Solution for Business?	Plan your smart business	All aboard to future Tech
			Making Cloud your new friend		
			Save time with smart collaboration tools		
			Virtual staff management		
			Advanced Data Analytics		
			How 3D printing can help small businesses?		
			How Internet of Things (IoT) can make your work easier		
	Big Data	Big Data value	Big Data for SMEs growth	Is your business ready for Big Data benefits?	Maximising Big Data value

Machine learning	Machine Learning What it is and why it matters	Streamline your business with machine learning	What processes can be supported by machine learning techniques in your business?	Machine learning versus AI: what's the difference?
Artificial Intelligence	What does Microsoft Bing's new AI assistant mean for your business?	AI applications for SMEs	Can AI leverage your business?	How AI and Blockchain are Changing Businesses
Blockchain	Do you need blockchain?	The next revolution is written with blockchain	Implementing Blockchain Technology in your business	Blockchain and IoT opportunities for the SMEs
Internet of Things	Why Every Single Small Business Needs the Internet of Things	5 Benefits of the Internet of Things (IoT) for SMEs	How can IoT transform your supply chain?	How AR and VR technology can enhance IoT applications
		Top 8 IoT applications and examples in business		
Augmented Reality (AR) – Virtual Reality (VR)	Augmented Reality for Everyone	How AR and VR are Transforming the Future of Businesses	Augmented Reality and Business: Can your business join in?	How AR/VR Is Driving Automation and Robotics
Automation and Robotics	Robotisation: Opportunity or threat to SMEs?	Helping Small and Medium Enterprises to Automate with Robots	Can SMERobotics take your business to Automation?	How Industry 4.0 is Becoming Affordable for SMEs
		Process automation for small businesses		

2.10. #SMEsGoDigital course structure

#SMEsGoDigital e-learning course will be structured by level, content type and topic in sequential order, however, in autonomous easily searchable learning units to facilitate learners to tailor their learning path in line with their needs. Table 2 below depicts our course’s structure:

Level	Content type	Topic	Learning unit
Basic – Standard - Advanced	e-course	Modules	Lessons
	Tools		Live events
			Webinars
			Success stories
			Links to free courses
	Resources		Links to relevant external sites

Table 8 #SMEsGoDigital course structure

3. Guidelines for developers

In order to help course developers to deliver PR2 in an effective manner ensuring its harmonisation, this section will provide the working tools for the development of the course. Table 3 shows how the course is organised while Table 4 depicts the proposed Lesson Plan to use with indicative lists

E-course organisation			
Session	Topic	Guidelines	Details
Welcome	Course presentation	Text presenting the course's aim	1 sentence motivational text Image with the course specific objectives Course syllabus in pdf
		Video/audio slides presenting the course and its modules	1-2 mins duration ppt based on project template
Module	Module presentation	Text presenting the professional goal	1 sentence motivational text 15-20 minutes for each module in total
	Enlighten	Video/Infographics/podcast/audio slides/short article to probe background knowledge & stimulate interest for the module selecting from indicative list.	2-5 mins duration per micro-learning activity
	Empower	Micro-learning activities related to module's topic selecting from indicative list.	2-5 mins duration per micro-learning activity
	Energise	Hands-on activity relating the module's content with authentic professional tasks selecting from indicative list.	Guide learners to apply knowledge
	Evolve	Video/audio slides to stimulate self-reflection and/or advancement to the next module selecting from indicative list.	2-5 mins duration ppt based on project template

Table 9 E-course organisation

Desired Core professional goal	Benchmark e-commerce
Level Basic	Framework Enlighten

Professional micro-learning outcomes (Choose verbs from the list below. Also see Appendix A & B)

Foundational Knowledge

Fink's Taxonomy of Significant Learning

	Foundational Knowledge	Application	Integration	Human Dimension	Caring	Learning How to Learn
Definition	Recall and demonstrate understanding of information and ideas.	Demonstrate skills. Engage in critical, practical and creative thinking.	Perceive connections between ideas, experiences, disciplines and realms of life.	Gaining a new understanding of themselves and others. Determine personal and social implications.	Acquire new interests, feeling or values about what they are learning.	Learning about the process of their particular learning and learning in general.
Actions	<ul style="list-style-type: none"> • Remember • Recall • Identify • Explain • Predict • Describe • Define • Summarize • Recognize • Arrange • Indicate • Classify 	<ul style="list-style-type: none"> • Use • Critique • Manage • Solve • Assess • Judge • Do [skill] • Imagine • Analyze • Calculate • Coordinate • Communicate 	<ul style="list-style-type: none"> • Connect • Identify the interaction between • Relate • Compare • Contrast • Integrate • Identify the similarities between • Determine the cause 	<ul style="list-style-type: none"> • Interact with others • Compare viewpoint • Discuss (world events) • Identify the impact • Plan (a change) • Determine (why actions occurred) • Advocate • Collaborate • Support • Resolve • Share 	<ul style="list-style-type: none"> • Get excited about • Prepare to • Increase interest • Value • Reflect • Change • Adjust (beliefs) • Commit • Develop (a plan) • Explore • Express • Pledge 	<ul style="list-style-type: none"> • Develop (a plan) • Identify resources • Construct knowledge about • Frame useful questions • Analyze • Inquire • Reflect • Research • Self-assess • Self-monitor

Adapted from Fink, L. D. (2013). *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. San Francisco: Jossey-Bass.

Authentic assessment performance task (Choose from the indicative list below)

Foundational Knowledge

Indicative Learning Assessment Techniques list

Foundational Knowledge

- Peer or self-assessment
- Multiple choice quizzes
- Case study quizzes
- Background knowledge quizzes

Application

- Creation of professional portfolio with action plans
- Professional Projects
- Team Projects
- Products
- Practical Demonstration
- Indirect Demonstration
- Workplace documents
- Draw a road map for lifelong learning for certain cases
- Answering set of questions following the learning activities
- Self-evaluation for keeping in line with the goal of improvement during the training

Integration

- Professional assignments
- Fact or opinion quizzes
- Workplace documents
- Simulation
- Third party reports
- Products
- Practical Demonstration
- Indirect Demonstration

Human Dimension of Learning (learning about & changing one's self)

- Iterative self-evaluation
- Open questions quizzes
- Third party reports

Human Dimension of Learning (understanding & interacting with others)

- Discussions in groups or course forum
- Learning Portfolio
- Quizzes
- Multiple choice questions
- Third party reports

Caring

- Discussions in groups
- Self-evaluation
- Case study quizzes
- Third party reports

Learning how to learn

- Discussions in groups or course forum
- Peer or self-assessment
- Learning Portfolio
- Quizzes
- Multiple choice questions
- Maintain a personal tracking record of self-improvement

Micro-learning activities (Choose from the indicative list below)

Foundational Knowledge

Indicative micro-learning activities list

Foundational Knowledge

- Assigned videos
- Infographics
- Short Presentations and articles
- Own web research
- Group/forum discussions
- Peer collaboration in problem solving scenarios

Application

- Short-term projects
- Real Professional activities
- Scenario-based professional activities
- Own web research
- Team-playing/ Small group discussions
- Case studies on adjusting the learning procedure according to mentee's needs

Integration

- Explore sources on the internet
- Simulations with real professional scenarios
- Case scenario role-playing
- Checklists

Human Dimension of Learning (learning about & changing one's self)

- Assigned videos, presentations, checklist templates and articles
- Own web research
- Forum discussions
- Small group discussion
- Peer collaboration in problem solving scenarios

Human Dimension of Learning (understanding & interacting with others)

- Assigned videos, presentations, checklist templates and articles
- Own web research
- Forum discussions
- Small group discussion
- Peer collaboration in problem solving scenarios

Caring













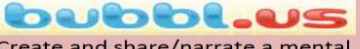



- Team playing/ small-group discussions
- Questionnaires and feedback from the learners
- Roundtable or 360-degree evaluations (receiving feedback)

Learning how to learn

- Assigned videos, presentations and articles
- Own web research
- Be a follower of related DT social media
- Forum discussions
- Small group discussion
- Peer collaboration in problem solving scenarios

Online Tools & Activities to Support Fink's Taxonomy of Significant Learning

"For learning to occur, there has to be some kind of change in the learner. No change, no learning."

Significant Learning	Description (Fink p. 29)	Sample Course Goal: (Fink p. 34)	Sample Online Tool Supported Activities				
Learning How to Learn	<i>Becoming a better student; inquiring about a subject; Self-directing learners</i>	Know how to keep on learning about this subject after the course is over.	Access journals in the field; subscribe to the journal's feeds (Twitter, Feedly). twitter.com		Reflect on the subject; self-assessment of ability; & interest. Moodle or wordpress.com	ePortfolio including reflective writing. mahara.org	
Caring	<i>Developing new feelings, interests, values</i>	Care about the subject and learning more on the subject.	 Create a 3 minute video that persuades others to care about an aspect of the subject. Videoscribe , flipgrid , animoto		 Collaboratively create a site showcasing the value and interest of the subject. sites.google.com	Participate in debates & create VBates (video debates). idebate.org	
Human Dimension	<i>Learning about oneself, others</i>	Understand the personal and social implications of knowing about this subject.	Blog or discuss ways in which one's personal life affects and is affected by the subject. LMS, wordpress.com , weebly , voicethread		Be an ethical, responsible member of a team serving others; tools to support groups. drive.google.com	Observation of real-life human experiences related to the content; report back to the class. Moodle or LMS	
Integration	<i>Connection ideas, people, realms of life</i>	Be able to relate this subject to other subjects.	Aggregate, curate, and mashup web content to make connections. feedly.com or flipboard.com on a mobile device.		Create a description or analysis of the relationship between two or more concepts. Infogram , Piktochart , wordpress.com	Curate pins on competing ideas or concepts into relevant boards to integrate and make connections. Pinterest.com	
Application	<i>Skills; Critical, creative, and practical thinking; Managing projects</i>	Know how to use the content.	Analyze and critique an issue or case study. Moodle, wordpress.com , or Padlet		Apply the skills in context; document ability with video. youtube.com , videoscribe , flipgrid , animoto	Create a recommendation for a corporation in a real-world problem/situation. Powtoon or sites.google.com	
Foundational Knowledge	<i>Understanding & remembering information & ideas</i>	Understand and remember key concepts, terms, relationships.	 Create and share/narrate a mental map or conceptual structure of major concepts. Mindmeister , bubbl.us , etc.		Create a presentation: Explain & predict concepts & ideas. prezi.com	Have students access and interact with primary sources of content. ted.com , Library of Congress , etc.	 

2018. Version 2.0 Adapted by Janine Lim from content in L. Dee Fink. *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses* (p. 30). Kindle Edition.

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APPENDICES

APPENDIX I: [#SMEsGoDigital] Qualitative Criteria - Screening phase of the Literature Review

[#SMEsGoDigital] Qualitative Criteria - Screening phase of the Literature Review

The following assessment should be repeated for all publications retrieved during the searching phase of the Literature Review.

Publications with an average score lower than 2, should be removed before proceeding with the clustering and analysis phases.

 ilonaeftheria@gmail.com (not shared) [Switch accounts](#) 

*Required

Publication's citation *

Please insert the citation of the publication you are assessing below.

Your answer

For each of the publication's quality assessment questions insert the appropriate * statement as described in the scale below.

- 1 - The issue is not mentioned at all.
- 2 - The issue is mentioned a little.
- 3 - The issue is adequately addressed.
- 4 - The issue is appropriately addressed.

	1	2	3	4
Is there a clear statement of the research aim(s)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is there a clear statement of the research question(s)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is there a clear statement of the research findings?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is the study valuable for future research or practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does the paper clearly discuss limitations or validity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Submit
Clear form

APPENDIX II: Detailed files of literature review and best practices data collections

The following files include the total data of the publications included in the literature review, as well as the practices from which best practices were highlighted.

Literature Review data collection:

https://docs.google.com/spreadsheets/d/1CowWAwT2w2OpvZF1ssfR26At247OspRzsVOXEgmk7XM/edit?usp=share_link

Practices data collection:

https://docs.google.com/spreadsheets/d/1udRxH5Nw1IzjNXufiE8Ev0Gpze4cTHwe/edit?usp=share_link&oid=107732203256868496832&rtpof=true&sd=true

Examples of the best practices highlighted from the total list of practices.

- <https://www.restartsmes.eu/>
- <https://www.imda.gov.sg/smesgodigital>
- <https://www.crowdpolicy.com/en/>

The following tables include the relevant information concerning each RQ from the detailed literature review file mentioned above.

Table 10: Literature review data concerning RQ1

Pre-digital organizations are established companies belonging to traditional industries, such as retail, automotive, or financial services, that were financially successful in the pre-digital economy, but to which the digital economy poses an existential threat (Ross et al., 2016). Unlike born-digital organizations such as Alphabet, Amazon or Tencent, pre-digital organizations often need to change their entire organization, business model and processes as they adopt digital technologies (Bharadwaj et al., 2013; Sebastian et al., 2017; Tumbas et al., 2017a). Digital technologies can transform an organization's products, services, operations, and business models, as well as its competitive environment (Fichman et al., 2014; Hess et al., 2016; Lucas et al., 2013; Yoo et al., 2012).

For pre-digital organizations, digital transformation is a holistic form of business transformation enabled by information systems (IS) that is accompanied by fundamental economic and technological changes at both the organizational and industry-level (Besson and Rowe, 2012; Crowston and Myers, 2004; Venkatraman, 1994).

DT can be regarded as an iterative organizational process, which comprises incremental and disruptive changes enabled by digital technology. It comprises the ability to adapt a BM with or to new technologies and technological innovations in the socio-technical environment, which have an impact on the operations and the customer experience.

Enterprise transformation can happen incrementally when expected, or in a “big bang”. Besides the utilization of digital potential and the creation of a digital value network and a digital customer experience, the DT offers opportunities to change or add BM elements. It might also have an impact on the entire BM. Indeed, DT describes a process that moves beyond catching up with the status quo. It “is a technology induced change on many levels in the organization that includes both the exploitation of digital technologies to improve existing processes, and the exploration of digital innovation, which can potentially transform the business model”. This corresponds to the BM design themes of efficiency and novelty and the topic of organizational ambidexterity. Furthermore, DT is concerned with the digitalization of the whole organization. This allows the generation and exchange of large quantities of data. Therefore, DT is also fueled by data-driven innovations.

DT has been defined as an iterative organizational process, comprising incremental and disruptive changes enabled by DT (Barann et al., 2019), to automatize business process (Lombardi et al., 2019), make the current logistical and administrative business that underpin day-to-day operations more efficient – thereby enabling the business to be more competitive (Lu et al., 2017). Despite its technological profile, its implementation requires the ability to adapt the business model to the new technologies and lead technological innovations in the socio-technical environment (Frank, et al., 2019; Muller et al., 2018; Lu, 2017; Moeuf, et al., 2017; Bauer et al., 2015).

Digital transformation is **an evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes and customer experiences to create value**

Institutional: European Commission (2019) : Digital transformation is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services.”

OECD (2018): “Digital transformation refers to the economic and societal effects of digitization and digitalization. Digitization is the conversion of analog data and processes into a machine-readable format. Digitalization is the use of digital technologies and data as well as their interconnection which results in new or changes to existing activities.”

Academic: Ismail, Khater, and Zaki(2017): "Digital transformation is a “process through which companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience (comprising digitally enabled products and services) and operations (comprising processes and decision-making), and simultaneously impacting people (including skills talent and culture) and networks (including the entire value system)".

Schwertner (2017): “the application of technology to build new business models, processes, software and systems that result in more profitable revenue, greater competitive advantage, and higher efficiency.”

Business experts: Deloitte (2018) “Digital transformation is the use of technology to radically improve the performance or reach of an organization. In a digitally transformed business, digital technologies enable improved processes, engaged talent, and new business models." **Bloomberg (2018)**: “Digital transformation requires the organization to deal better with change overall, essentially making change a core competency as the enterprise becomes customer-driven end-to-end. Such agility will facilitate ongoing digitalization initiatives but should not be confused with them.”

The aim stated by the authors within the current research was to get an insight into the **concept of digital transformation, specifically business DT, focusing especially on the human element**. The analysis resulted in **the conceptual model of digital transformation that contains three main blocks: DT drivers,**

DT categories and DT outcomes.

[...] the main elements of the concept are processes and technologies, but it should be pointed out that digital transformation is not about the implementation of IT solutions only. We should think about it in a broader context as about “organizational change”, “cultural transformation” and “moving towards customer-centric approach”. In this regard, the element “people” becomes essential, and even more important than anything else does.

Vial (2019) suggests a definition of DT as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies”

Digital transformation: one could describe this as “digitalization on steroids”, as it were, for it refers to the integration and coordination of several parallel internal and external digitalization processes, using multiple digital technologies. Newly collected information is systematically analysed and acted upon, the ultimate result being to alter modes of production and ways of doing business. New roles are created and/or the nature of existing roles changes fundamentally

Digital transformation strategy has been defined as “a central concept to integrate the entire coordination, prioritisation, and implementation of digital transformation within a firm” (Matt et al., 2015, p. 339). Consequently, interaction, communication, collaboration, within the firm, are central points of interests (Oney et al., 2018). With regard to access and/or implementation of novel technologies in particular, external relationships and partnerships are also significant, especially for SMEs (Kilubi and O’Regan, 2016; Neirotti et al., 2018).

The approach taken in this paper focuses on the “who”, i.e. actors within and around the organisation, their values, beliefs, attitudes, communications, as well as their understanding of issues experienced (Reich and Benbasat, 2000). Consistent with specificities of the entrepreneurial context, SMEs and their business environments, the reasons for this approach are: its coherence with the definition of IT-enabled organisational transformation, which is “a global phenomenon in which psychological, socio-cognitive, sociotechnical, economic and political considerations intertwine” (Besson and Rowe, 2012, p. 105); the attention given to actors’ cognition which is relevant to a service-dominant logic (S-D) approach in an ecosystem that relies on actor-to-actor (A2A) orientation for value creation (Vargo and Lusch, 2011); its focus on individuals, and their conceptualisations, behaviours and relationships (Dulipovici and Robey, 2013), including the influence of their environment on all of these elements (Weick, 1995).

digital transformation is beyond the implementation of digital technologies

Digital transformation is “a change in all job and income creation strategies, application of a flexible management model standing against competition, quickly meeting changing demands, a process of reinventing a business to digitise operations and formulate extended supply chain relationships; functional use of internet in design, manufacturing, marketing, selling, presenting and is data-based management model”

“the transformation of socio-technical structures that were previously mediated by non-digital artifacts or relationships into ones that are mediated by digitized artifacts and relationships” (Yoo et al, 2010), which refers to the optimization of organizational processes with the aim of operational excellence by data-based workflows (Lederer, Knapp, & Schott, 2017), and by using the technology to radically improve performance or reach of enterprises (Westerman et al, 2011).

...the networking of actors such as businesses and customers across all value-added chain segments, and the application of new technologies. As such, DT requires skills that involve the extraction and exchange of data as well as the analysis and conversion of that data into actionable information. This information should be used to calculate and evaluate options, in order to enable decisions and/or initiate activities. In order to increase the performance and reach of a company, DT involves companies, business models, processes, relationships, products, etc. (Schallmo et al. 2017)

this study defines DT as strategic interventions that enhance the digital capability of an organizational to improve its business processes, products, services, and operations management.

In this study, we define digital transformation as transformation “precipitated by a transformational information technology”(Lucas et al., 2013, p. 372).

Digital transformation is a broad concept encompassing the changes induced by the increased availability and use of digital technologies in almost all kind of human activities. For businesses it implies that existing or emerging digital technologies contribute to change their business models, their products or services and the way they are manufactured and delivered, as well as the necessary skills to remain competitive in fast changing competitive environments. The transformation process must be integrated into every aspect of the company. It should be supported by equally important amendments in culture, leadership, skills, and processes. SMEs should pro-actively rethink their core businesses to adapt to the challenges.

"digital transformation refers to the process of triggering organizations to make strategic responses through digital technologies such as information, computing, and communication, changing their structure, boundaries and even value generation paths, and then realizing the process of enterprise entity evolution [8]. Some scholars also believe that digital transformation is a high-level transformation that is based on digitization and digitalization, further touches the company's core business, and aims to create a new business model. Digital transformation entails the development of digital technology and support capabilities to create a dynamic digital business model [9]. Other scholars believe that enterprise digital transformation refers to the process of triggering major changes in enterprise organizational characteristics and reconstructing the organizational structure, behavior, and operating system through the combined application of information technology (IT), computing, communication, and connection technologies"

The article takes into consideration several different approaches to digital transformation and the factors influencing them:

1. Cloud computing
2. Servitization
3. Social media
4. E-commerce
5. Blockchain adoption
6. Digital platforms
7. Radio frequency identification technology adoption
8. Adoption of industry 4.0 technologies (for this case, in particular, some of the identified barriers are: lack of understanding, knowledge and industry 4.0 standards; culture and organizational structure, information systems, and resources)
9. Adoption of smart manufacturing
10. Portals and websites
11. Adoption of an accounting information system

Digital transformation is “a change in all job and income creation strategies, application of a flexible management model standing against competition, quickly meeting changing demands, a process of reinventing a business to digitise operations and formulate extended supply chain relationships;

functional use of internet in design, manufacturing, marketing, selling, presenting and is data-based management model" [1]. Digital transformation should not be supposed as technological leap. The management of operations should not just focused on software-hardware updates. It is an adaptation of its institutional and operational ecosystems of any entity in terms of new business and thinking methods in an attempt to keep a pace with digitization by benefitting from digital factors. When digital transformation is mentioned, digitization should not only come to mind. It should be application of a flexible business model. Some successful digitization transformation examples can be; solar panels are substituted for tiles used as raw material, electric cars are started to manufacture instead of gasoline-powered vehicles, recycled glass are being used in manufacturing of new glass containers. It is significant that operations can comply with the changed competition rules and demands.

The paper states 7 core trends to digital transformation, along with tips for owners and managers of SMEs. These trends are:

1. Flexible working
2. Personalised customer care
3. Data-driven decisions
4. Artificial intelligence
5. Empowered frontline workers
6. Cloud solutions
7. Cybersecurity

the paper offers an overview of the scientific literature on the subject in the past 20 years. Therefore it reports a variety of DT definitions:

- "Digitalization, also known as implementation of digital technologies, ..."
- Digitalization "involves fundamental changes in business processes, operational routines, and organizational capabilities as well as entering new markets or existing current markets ..." and "... highlights the impact of IT on organizational structure, routines, information flow."
- Digitalization is "... mainly concerned with the strategy, culture, and talent development instead of technical issues."
- "Digitalization means using digital technologies to change a company's business model, ..."

Table 11: Literature review data concerning RQ2

<p>The results introduce a four levels approach of engagement of SMEs in the adoption of digital technologies, namely, digital awareness, digital enquirement, digital collaboration and digital transformation. Furthermore, for each level of engagement the study describes and discusses some relevant variables that could be used by managers and entrepreneurs to assess the level of readiness for utilization of digital technologies and how to digitalize some processes.</p>
<p>Step 1, preparing for GCM Step 2, generating ideas Step 3, structuring items Step 4, estimating and analysing concept maps Step 5, interpreting concept maps and results</p>
<p>four steps to create high business value by implementing measures to see what happens in a company (visibility), to understand why something happens (transparency), to forecast what will happen (ability to forecast) and to self-optimize the whole production system (adaptability)</p>
<p>The more significant use of the pillars of digital transformation has been driven by innovation accelerators, which include, among other solutions, IoT, robotics, 3D printing, artificial intelligence, augmented and virtual reality, new generation, security, simulation, horizontal/lateral software integration, internet of things, cyber security, blockchain, nanotechnology, cloud computing, big data</p>
<p>Reis et al. (2018) categorized digital transformation into three distinct elements: 1) technological – digital transformation based on the use of new digital technologies such as social media, mobile, analytics or embedded devices; 2) organizational – digital transformation requiring a change in organizational processes or the creation of new business models; Depending on the sector in which the company operates, the level of its digital transformation varies. It is noticeable that the level of digital transformation is also influenced by the changing needs of consumers, by the level of application of high technologies, by the position of company’s leadership, by the size of a company.[...] 3) social – digital transformation is a phenomenon that is influencing all aspects of human life by, e.g., enhancing customer experience.</p>
<p>Basically, the degree of maturity of a research object deals with the fulfilment of certain objectives, characteristics, or indicators (Becker et al. 2009a: 213). The characteristic values or dimensions necessary to achieve a degree of maturity are generally predefined. CMMI Product Development Team 2011: 464); the point in time can be arbitrary (Pfeifer-Silberbach 2005) but is usually the actual state of a company and its products, services, business model, and processes considering the point in time of the measurement.</p>
<p>Collectively, the sequential events and actions described in this model—managerial cognition renewal, managerial social capital development, business team building, and organizational capability building—not only describe the pattern of how digital transformation can happen but also explain the mechanism of why it happens through the theoretical lens of managerial and organizational capabilities, which is exactly the important way in which process models make theoretical contribution (Langley, 1999).</p>
<p>"First, SMEs lack adequate knowledge about themselves Second, the application level of digital technology is still not very high in some countries. Finally, digital transformation requires the support of financial, material, human, and other resources. "</p>
<p>According to Azhari et al. the model for the digital transformation is include eight dimensions of digitisation, namely strategy, leadership, products, operations, culture, people, governance and technology. The first level, “unaware”, describes companies in which there is no strategy for digital transformation, nor are there any digital competencies available. Companies classified by the “conceptual” level, are those which offer a few</p>

<p>digital products, but are still without a digital strategy. Those with a “defined” level of digitisation, are the companies who are able to consolidate experiences gained from pilot implementations into partial strategies. At this stage, a culture of digital thinking is taking root in the company. The profitability of these partial strategies and the effects of the pilot implementations are assessed and used to develop an overall digital strategy. At this point, where a clear digital strategy is developed, the company falls into the “integrated” maturity level. Only once this strategy has been implemented across all products and business processes, can the company be classified as “transformed”. The now-defined digital strategy will have transformed the business and operations models of the company.</p>
<p>The Digital Transformation Framework describes the cornerstones of the transformation along four dimensions: use of technologies, changes in value creation, structural changes, and financial aspect</p>
<p>This editorial represents a first attempt to give order to this growing field of study, by focusing on the implications and complex interconnections between digital transformation, innovation processes, and innovation management. Through a review of existing literature on the topic, this editorial first reveals the fragmented nature of the field of study. It then introduces a three-level (micro, meso, and macro) framework that allows organizing the theoretical and empirical research on the interconnections between digital transformation and innovation management.</p>
<p>One of the approaches to exploring digital transformation is the grouping of changes in three areas: consumer behavior, business processes and business models (3).</p> <p>The transformation of consumer experiences in the use of products and services of the organization is expressed in the in-depth study of market segments and their behavior in the marketing space, consumer behavior and loyalty, interactive communication with customers in the sales process and many digital contact points between the organization and the customers.</p> <p>Transformation of the business processes of the organization covers the automation of R & D, production and distribution processes. Digital technologies also enable the capacity of people to work at different levels in different functional areas.</p> <p>Transforming the business model is done through digital business modification, a new digital business and digital globalization. These processes take place by adding digital content to existing products and services and introducing new digital solutions</p> <p>Digital business transformation is seen as a set of 7 elements: business model, organizational structure, digital skills of employees, digitization of business processes, IT infrastructure, digitization of products / services, digital channels for interaction with clients (3).</p>
<p>Executives are digitally transforming three key areas of their enterprises: customer experience, operational processes and business models.</p> <p>These nine elements form a set of building blocks for digital transformation.</p> <p>1. Transforming Customer Experience</p> <p>The three major building blocks with which companies are digitally transforming customer experience are:</p> <ol style="list-style-type: none"> a. customer understanding, Companies are starting to take advantage of previous investments in systems to gain an in-depth understanding of specific geographies and market segments. companies are learning to promote their brands more effectively through digital media.

- b. top-line growth. Companies are using technology to enhance in-person sales conversations. For example, financial services companies are using tablet-based presentations instead of paper-based slide decks to make sales pitches.
- c. customer touch points. Customer service can be enhanced significantly by digital initiatives. For example, a bank established a Twitter account to answer client complaints quickly,

2 Transforming Operational Processes

Companies are also realizing very strong benefits from transforming internal processes through process digitization, worker enablement and performance management.

- a. Process Digitization Automation can enable companies to refocus their people on more strategic tasks. A manufacturer has begun to centralize the HR function, allowing economies of scale through self-service while freeing HR people to “focus on enlarging manager skills, rather than counting days off.”
- b. Worker Enablement. Individual-level work has, in essence, been virtualized — separating the work process from the location of the work. The tools that virtualize individual work, while implemented for cost reasons, have become powerful enablers for knowledge sharing.
- c. Performance Management. Transactional systems give executives deeper insights into products, regions and customers, allowing decisions to be made on real data and not on assumptions.

3. Transforming Business Models

Companies are not only changing how their functions work, but also redefining how functions interact and even evolving the boundaries and activities of the firm.

- a. Digitally Modified Businesses. The company is finding ways to augment physical with digital offerings and to use digital to share content across organizational silos.
- b. the creation of new digital businesses. Companies are also introducing digital products that complement traditional products. Other companies are changing business models by reshaping their boundaries through digital.
- c. digital globalization. Companies are increasingly transforming from multinational to truly global operations. Digital technology coupled with integrated information is allowing businesses to gain global synergies while remaining locally responsive no company we studied is transforming all nine areas at once

Table 12: Literature review data concerning RQ3

Kane et al. (2019) have recently described as in implementing a **DT process companies move towards a four-stage evolutionary path associated to a growing level of changes due to the introduction of DT**. These phases have been identified in:

(1) the **exploration of DT**, as preliminary stage causing minimal changes into the organization,
 (2) the **development of digital initiatives**, as second stage characterized by an increased attention to the DT even if the company remains focussed on its business, operational and strategic model,
 (3) the **digital maturity**, as stage of deliberated adoption of DT in all the organizational actions and goals and

(4) **being a digital organization**, as aspirational last behaviour of full digitalization involving the company's environment and ecosystem (Kane et al., 2019).

[...] SMEs operating of three industrial sectors, such as Agri–Food, Clothing–Footwear and Mechanics–Mechatronics, geographically located in the Apulia Region, a Southern Italian region. [...] The effective implementation of DT on the value chain process in all three sectors highlights the **need of creating a digital entrepreneurial culture, promoting sessions of collaborations, networking and collaborations, identifying pilot actions able to provide a clear representation of the benefits associated to this**.

A four levels approach towards the digital transformation Smart District 4.0 promotes the DT of SMEs according to a methodological approach with a different and growing levels of SMEs' engagement and impact of DT on their business model, strategic and organizational setting. Four levels have been identified as a result of the research:

(1) **Level 1 - digital awareness**: This level is grounded on the awareness about the potentiality of DT on SMEs. This level sees the participation of a larger and differentiated community of stakeholders (companies belonging to all the three industries) participation through phone calls and live meetings aimed at informing about the project and collecting subscriptions.

(2) **Level 2 - digital enquirement**: At this level, the technological solutions at the basis of the Smart District 4.0 are presented in terms of functionalities and potentialities to sensitize SMEs and all the other stakeholders, etc. The modalities of SMEs engagement regard a more powerful interest of SMEs in the project of DT and are involved through working sessions, seminars, focus group, etc.

(3) **Level 3 - digital collaboration**: On the basis of their interests, companies are accompanied into an activity of exploration of the potential benefits of digitalization in their own business processes and strategies. At this level, a number of limited companies are engaged; they are allowed to use the G Suite to sustain their administrative and communication processes.

(4) **Level 4 - digital transformation**: This is the level of highest engagement that sees a limited number of SMEs interested in. SMEs in this level show a major interest towards the digitization process and that can represent pivotal set for the project's goals. In this stage, the technologies made available are mainly digital solutions for production, distribution and with a more relevant impact on the companies in terms of strategic and organizational issue for the business strategy and organizational settings.

Answering the research questions, we can state that the main elements of the concept are processes and technologies, but it should be pointed out that digital transformation is not about the implementation of IT solutions only. We should think about it in a broader context as about **“organizational change”, “cultural transformation” and “moving towards customer-centric approach”**. In this regard, the element **“people” becomes essential, and even more important than anything else** does. In addition, one of the main barriers to transformation could be **staff resistance**. This is our topic for further investigation, and we will start with a higher education sector. Our purpose will be to identify the biggest obstacles for ensuring a qualitative study process aligned with a digitalization strategy. **Focusing on human factor to boost DT processes assumes not only internal communication with staff members and other stimulating activities, such as training and motivating, but also re-building recruitment programme.** Based on McKinsey experts (Dahlstrom et al., 2017), **“Talent priorities should be based on a clear understanding of the skills needed at all levels of the business. This requires investing in building relevant digital capabilities that fit with the strategy.”**

At the base of the hierarchy are the organizational resources, which constitute the inputs for the creation of value in the organization. At the second level are **the capabilities that are the ability of the organization to exploit its resources; they consist of business processes and routines that direct the interaction between the resources. Capabilities are distinguished by having a functional basis. Competencies are on the third level of hierarchy, they are a multifunctional integration and coordination of capabilities, a set of skills and know-how housed in a strategic business unit. Finally, at the highest level are the core competencies.**

Five types of micro and small enterprises (MSEs) with different overall digitalization capabilities

1. Microenterprise
2. Locally oriented small enterprise
3. Export-oriented small enterprise
4. Knowledge based small enterprise.
5. Start up

the digital transformation from a service ecosystem adopting a S-D logic orientation is based on **actors not fundamentally different, but who exchange skill and knowledge resources of various kinds to meet specific needs** (Fujita et al., 2018). Thus, we no longer refer to resource production/consumption, but to the resource integration between organisations during exchanges whose coordination is based on “rules of the game” shared by the actors (Vargo and Lusch, 2016a). This supports a complex vision of the **digital transformation process that begins with humans in relation to each other and not exclusively based on technological artefacts** (Besson and Rowe, 2012; Dyer and Kale, 2007). Given this, the ecosystem of interest is based on the S-D logic of a service/multi-actor ecosystem (Tsujiimoto et al., 2018).

“Digital in NRW” is one competence centre and a research project to support SME in their digital transformation in Northrhine Westfalia. **“Digital in NRW” offers several services from informing people, demonstrating solutions in smart factories to discuss and design digital solutions.** Especially two services are very important to shape SMEs digital strategy and transformation roadmap. First, the **potential analysis and second the design workshop.**

Turkey has changed the definition of small and medium size enterprises (SMEs) in 2019. The accepted definition points to those with 1 to 49 employees as “small” and those companies with 50 to 250 employees as “medium”. In financial terms, an SME would have less than 125 million Turkish Liras annually. SMEs consist of 99,83 % total enterprises, and 72,7 % of total employment, 50,6 % of total value added and provide 55,1 % of export, take an important role in economy [13]. SME’s have many advantages because that are flexible, dynamic, work closely with other people, more informal and less bureaucratic than larger organizations [14]. **They should transform their organizational structures and business making cultures starting from manufacturing technologies to management percepts as to get a productive digital transformation process.** However, the more limited resources of SMEs might prevent them to perform digital transformation. In order to carry out digital transformation in manufacturing industry, those should come into prominence which are **raising awareness of SMEs about digital transformation, increasing competence of labor power, providing technical and financial support for SMEs about that issue, strengthening the data communication infrastructure.**

Research results revealed three groups of internal factors that we identified as **capabilities fit, resources fit and factors related to changes in the business model.**

Four groups of external factors potentially having a significant impact on the digital transformation of SMEs: capabilities fit, resources fit, government regulations and industry related factors.

...what is digital capability? This question is explored in this paper from theoretical and practical perspectives in the form of a conceptual construct: the Digital Capability Framework (D-CaF). The framework distinguishes six levels and seven dimensions of digital capability. It is intended to provide a foundation to plan and execute digital capability driven innovation and transformation initiatives.

For the purposes of this paper, we define **digital capability as an enterprise’s capacity to integrate and utilize digital data and information technologies in its products, services, business processes, and organizational systems and practises to create added value to its constituents and beneficiaries [...]**

Levels of Capability

Levels of Work I–VI and the respective Levels of Capability (LoC) are summarized in Table 1 and described below

LoW	Essence	LoC	Description
VI	Develop inter-organizational networks to institutionally legitimize the organization and to ensure its ecological viability.	Adaptive	The organization’s ability to enable quick responses to and proactive enactment of disruptive changes in its environment to sustain its viability and effectiveness.
V	Define and articulate the organization’s intent to provide internal coherence and to determine its position in the present and future.	Strategic	The organization’s ability to use and dynamically adjust its creative capabilities vis-à-vis the changing environment.
IV	Interrelate and coordinate a functioning set of products/services, structures, systems, internal and external relationships to maintain viability in a changing environment.	Creative	Organization-specific, dynamic bundles of systemic capabilities that underlie the organization’s strategic capability.
III	Integrate and manage a work system of people, technology, and processes to meet the current and foreseeable needs of known customers.	Systemic	Dynamic sets of interlinked routines that constitute responsive and relatively independent systemic functional wholes, or work systems.
II	Apply knowledge and experience to a particular situation within prescribed boundaries and available resources.	Routine	Relatively static routines that allow some degree of situational latitude.
I	Produce a specified output, which is largely prescribed, tangible and measurable.	Zero	Concrete and pre-specified elementary, atomic activities that underlie routine capabilities.

Table 1. Levels of Digital Capability Dimensions of Discovery

Based on the levels and dimensions identified and discovered above, we constructed a 6 x 7 conceptual Digital Capability Framework (D-CaF), as summarized in Table 3. Each of the dimensions is discussed by

	IT	DA	CE	CC	BP	KW	DB
VI	Adaptive	Prescriptive	Real-time context	Coordination	Intelligent BPM	Real-Time Decision-Making	Digital Platform
V	Strategic Value	Predictive	Individualized	Collaboration	Inter-Enterprise BPM	Strategic Work	Digital Business Model
IV	Enablement	Descriptive	Profiling	Coordination	Collaborative BPM	Collaboration Work	Digital Product Line / Service Offering
III	Service	Reporting	Segmented	Cooperation	Organizational BPM	Expert Work	Digital Product / Service
II	Cost	Aggregation	Opt-in	Communication	Operational BPM	Integration Work	Digital Components
I	No IT	Query	Solicitation	Coexistence	Transaction Processing	Transaction Work	Non-digital

each level in the subsections below

Table 3. The Digital Capability Framework

As a result, the most important requirement belongs to the humans. **The personnel has to be sensitized for the topics digitalization, networking and industry 4.0. Interdisciplinary competencies are required to understand how new approaches and technologies can be used efficiently for the own processes.** Therefore, the three dimensions **human, technology and organization have to be considered in a holistic way for the successful digital transformation.**

How can industry 4.0 be applied practically? Basically, the **entrepreneurs should be open-minded and recognize new products, technologies and connected services to earn money** (e.g., apps). They should think about how these approaches could be applied in their own company. However, it doesn't mean that the whole company has to be renewed completely. If the **goals and processes are defined clearly, improvements can be applied step by step** [6]. At the first step, systems for data acquisition could be integrated in manufacturing (e.g., object identification by barcode reader or RFID). Thus, information about how the process works are gathered. Large stocks or long process times are identified and traced to their origins. In the next step, mobile devices with an appropriate software can be used as an assistance system to provide role and task specific information for the personnel in the factory. This could be useful for repair or learning processes. A next possible step is the integration of intelligent and autonomous systems (e.g., lightweight robotics or automated guided vehicles) to improve manual production and logistics processes. Then, machines and humans are connected. This means, for example, that messages or failures are directly reported to the mobile devices of the personnel and actions are derived automatically. For example, see Fig. 1. Finally, this is the basis for the networking and cooperation of humans and machines across companies. Again, it is emphasized that **the personnel has to be sensitized and qualified for these approaches.**

The "Mittelstand 4.0 – Digital Production and Work Processes" initiative by the Federal Ministry for Economic

Affairs and Energy in Germany supports small and medium-sized enterprises to become digitized, to network and to start using industry 4.0 applications. **The active transfer of knowledge and technologies from research and development into practical usage of the SMEs is focused. By this, the awareness among SMEs about the technological and economic potentials of digitalization including industry 4. 0 should be raised.** Two kinds of projects are part of this initiative: The so-called "Mittelstand 4.0 agencies" work on specific issues such as cloud, processes, communication and trade for SMEs and share this knowledge to multipliers; the "Mittelstand 4.0 Competence Centers" represent the local contact points for the SMEs to receive a direct support.

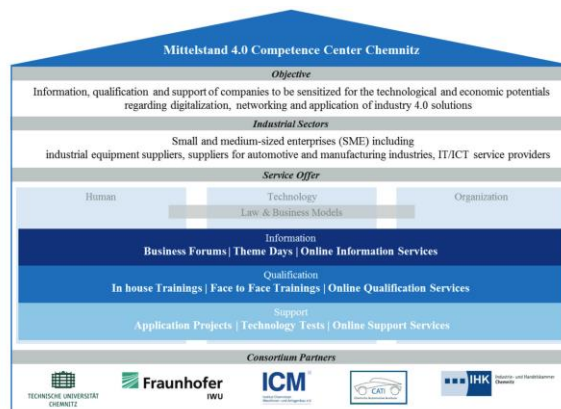


Fig. 2. Overview on Mittelstand 4.0 Competence Center Chemnitz.

The service offer includes several instruments for the stepwise sensitization, training and support of entrepreneurs, executives and practitioners for the topics digitalization, networking and industry 4.0 applications.

For this, the three main parts information, qualification and support are defined. Each of these parts consists of three instruments: **the first ones are located in the companies (business forums, in house trainings and application projects); the second ones take place in the test environments of the competence center (theme days, face to face trainings and technology tests); the third ones can be used online (online information services, online qualification services, online support services).** To get an impression, more than 90 events and trainings as well as 30 application projects will be performed in the project duration (three years until 2019). Typical contents are:

- **Digitized factory and production systems,**
- **Virtual product development and business processes,**
- **Work processes and qualification,**
- **Legal aspects,**
- **Usability.**

In the first months more than ten events and trainings as well as nine application projects were performed with different results and findings. Basically, the demands of the SMEs for information and qualification are different compared to large companies or to typical research and development projects of universities and other research institutes. **The SMEs don't have time or resources to qualify the staff, to develop complex ICT structures or to think about a digitalization strategy for the company. There also skepticism about the word "Industry 4.0" and the benefits of it.**

Therefore, for the beginning, **basic topics (e.g., "What is Industry 4.0?", "What can I do with digitalization?" or "New business models") have to offered in the first events and have to be detailed in following workshops. By this, the participants want to get concrete and easy-to-use solutions which can be directly used in their own processes or companies. By using practical and conceivable demonstrators and also short use cases, the most effects can be achieved (Fig. 3). Low-cost solutions are also preferred (e.g., by using Raspberry Pi or free and open-source software).**

The digital transformation of systems and processes includes risks and potentials, especially for SMEs. These companies have limited resources for research & development, investments, consulting or qualification of personnel.

Therefore, the "Mittelstand 4.0 – Digital Production and Work Processes" initiative supports SMEs to become digitized, to network and to start using industry 4.0 applications. The "Mittelstand 4.0 Competence Center Chemnitz" is part of this initiative and provides information, practical trainings, test environments and application projects for the companies.

Considerable research has been done on maturity models focusing on digital capabilities in the areas of IT management (Becker et al. 2009b) and business processes (Tarhan et al. 2016; Williams et al. 2019). Maturity models for digitization in companies must summarize certain characteristics in particular dimensions at a specific time (Becker et al. 2009a; Pfeifer-Silberbach 2005; CMMI Product Development Team 2011: 464). **They serve to determine the current state and the degree of digital maturity in the context of DT (e.g., regarding competence, performance, and level of experience) and allow recommendations for future actions deriving from the current degree of maturity.**

[...]This generic conceptualization allows researchers to choose from a wide range of determinants that could explain the factors influencing SMEs' intention, adoption, implementation, and usage of digital technologies. Recent research added the individual antecedents relating to the owners' and/or managers' characteristics, which was missing in studies using the TOE framework. [...] Individual antecedents: The characteristics of the Chief Executive Officer (CEO) or the owner and/or manager influence digital innovation in SMEs. These are characteristics that describe the individuals responsible for the uptake of digital technologies (Jeyaraj et al., 2006). From reviewing the literature, seven antecedents were shown to influence digital innovation. These antecedents are **knowledge and experience, education, attitude, motivation, age, gender, and entrepreneurial orientation of the owner and/or manager** [...]Technological antecedents: These have been found to influence digital innovation in SMEs. These are characteristics that describe the digital technology (Jeyaraj et al., 2006). Five antecedents were found to significantly influence the uptake of digital technologies including **perceived usefulness, perceived ease-of-use, perceived compatibility, security and privacy, and trialability** [...]Organizational antecedents [...] Environmental antecedents: [...] Also, very little is known on which digital technologies impact small business performance, and which fall short and why. One of the less explored aspects in this literature is the organizational capabilities facilitating the delivery of specific digital innovation outcomes. Furthermore, digital innovation [...] Mediators and/or moderators Some studies suggest that digital innovation process-outcomes relationship is not straightforward for two reasons. First, some of the antecedents discussed earlier have been found to mediate and/or moderate this relationship[...] Other studies have shown that certain **organizational capabilities such as marketing capabilities** (Tajvidi & Karami, 2017), and **absorptive capacity** (Francalanci & Morabito, 2008) also mediate this relationship. Although researchers have started gathering evidence on the mediators and/or moderators of digital innovation process-outcomes association, it is still unclear which variables play intervening roles in this relationship. [...]Also, evidence is scarce on the activities and capabilities facilitating specific digital innovation outcomes. Therefore, it is essential that future research examines the process-outcomes relationship and the intervening role of mediators and/or moderators of this relationship.

Another important challenge is a compo focus on the knowledge and skills required. Knowledge capabilities can be seen as a challenge which can influence the need for training and education to improve new professional skills and knowledge (European Commission, 2015). **From the technological perspective, significant challenges of the digital transformation are related to the technology required. From the business organization point of view, the benefit from digital transformation implementation can be achieved only if the information system of the company is aligned with new technologies.** [...]Capabilities fit. As Reis et al. (2018) observed, **successful digital transformation requires a company to develop a wide range of capabilities, which will vary in importance depending on the business context and the specific company's needs.** According to Liu, Chen, and Chou (2011), for a successful formation of capability fit an **ability to integrate information technology into operations and collaboration between enterprise's departments as well as reconfiguration agility are critical aspects.** Moreover, research results revealed that information technology integration requires both - technological and strategic development (Bondar et al., 2017; Gölzer & Fritzsche, 2017; Kettunen & Laanti, 2017; Liu, Chen, & Chou, 2011; Remane et al., 2017). Therefore, reconfiguration agility based on Liu, Chen, and Chou (2011, p. 1738) “refers to **a firm's flexible capability to embrace organizational structures, information systems and mindsets**” **signifying the importance of organizational changes during the process of digital transformation**[...]. Based on the results of a thorough analysis of performed case study, Liu, Chen, and Chou (2011) state that such **external capabilities as collaboration and customization are crucial.** According to Liu, Chen, and Chou (2011, p. 1736) “collaboration is a recursive process whereby two or more organizations work together toward a common goal.” Moreover, an effect of **synergy achieved through the collaboration between different organizations also can be interpreted as a facilitator of digital transformation in SMEs.**

IT resources (IT infrastructure and IT management capabilities) and environmental support (government support and partnerships) have an indirect positive impact on DT through improving organizational capabilities (digital strategy and top management). Moreover, employee skill positively moderates the relationship between organizational capabilities and DT, which partly explains the generation of differentiated value. This study enriches and expands the research in the field of DT, which helps to deepen the knowledge and understanding of SMEs to promote the success of DT by prioritizing the allocation of critical resources. Meanwhile, it provides SME managers with a methodology for DT and strategic guidance for the management practice of enterprises.[...]It is also argued by scholars [17] that **DT requires more than technical capabilities but management capabilities as well, such as work process design, business strategy training, and human resources investment in digital literacy apability.**[...]Organizational capabilities play an intermediary role in the influence of technological and environmental factors on DT, and employee skill positively moderates the relationship between organizational capabilities and DT. [...]Our investigation shows that maturing digital organizations build skills to realize the strategy. Digitally maturing organizations are four times more likely to provide employees with the needed skills than organizations at lower ends of the spectrum are [47]. Therefore, **employee skill is among the key factors in the success of DT** [48].

The growth and long-term survival of family firms depend on the entrepreneurial abilities of the individuals who own and manage these businesses and their ability to build functional business models that effectively capture and redistribute value-added to cope with the challenges that the current business environment presents (Carayannis et al., 2014).

[...]FBs must develop **adaptive strategies and strengthen crucial processes to generate a competitive and sustainable advantage. Knowledge management provides models and tools to reinforce tacit knowledge management's relevance in the FBs professionalization and succession processes.** [...]To face the current challenging environments, firms **need to create dynamic capabilities that can reconfigure existing resources and change ways of doing things to sustain or redefine the firm's competitive advantage** (Helfat & Winter, 2011; Winter, 2003). The presence of **dynamic capabilities can safeguard sustainability and growth within turbulent and dynamic business environments.**

Previous work highlights that **family businesses can nurture distinctive dynamic capabilities due to family control** (Chirico & Nordqvist, 2010). Additionally, **familiness resources play a role in creating dynamic capabilities in the family business to create competitive advantages and facilitate ongoing growth** (Glyptis et al., 2021).

[...]. Additionally, **firms need the agility to effectively design and implement strategic changes, which involves fluidity, speed, and mindsets that encourage innovative thinking and resilience. Thus, the sensing,**

seizing, and **transforming components of dynamic capabilities** (Teece, 2007) **are even more required in post-pandemic era.** [...]Family firms must create financial value over generations to survive long-term. The ability to do so largely depends on how they can **use and combine their current knowledge to generate new knowledge.** Elements of **knowledge transfer across generations include moral values, competence values, and cognitive heuristics, which highlight types of knowledge that are foundational to the transgenerational success of the family firm** (Su & Daspit, 2021). [...] For other authors, professionalization should occur by hiring non-family professionals. This solution has a significant impact on the family involvement in the firm management because it becomes limited. [...], innovation and digitalization hold the key to long-term success. [...]

Our research question concerns **how SME entrepreneurs with inadequate capabilities and limited resources drove their drastic transformation** to CBEC. Our analysis shows that **with support from their digital platform service provider, the SME entrepreneurs were able to do so through upgrading both their own managerial capabilities and their companies' organizational capabilities** in CBEC. (Cross border e commerce) The findings of this study expand our understanding of both digital transformation and digital entrepreneurship. They also lead to new insights into how **third-party digital platform service providers can help SMEs transform and compete**[...]The theory of **dynamic managerial capabilities** (DMC) provides a useful theoretical lens through which we can understand digital transformation in SMEs[...]Previous research has suggested that DMC is built on three core underpinnings: **managerial cognition, managerial social capital, and managerial human capital** (Helfat & Martin, 2015)[...]**Organizational capability** is defined as the capacity by which an organization “perform(s) a particular activity in a reliable and at least minimally satisfactory manner”(Helfat & Winter, 2011, p. 1244). The overarching concept of organizational capabilities embraces a collection of more specific **capabilities that matter to different organizations under different circumstances**. For example, companies competing in fast-changing, dynamic markets need to have superior **market-sensing capability** (Teece, 2012); companies must build up their **research and development (R&D)capabilities to gain competitive advantages** in hi-tech industries (Eisenhardt & Martin, 2000); and channel management capabilities are vital to traditional retail companies (Chopra & Sodhi, 2004)[..[Rather, to succeed in digital transformation, the SME entrepreneurs need to engage in both managerial and organizational capabilities building. For SMEs, digital transformation is usually initiated by the entrepreneurs. Their **self-transformation is necessary for their companies to start organizational capability building and induce strategic changes**. As shown in our study, **entrepreneurs can do so through the two processes of managerial cognition renewal and managerial social capital development**

"Through digital transformation, SMEs have found a new paradigm for development. **Compared with large enterprises, SMEs have the advantage of flexibility and can accept innovation. Therefore, as a method of organizational change, it is relatively easy for SMEs to carry out digital transformation.** "

"The Adoption of Industry 4.0 and other information and communication technology in the manufacturing and service sectors may be a global phenomenon. Nevertheless, in the case of SMEs, it is not. SMEs all around the world face different challenges in digital transformation. On the other hand, digital transformation is becoming more and more crucial since 2020. Hence, the digital transformation of SMEs can be achieved through either one or a mix of the following technology/approaches (1) cloud computing, (2) servitization, (3) social media adoption, (4) social commerce, (5) E-commerce, (6) Block Chain, (7) Digital Platforms (CRM/SCM), (8) RFID, (9) Industry 4.0, (10) Portals (websites), (11) Accounting Information System & (12) Smart Manufacturing. The researchers widely adopt the "**technology - environment -organization**" framework for assessing various metrics such as **intention, willingness, opportunities, and challenges of SMEs' digital transformation**. However, new models for assessing the digital transformation of SMEs are also evolving."

- Italian SMEs have access to a broad and diverse **innovation ecosystem** to sustain their digitalisation efforts, including among others business associations, **digital innovation hubs** and **competence centres**.
- However, despite extensive public intervention and the support of the innovation ecosystem, this study suggests that Italy still shows pain points and barriers to digitalisation, particularly for SMEs.
- A number of **knowledge gaps limit the ability of SMEs to adopt digital solutions**. Gaps include:
 - **Awareness:** Italian SMEs invest less than EU peers in digitalisation. This leads to lower levels of adoption and sophistication of digital technologies. The complexity of the ecosystem makes it difficult for SMEs to navigate different options and for other digital players to scale up their expertise.
 - **Capabilities:** According to the available data, Italian SMEs have a limited digital skillset compared to EU peers.
- In addition, the offer of digital solutions from large tech vendors is fragmented and not always suited to the specific needs of SMEs. Smaller tech vendors face significant challenges preventing them from being as effective as possible in providing innovation solutions to SMEs.
- In terms of funding, the availability of banking credit is often a barrier to SMEs willing to digitalise. While financial institutions support SMEs in accessing resources for their digitalisation investments, there is no clear evidence of “digitalisation-specific” financial instruments.

According to Erich Hoch, five **major challenges, or rather resistance factors, prevent a more complete acceptance of the Digital Transformation:**

- Employee pushback
- Lack of expertise to lead digitalization initiatives
- Lack of overarching strategy
- Organizational Structure
- Limited Budget

...we notice that the digital transformation... has the largest number of inflowing and outflowing connections (i.e. 80). Being at the core of this research stream, it is obviously connected to all the other clusters and represents the most important node in the network. When it comes to the content of this cluster, we can observe that the concept of digital transformation (Berger et al., 2019; Nambisan et al., 2019; Verhoef et al., 2019) is usually adopted in relationship with a wide range of recently introduced enabling technologies such as artificial intelligence, industrial internet of things, big data, and smart products (see Blackburn et al., 2017; Chandy et al., 2017; Farrington and Alizadeh, 2017; Fossen and Sorgner, 2019; Iansiti and Lakhani, 2014; Mariani and Fosso Wamba, 2020; Raff et al., 2020; Ransbotham et al., 2016; Sjödin et al., 2020; Verganti et al., 2020). Moreover, the studies included in the cluster offer evidence on **service innovation** (Sjödin et al., 2020), **product-service systems** (Lerch and Gotsch, 2015), **organizational practices and routines** (Jackson, 2019), **change management** (Mugge et al., 2020; Solberg et al., 2020), **innovation processes** (Guenzi and Habel, 2020; Klein et al., 2020), **competitive dynamics** (Ferreira et al., 2019; Porter and Heppelmann, 2014, 2015), **organizational design and structure** (Kretschmer and Khashabi, 2020).

Table 13: Literature review data concerning RQ4

<p>Such a strategy is an overall construct of an IT-driven digital strategy and a business strategy (Woodard et al. 2013; Mithas et al. 2016), where there is a reciprocal relationship between the two strategies (Bharadwaj et al. 2013; Hess et al. 2016). A so-called digital business strategy arises when it includes competition-related activities to offer digital products and services (Yeow et al. 2017). To successfully master digital transformation and thus ensure future survival in times of digitalization, companies need to have a digital strategy that suits them. To formulate a digital strategy, companies use the so-called “digital transformation framework”, according to Matt et al. (2015). The authors describe in their article that it is first necessary to clarify “which content aspects digital transformation strategies should consist of” (Matt et al. 2015, p. 3). Regardless of the industry or company, such digital strategies have similarities in the following: (1) the use of technologies, (2) changes in value creation, (3) structural changes, and (4) the financial dimension.</p>
<p>A digital strategy is one that encompasses a “fusion view”, in which both the IS and business strategy are equated. In other words, there is no longer a clear distinction between business strategy and IS strategy (Bharadwaj et al., 2013; Galliers, 2011; Mithas et al., 2013). Digital strategy is equally business-centric and technology-inspired (Sebastian et al., 2017; Yeow et al., 2018) [...] DTS seeks to provide insights about how such an organization-wide digital strategy might be developed and implemented (Hess et al., 2016; Matt et al., 2015). Of course, a DTS does not necessarily replace any former strategies, but most likely will need to be aligned with them. [...] These theoretical underpinnings represent the starting point for our investigation of DTS formulation and implementation that we regard as inextricably interrelated (Mirabeau and Maguire, 2014). A DTS can be shaped through episodes of digital strategy making by actors who rely on recursive and/or adaptive practices. Our main objective is to theorize an integrated process/activity perspective on digital strategy making in pre-digital organizations – theorizing that builds on IS strategizing and is in line with the combinatory view described above. [...] a DTS is a highly dynamic process involving iterating between learning and doing in terms of digital strategy making. [...] the actual practice of digital strategy making where a TS has to be continually reinvented [...] First, DTS is business-centric and customer-oriented in its perspective, rather than technology-centric. IT are mostly regarded as an enabling prerequisite in a DTS. Second, almost all parts of the organization are affected by changes resulting from a DTS. Third, a DTS is developed by different stakeholders within the organization (strong representation from marketing and sales), and might even be crafted “bottom-up” by opening strategy processes up to the entire organization (Tavakoli et al., 2017). Fourth, the development of a DTS requires distinct governance structures. Fifth, a DTS is never “finished”, but has to be continually reinvented. Overall, these characteristics suggest that a DTS has more wide-ranging implications for the entire organization.</p>
<p>four companies have been included into this fourth level of digital transformation with the aim of validating the platform Smart District 4.0 with the support of the project partner Noovle. The pilots identified to date are located, two in the Agro–Food chain, one in the Textile–Clothing–Footwear sector and one in the Mechatronics–Mechanic industry, respectively.</p>
<ol style="list-style-type: none"> 1. MSEs do not digitalize “automatically” and by default; instead, digitalization is driven by deliberate decision-making on the part of MSEs, which may be hampered by incomplete information and risk-averse attitudes. 2. The extent to which MSEs are able to increase their productivity through digitalization is determined by their internal capabilities: depth of digital adoption, digital skills, innovation orientation and flexible management. 3. The potential depth of digitalization and the associated capability levels depend on an MSE’s size,

degree of formalization, export orientation and the information intensity of the sector in which it operates.

4. MSE digitalization is **affected by three sets of external influences: the local digital ecosystem, an MSE’s business network, and its broader social and policy environment. Microenterprises are more directly dependent on their environment than other types of MSE.**

Relevant for examining the collective or group aspects related to IT (Tan and Gallupe, 2006), the present study employs the GCM approach. GCM is **mixed methods-based (qualitative/quantitative) and is employed with groups of participants** (Rosas, 2017). It is used to highlight deliberate and unintentional learning systems, as well as complex interactions among underlying dimensions of business and service ecosystems, including those of very small enterprises (Sutherland and Katz, 2005). The GCM method emerged in the field of programme planning and evaluation (Kane and Rosas, 2018; Kane and Trochim, 2007), and has been applied to a host of other knowledge areas (Trochim, 2017; Cloutier, Cueille and Recasens, 2017; Berg et al., 2018).

The method uses **multivariate statistical analyses to estimate conceptual representations, on the one hand, and to evaluate the perception, on the other hand, of issues associated with the digital transformation from the perspective of entrepreneurs, IT professionals, and socioeconomic support professionals.**

analysis of eleven companies,

18 different digitisation measures have been identified in various structural forces and empowering maturity levels.

Finally, **a procedure on how companies select the relevant digitisation measures based on a target maturity level and transfer them into a roadmap for digital transformation has been presented**

To perform digital transformation 6 factors are important:

1. It is required that the management is asking for **data-based digital transformation, to be determined who will be responsible what for.**
2. **Adopting of “learning culture”** in SMEs is essential for digital transformation of operations.
3. Defining a **simple roadmap of business goals or digital transformation**: Based on the digital transformation, objectives with regards to DT are defined.
4. Creation of an **awareness of digital and a supportive environment.**
5. **Collaboration with SME helpers, innovation labs, research institutions.**
6. **Support SMEs with the requirements and needs analysis, implement feasible objectives.** It is essential that SMEs which ask for digital transformation should be **supported by governments. With the aid of government agencies and other stakeholders such as the Trade Association and Chambers, SMEs may be better able to access more assistance in their digital transformation process.** Also **external supporters such as competence centers or research institutions can help SMEs to understand and implement digital transformations initiatives.**

The integration of technological innovations which according to McKinsey & Company experts were structured into four clusters of Industry 4.0 innovations such as **1) data, computational power, and connectivity; 2) analytics and intelligence; 3) human machine interaction; 4) digital-to-physical conversation** (McKinsey & Company, 2015), are a part of digitalization processes and digital transformation and can enable achieving competitive advantages for companies.

The companies know that “something has to be done” but often “do not know where to start.” Determining the digital maturity is seen as a good way to discover “potentials and recommendations for further actions” as well as to create a “digitalization roadmap including priorities.”

The implementation of digital transformation leads to the benefits for SMEs, for large enterprises and the entire industry/economy alike. Hence it could be stated that digital transformation should enable innovation, cost-saving, and productivity in companies.

Nevertheless, there are many challenges for companies to succeed in achieving these results and the **total commitment of all companies (especially SMEs) internally as well as external alignment are needed**. Knowing that SMEs have a significant impact on the industry/economy, it is necessary to analyze the factors that determine the implementation of the digital transformation of SMEs

From the study findings, at least three important implications are worthy of practitioners' consideration to promote DT in SMEs:

First, the key for **managers is to understand what resources need to be configured for the transformation process**. Based on existing research results, this study identified seven key resources that affect the success of DT in SMEs from a systematic perspective, which helps managers understand the success factors more clearly, and can be used to evaluate the company's readiness for DT, **identifies and improves the areas of resource weakness and pre-employment supports firm decision-making**, thus increasing the possibility of successful DT.

Secondly, this study helps managers to develop more effective **strategies addressing the complexity arising from DT**. This study empirically tested the influence mechanism of each element on DT. **The acquisition of enterprise IT resources and external resources (government support, partnerships) is crucial to the implementation of DT, but its value needs to be enhanced through organizational capabilities**. When carrying out resource allocation and planning, managers should pay attention to the **matching of technology, business, and strategy** [63], and actively **embed in the upstream and downstream industrial chain to achieve value co-creation** [26], so as to **support the formulation and implementation of the enterprise digital strategy** [64]. Based on this, managers can know whether to **address and optimize the complexity caused by the interaction of various factors**.

Finally, SME managers need to **support and train employees to acquire the necessary digital skills** [60]. This will naturally **change their existing roles and also affect the identities of employees and the identity of the organization as a whole** [65]

]. Managers need to support employees to develop accordingly [66] **and create a digital-related identity and role within the organization** [67].

[...] Given the need to be flexible to change and adversity, it would equally be necessary to **develop strategies that reflect adaptability and build upon the strengths in the firm's capabilities and knowledge resources**. For FB owners, these steps entail **a deeper understanding of the external environment they operate in and strong knowledge of their firm's strengths**. Combining multiple digital artifacts and infrastructures (e.g., blogs, boards social media interfaces, platforms, etc.) creates **spaces for community interaction, engaging in co-creation activities, and broadening stakeholder integration**. Digital technologies can enable the **parallel growth of socio-environmental and financial value**. This brings the importance of digital technologies and their supportive function for **sustainable business models** (George et al., 2020)

[...] FBs need an innovation and digitalization strategy to compete and survive. Furthermore, to develop and reinforce innovative capabilities, FBs need to **adopt technological advances, but this is only possible when**

risk-aversion and challenge for sharing control with non-family members diminish.

In an incessantly shape-shifting globalized context, firms **need to innovatively keep pace with the accelerating rate of change and explore new opportunities worldwide**

(Andriopoulos & Lewis, 2010; Penney et al., 2018; Thrassou et al., 2014)

Our study suggested the sequence of entrepreneur DMC building—CBEC business team building—and organizational CBEC capability building as the mechanism through which SME entrepreneurs push to transform their businesses to CBEC (Figure 2). The key to this sequence is **business team building, which bridges the entrepreneurs' self-transformation and the SMEs' transformation** to CBEC. This is especially important, as a **strong, competent team might have relieved the SME entrepreneurs of the burden to be versed in hands-on CBEC operations so that they could focus on renewing managerial cognition and building managerial social networks.**

The new European industrial policy includes a dedicated strategy for SMEs “for a sustainable and digital Europe”. The SME Strategy announces a series of measures fostering the sustainable and digital transitions of European SMEs:

- **Sustainability Advisors** will be appointed within the existing Enterprise Europe Network **to help SMEs with environmental and social challenges and improve access to skills.**
- Up to 240 **Digital Innovation Hubs** will advise SMEs on how to integrate digital innovations into their products, business models and processes.
- The new European Innovation Council (EIC) will make available **€300 million to encourage breakthrough innovations delivering Green Deal objective.**

A digital transformation strategy is like a personalized map that can bring great value in business transformation. The formulation and implementation of a digital transformation strategy has become a key concern for organizations prior to digital transformation across many traditional industries. Four common types of digital transformation strategies are formed via two dimensions: **the use of digital technologies and the preparation of business models for digital operations.** Studies have found that SMEs are strengthening their digital transformation strategies through innovative technologies and new values that restructure business models and processes. Presently, many enterprises have completed the strategy formulation stage of digital transformation and are in the strategy implementation stage. A new strategic implementation framework can be adopted in digital transformation, which is divided into three phases: **planning, implementation, and review.** In summary, digital transformation is the best strategy for an enterprise, and **it must be reflected in the whole process execution of business, operation, and performance appraisal.** It is no longer sufficient to stay at the technical level; it is necessary to **digitalize all aspects of decision making, work, and cooperation, and provide the best experience for customers.**

- Recommendation 1: **Increase the digitalisation awareness and capabilities** of Italian SMEs
 - Initiative 1a: **Create a single source of information for SMEs willing to digitalise, coordinating resources from all existing stakeholders in the ecosystem** (e.g. business associations, digital innovation hubs, competence centres).
 - Initiative 1b: Accelerate SMEs' digitalisation through large corporates' and government procurement levers.
- Recommendation 2: Address the demand-supply matching gap
 - Create **mechanisms to steer the development of solutions to match the needs for the market's demand side.**
 - In particular, the government could sponsor the creation of an integrated digitalisation platform to match demand and supply for digital solutions.
- Recommendation 3: Reinforce the availability of debt and equity financing
 - Initiative 3a: **Reinforce the availability of credit through the banking system targeting digitalisation and innovation financing to SMEs.** For example, the European Investment Bank (EIB) could expand its

thematic SME lines to cover digitalisation and innovation in Italy in the form of intermediated loans to financial intermediaries or guarantees/senior loans for granular portfolios of SME loans. Importantly, such an initiative could benefit from the resources made available by the European Union's Recovery and Resilience Facility in the form of guarantees, first-loss pieces or junior tranches.

- Initiative 3b: The EIB could enhance access to equity financing for innovative SMEs in Italy by contributing to scaling up the **availability of funds of key players** in the Italian private equity and venture capital landscape, or by setting up country-specific investment schemes to **provide financial and strategic support** to private equity and **venture capital funds** willing to invest in Italy

Almost all industries have explored new digital technologies. This involves transformations of key business operations and affects products and processes. **To govern these complex transformations, companies need to establish management practices, such as establishing a digital transformation strategy that serves as a central concept to integrate the entire coordination, prioritization, and implementation of digital transformations within a firm.**

A digital transformation strategy seeks to coordinate and prioritize the many independent threads of digital transformation.

They focus on the transformation of products, processes, and organizational aspects owing to new technologies. Their scope is more broadly designed and explicitly includes digital activities at the interface with or fully on the side of customers, such as digital technologies as part of end-user products.

Digital transformation strategies go beyond the process paradigm, and include changes to and implications for products, services, and business models as a whole.

A digital transformation strategy is a blueprint that supports companies in governing the transformations that arise owing to the integration of digital technologies, as well in their operations after a transformation. Despite first research efforts and the frequent challenges encountered in practice, **academia still lacks specific guidelines for firms on how to formulate, implement, and evaluate digital transformation strategies.**

Digital transformation strategies have certain elements in common:

- **Use of technologies**, The use of technologies addresses a company's attitudes towards new technologies as well as its ability to exploit these technologies.

- **changes in value creation**. From a business perspective, the use of new technologies often implies changes in value creation. These concern the impact of digital transformation strategies on firms' value chains, i.e. how far the new digital activities deviate from the classical – often still analogue – core business.

- **structural changes**. With different technologies in use and different forms of value creation, structural changes are often needed to provide an adequate basis for the new operations. Structural changes include variations in a firm's organizational setup, especially concerning the placement of the new digital activities within the corporate structures, but also whether it is mainly products, processes, or skills that are affected most by these changes.

- **financial aspects**. the former three dimensions can only be trans-formed after considering financial aspects. These constitute both a firm's urgency to act owing to a diminishing core business and also its

ability to finance a digital transformation endeavor; financial aspects are both a driver of and a bounding force of the transformation.

It is important to ensure adequate and clear responsibilities for the definition and implementation of a digital transformation strategy. Companies should therefore ensure that the person who is operationally responsible for the digital transformation strategy has sufficient experience in transformational projects and directly align his or her incentives with the strategy's targets and progress. The define a potential candidate to carry on with the transformation should be one and the same person all the time. Top management support is essential along the whole transformation process, since digital transformation strategies affect the entire company, and there may therefore be resistance in different areas of the company. To deal with such resistance, transformation leadership skills are essential and require the active involvement of the different stakeholders affected by the transformations.

Digital transformation strategies should be subject to continuous reassessment, in which both the underlying assumptions as well as the transformational progress to date are evaluated.

It is necessary that organizational change, technology and data integration are addressed equally to achieve successful digital transformation of business.

Successful organizations must leverage strategy, culture and leadership to harness the potential of digital transformation of business. Organization's digital strategy goal are: improve customer experience, increase efficiency, improve innovation, improve decision making, transform the business. The organization is innovative is innovative compared to their competitors. Leadership has sufficient skills, experience to lead digital strategy.

The analysis should focus on a number of key areas: **users, suppliers and partners, investors, organization staff and organization leadership. The analysis should show how an organization's digitization will create more value for consumers, how it will help investor relations, how it will enhance interaction with partners, how it will change corporate culture, and how effectively the change in organization and process to digital transformation (7).**

Table 14: Literature review data concerning RQ5

<p>[...] New software solutions are also particularly helpful for SMEs, since these solutions can produce selective improvements and often no company-wide and uniform IT infrastructure is required. [...] The study showed that the SMEs were achieving their added value through physical products, and this will not change in the near future. [...] the generation of new and larger amounts of data will change the value added [...] the study shows that these necessary changes in SMEs and LSEs are primarily implemented through generated sales through products and services or through clearly defined budgets since the digital transformation is an internal investment theme.</p>
<p>Customized and multi-level tools that will address the key barriers to small business digitization and digital maturation. Emphasis on immediate coverage of basic digital needs especially for very small businesses. Emphasis (and) on capital / technological equipment depending on the specialized productive needs of small businesses. [...] configuration of digital hubs (digital hubs for non-tech SMEs) and education / training infrastructure, demonstration and pilot use of new digital technologies that will provide access to technological infrastructure and tools for very small (low / medium / high intensity technology / knowledge) enterprises. [...] specific tools and targeted actions to upgrade digital skills at the small business level (including low / medium technology / knowledge-intensive businesses), with an emphasis on modern digital tools. [...] Basic digital needs - which could be addressed through a "basic multi-level digital transition package for micro-enterprises" focused on real needs - are a priority for micro-enterprises in all sectors, especially for non- technology companies (low / medium technology / knowledge) both in terms of installation and upgrade of basic equipment and functions as well as in terms of expanding production and commercial capacity through further digitization of processes, activities, products / services, business model and digital skills.</p>
<p>Requirements for a Procedure Model to Support Digital Transformation in SMEs</p> <p>R1 – Integration of External Supporters: Incorporate external supporters such as competence centers or research institutions, which can help SMEs to understand and implement DT initiatives. Similar to this, the literature talks about collaboration with SME helpers, innovation labs, research institutions, and other intermediaries.</p> <p>R2 – Provision of Practical Orientation: Provide domain-specific orientation for DT by guiding the SMEs through current trends and demonstrate their importance based on practical examples. Literature suggests providing light, simple, easy-to-use, agile, and practical tools. Therefore, a procedure should go beyond the conceptual level and help to develop overviews incorporating domain specific knowledge, best-practice, real-life examples, and pre-filled tools.</p> <p>R3 – Creation of a Supportive Environment: Create an awareness of the basic conditions, which need to be ensured before an implementation project starts. R4 – Consideration of Tangible Goals: Support SMEs with the requirements and needs analysis, which enables them to clearly define measurable goals.</p> <p>R5 – Provision of an Individual Roadmap: Support SMEs with the creation of a simple roadmap, considering their current state of DT and a mix of quick wins as well as sustainable innovations.</p> <p>R6 – Enabling a Stepwise Implementation: Provide a cyclic step-by-step approach, which helps SMEs to implement feasible objectives one after another. This allows the sequential implementation to encounter the lack of resources. Still, the procedure should allow different entry points and provide the possibility to flexibly adjust the goals.</p> <p>R7 – Identification of Opportunities: Support SMEs to identify different possible solutions for a specific goal and select the most appropriate one. Thus, different business cases should be compared.</p> <p>R8 – Assisting Reflection & Measurement: Supporting SMEs in understanding and evaluating</p>

(un)successful digitization efforts in order to generate best practice and motivate further projects.

R9 – Balancing Strategy and Operation: Lead to actions, yet, ensure a strategic fit.

R10 – Supporting all Levels of Digital and Data Driven Innovation: Balance simple stepwise and radical innovations. Thus, it should support all levels of digital and data-driven innovation.

R11 – Consideration of Open Innovation: Consider the building of communities, in which SMEs can help each other. To drive the performance of their innovation process, ideas and resources should be shared between internal and external entities.

training sessions and assistance with a remote support service 24/7.

a model based on organizational competencies can help SMEs advance in their digital maturity in the sense proposed by Kane (2017) to refer to the capacity to respond to change early.[...] DT capabilities can constitute an OCDT according to the model that we have developed, which will allow SMEs to advance in their digital maturity [...]Furthermore, in the refined model we identify organizational knowledge as a strategic resource for the formation of the elements of competence and the advance in the development and maturity of the OCDT. It would be important to research actions needed to promote, retain, share and use organizational knowledge, how training programs and other types of business actions can help.

The overall conclusion is that policymakers and support organizations should not overestimate the immediate benefits that digital technologies can bring to MSEs; rather, they should facilitate investment in assets that are relevant to specific types of MSE and are complementary to digital adoption, such as skills, mindsets and managerial abilities. They should identify MSE groups with room to improve before they reach capability thresholds (for instance, by using the typology outlined in table 1 in section 1.4 or the bottleneck mapping presented in figure 7 in section 4.3), helping these MSEs to make the most out of their initial capability level and the circumstances they are faced with.

SMEs have access to turnkey IT applications in support of business functions, such as marketing (e.g. platforms for e-commerce, including social media applications); finance and accounting (e.g. open source software or mobile secure payment solutions) or human resources (e.g. collaborative tools, such as videoconferencing, shared calendars and instant messaging). Although they may represent an undeniable advantage in this context, turnkey IT applications can either be completely free or pay per use as they are based on a service-oriented architecture (SOA) accessible over the internet (Bradley et al., 2011).

In Germany, competence centres have been in existence since 2015 to give SMEs a holistic approach to digitisation and to quickly identify simple potentials. The centres support the companies in taking the first steps towards a digitally networked enterprise independently.

It is essential that SMEs which ask for digital transformation should be supported by governments. With the aid of government agencies and other stakeholders such as the Trade Association and Chambers, SMEs may be better able to access more assistance in their digital transformation process [17]. Also external supporters such as competence centers or research institutions can help SMEs to understand and implement digital transformations initiatives.

According to the Institut für Mittelstandsforschung (2020), SMEs are companies that employ fewer than 500 persons and have an annual turnover not exceeding 50 million euros. SMEs are also typically seen as long-term, stable, and independent (Bundesverband der Deutschen Industrie e. V. 2015). Therefore, they have their own needs and requirements, especially when it comes to new and radically changing issues like DT. They do not rely much on theoretical approaches and prefer quick and easy, pragmatic solutions. Their requirements must consist of practical facts and recommendations for action. Furthermore, Arendt (2008: 93–108) found that knowledge and skills were the biggest barriers for the SMEs with regard to digital initiatives. Zimmermann (2019: 11) adds data security and governance as well as Internet infrastructure.

Therefore, the prerequisites for DT of SMEs are different than those for larger organizations. A previous study [16] explains that SME actors can carry out DT through the availability of digital platforms, digital investment, social capital development, building business teams, and improving the ability of all organizational members. It is also argued by scholars [17] that DT requires more than technical capabilities but management capabilities as well, such as work process design, business strategy training, and human resources investment in digital literacy capability. Moreover, the DT process requires innovative culture, pioneering top management, effective government support, and so on. In short, certain conditions or resources are necessary for SMEs to realize DT, and it is of great practical importance to analyze the key factors that determine the realization of DT of SMEs.

To manage complex problems, FB may be required to manage resources and stakeholders more effectively in the post-pandemic era. Additionally, firms need the agility to effectively design and implement strategic changes, which involves fluidity, speed, and mindsets that encourage innovative thinking and resilience. Thus, the sensing, seizing, and transforming components of dynamic capabilities (Teece, 2007) are even more required in post-pandemic era.

Large companies can develop and deploy their own digital platforms. Equipped with abundant resources and capabilities, they can orchestrate internal resources to develop critical capabilities that allow them to overcome organizational inertia and resistance to changes (Chen et al., 2014; Cui & Pan, 2015). Most SMEs, however, have to rely on third-party digital platforms (Banerjee & Ma, 2012). Although this phenomenon has drawn research over the last a few years, much research on SMEs' use of third-party digital platforms has tended to focus on specific technological functionalities offered by the platforms, investigating the effectiveness of specific tools such as online communication tools and transaction processing in helping SMEs better understand their customers and process orders (e.g., Alba et al., 1997; Bakos, 1991; Dai & Kauffman, 2002). However, as Besson and Rowe (2012) noted, digital transformation is more a managerial issue than a technical one: Successful digital transformation demands not only acquiring and deploying technical resources but also—perhaps even more importantly—tackling managerial issues (Doherty & King, 2005) such as redesigning business processes and training (Markus, 2004) and investing in e-Commerce human resources and organizational capabilities (Cha et al., 2015). However, little research has explored how SMEs tackle managerial issues in digital transformation using third-party digital platforms.

Digital technology, employee digital skills, and digital transformation strategies are the three core elements for SMEs to carry out digital transformation from point to face, local to global, and in stages. All three are indispensable in the ongoing digital transformation process. Previous research has found that, in addition to technology adoption, important factors for successful digital transformation are the organization's ability to change and its operational excellence in integrating external digital services with internal IT support [14]. Another study reports that digital transformation at the enterprise level requires attention to the alignment of strategy, vision, and digital transformation investment; the

suitability of innovation culture; intellectual property and know-how; the strength of digital capabilities; and the use of digital technology

The needs of SMEs in digital transformation process can vary. It is required to privatise the content by means of size of enterprise, sector and SME. Electronic operation is an operation’s adopting of other business processes, such as supply, manufacturing, marketing, sale, finance, accounting, human resources to new technology. Digitisation requires radical changes not only in terms of strategy, but also in terms of culture within the company.

APPENDIX III: Focus Group Report & Transcript



FOCUS GROUP
 in terms of the approved proposal
“Empowering SMEs for the digital transformation”

This report was prepared for and submitted to the “#SMESGoDigital” Project by:

“The European Commission’s support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein”

Focus Group

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About Definition of requirements with focus group discussions & extant research identified through literature review

A focus group meeting was held by IME GSEVEE on Zoom Platform, on 14.11.2022, with the aim of discussing the findings of the literature review, which is implemented in the framework of the Erasmus + Key Action 2 , Cooperation partnerships in vocational education and training in terms of PR1: Design of #SMESGoDigital tool, of the approved proposal "Empowering SMEs for the digital transformation – #SMESGoDigital".

The main goal of the proposal "Empowering SMEs for the digital transformation – #SMESGoDigital" is to develop a dedicated online tool tailored to the SMEs requirements for guidance, skills and resources to fuel capitalization on their digital business models and processes transformation. The Literature review provided the necessary information on the current situational context worldwide which assisted in the design of the need analysis of our target group, the SMEs stakeholders, which will follow suit. The research was conducted by all #SMESGoDigital project partners (IME GSEVEE and Mathesis 4FC from Greece, ECIPA and ENAIP VENETO from Italy, PIMEC from Spain). The results were collected on an Excel file uploaded on project's Google Drive, completed by the participants from all the countries of the consortium: Greece, Italy and Spain.

Focus Group Participants

In the Focus Group, implemented by IME GSEVEE participated a) scientific experts of IME GSEVEE, ECIPA, Mathesis 4FC, PIMEC, ENAIP VENETO, EVTA b) ICT experts and staff members of SMEs.

RQ1: How is Digital Transformation defined by Academia, Institutions and Business

DIGITAL TRANSFORMATION (DT) OF SMEs COULD BE DEFINED AS "THE PROFUND AND ACCELERATING PROCESS OF SHIFTING IN A STRATEGIC AND PRIORITIZED WAY SMEs' ACTIVITIES, PROCESSES AND MODELS TO FULLY LEVERAGE THE POTENTIAL OF EMERGING TECHNOLOGIES AND THEIR IMPACT ACROSS THE LABOR MARKET AND MORE WIDELY, ACROSS THE SOCIETY." #SMESGoDigital project

Regarding the RQ1, participants asked to answer (either orally or at Poll Everywhere) in the following questions:

- What comes to your mind when you hear about digital transformation?
- Do you think that you have already been part of a DT process at your company or somewhere else in your everyday life? If yes, please describe.

Participants answered that when they hear about Digital Transformation come to their mind the words "innovation processes" "technology" "automation", "business change", "behaviors", "time, material.. It is considered that digital transformation has to do with the upgrading up scaling of the processes that already exist in SMEs and of course integrating innovative technologies in these processes and using the appropriate tools to do so.

In addition, it seems that Digital Transformation after Covid 19 pandemic became an urgent need. For some of the participants, Digital Transformation is not only about IT, but it is also innovation, leadership & vision.

Preliminary Remarks

It had already been distributed to the participants the Agenda and the focus group questions as well as an executive summary of its purpose.

At first, the #SMESGoDigital project was presented, with a focus on its context and its concrete objectives. In addition, the presentation was focused on the Project Result 1.

Each project partner presented the research question in which contributed in the literature review. IME GSEVEE was responsible for RQ 1 & 5, PIMEC was responsible for RQ2, Mathesis 4FC was responsible for RQ3 and ECIPA in collaboration with ENAIP VENETO were responsible for RQ4.

Research Question 1	How is Digital Transformation defined by Academia, Institutions and Business
Research Question 2	How are the Digital Transformation Levels defined and distinguished?
Research Question 3	Which capabilities build upon Digital Transformation Capacity (DTC)?
Research Question 4	How Digital Transformation Strategy (DTS) is related to Digital Transformation?
Research Question 5	What support do SMEs (especially small & micro-ones) need for their Digital Transformation?

Specific Observations

After the presentation of each Research Question, more specific questions were asked. It is worth mentioning that partners used the "Poll Everywhere" in order to give the chance to participants to express their opinion in a brief way.

RQ2: How are the Digital Transformation Levels defined and distinguished?

THE LEVELS OF DIGITAL TRANSFORMATION (DTL) COULD BE DEFINED AS 3 MAIN BLOCK AND 9 SUB-DIVISIONS:

1. CONSUMER BEHAVIOR/EXPERIENCE
 - a. CUSTOMERS UNDERSTANDING
 - b. TOP-LINE GROWTH
 - c. CUSTOMER TOUCH POINTS.
2. BUSINESS/OPERATIONAL PROCESSES
 - a. PROCESS DIGITALIZATION
 - b. WORKER ENABLEMENT
 - c. PERFORMANCE MANAGEMENT.
3. BUSINESS MODELS
 - a. DIGITALLY MODIFIED BUSINESSES
 - b. NEW DIGITAL BUSINESSES
 - c. DIGITAL GLOBALIZATION

#SMESGoDigital project

Regarding the RQ2, participants asked to answer (either orally or at Poll Everywhere) in the following questions:

- When starting a Digital Transformation Process, do you know which are the levels/areas to proceed with? If you do, in which have you found more difficulties to implement the transformation?

Participants highlighted 3 levels "technology" "demand" and "behavior". In addition, it is a common need for self-assessment and orientation for SMEs in order to know where to start and how to proceed. However there is lack of time, financial resources and knowledge to implement these changes.

RQ3: Which capabilities build upon Digital Transformation Capacity (DTC)?

DIGITAL TRANSFORMATION CAPACITY (DTC) OF SMES AND THEIR MANPOWER COULD BE DEFINED AS "THE DIGITAL MATURITY STAGE FACILITATED BY THE DIGITAL LITERACY ORIGINATING FROM CAPABILITIES TO UNDERSTAND AND APPLY DIGITAL ACTIVITIES IN A SITUATIONAL, ORGANIC & VALUE-DRIVEN WAY".
#SMESGoDigital project

Regarding the RQ3, participants asked to answer (either orally or at Poll Everywhere) in the following questions:

- Is the Digital Transformation definition we presented close to your understanding of the concept?
- What skills do you think you need to build your Digital Transformation Capacity?

Participants consider that the Digital Transformation definition we presented was close to their understanding of the concept. Furthermore, Digital capabilities, literacy and maturity were highlighted as basic components of Digital Transformation Capacity.

Finally, participants consider that they need some skills in order to build their Digital Transformation Capacity such as collaboration, experience probably to have some networking with experienced SMEs that have already gone through digital transformation, adaptability and of course communication.

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RQ5: How Digital Transformation Strategy (DTS) is related to Digital Transformation?

Regarding the RQ5, participants asked to answer (either orally or at Poll Everywhere) the following question:

- Do you already have support for the DT at your organization/ company? If yes, what kind of support? If no, why?

SUPPORT NEEDED FOR THE DT OF SMES COULD INCLUDE AMONG OTHERS:

- GOVERNMENT SUPPORT
- FINANCIAL SUPPORT
- SKILLS DEVELOPMENT
- ACCESS TO KNOW-HOW CENTERS & MATERIAL
- APPROPRIATE INFRASTRUCTURE
- STANDARDIZATION
- SMES COMMUNITIES (NATIONAL & INTERNATIONAL)

#SMESGoDigital project

During the focus group the factor of "financial support" was mentioned, with the participants highlighting that DT needs "funding" and "investments" and thus, horizontal support by the government and/or other public organizations. Moreover, "new skills" and "upgraded skills" were mentioned.

RQ4: How Digital Transformation Strategy (DTS) is related to Digital Transformation?

Regarding the RQ4, participants asked to answer (either orally or at Poll Everywhere) in the following question:

- Which of the following do you think you need support to transform your business digitally?
 - The participants expressed their need for expertise to guide them through their DT journey as some of them have no idea where to start or for those who already are aware of their needs do not know how to proceed for tailored solutions:
 - Simple roadmaps with clear "steps and milestones" leading to immediate benefits were recommended by participants:
 - Need for knowledge exchange networking Provision of success stories was deemed essential by participants
 - Need for digital consultants for in-depth advisory and project management services.
 - Some SMEs are lacking senior staff resources in charge of their DTS internally leading them to seek support externally, which, however, is not customised to their needs
 - As has been demonstrated by the findings of our Focus Group data analysis a CTO as a Service (CTOaaS) to plan, implement and evaluate micro DTS for SMEs guiding them through their DT trajectory is deemed as an ultimate supportive tool. This CTOaaS should integrate:

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Annexes

A. Invitation/ Agenda



Empowering SMEs for their digital transformation #SMESGoDigital AGENDA

Focus Group
Dates: Monday, 14th November 2022, 11:00-12:30 CET
Venue: On-line, via zoom
Zoom meeting link: <https://us06web.zoom.us/j/82534311725>

	Topic	Contributors
11:00 am - 11:05 am	Welcome & Presentation of the lead partner	IME GSEVEE
11:05 am - 11:15 am	Presentation of the project	IME GSEVEE
11:15 am - 11:20 am	Focus group Methodology	IME GSEVEE
11:20 am - 11:25 am	Research Question 1: How is Digital Transformation defined by Academia, Institutions and Business?	IME GSEVEE
11:25 am - 11:30 am	Q & A	Focus Group
11:30 am - 11:35 am	Research Question 2: How are the Digital Transformation Levels defined and distinguished?	PIRELL
11:35 am - 11:40 am	Q & A	Focus Group
11:40 am - 11:45 am	Research Question 3: Which capabilities build upon Digital Transformation Capacity (DTC)?	Mathesis4C
11:45 am - 11:50 am	Q & A	Focus Group
11:50 am - 11:55 am	Research Question 4: How Digital Transformation Strategy (DTS) is related to Digital Transformation?	EUPA-ENAD VENETO
11:55 am - 12:00 pm	Q & A	Focus Group
12:00 pm - 12:05 pm	Research Question 5: What support do SMEs (especially small & micro-ones) need for their Digital Transformation?	IME GSEVEE
12:05 pm - 12:10 pm	Q & A	
12:10 pm - 12:30 pm	Conclusions	All



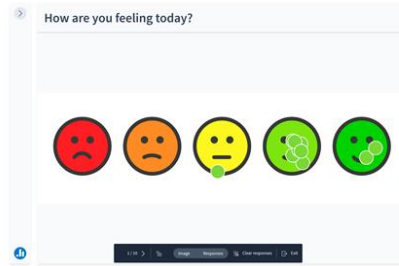
Main Questions

1. What comes to your mind when you hear "Digital Transformation (DT)"?
2. Do you think that you have already been part of a DT process at your company or somewhere else in your everyday life? If yes, please describe.
3. When starting a Digital Transformation Process, do you know which are the levels/areas to proceed with? If you do, in which have you found more difficulties to implement the transformation?
4. What needs to happen and what needs to be in place to build digital capacity: a. For an individual? b. For an organization? c. For a network?
5. Do you already have support for the DT at your organization/company? If yes, what kind of support? If no, why?

Other Questions might be discussed

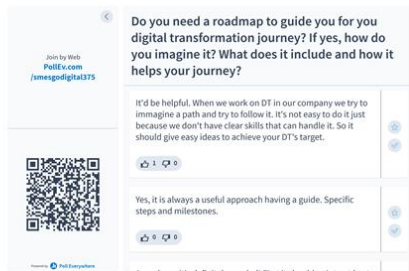
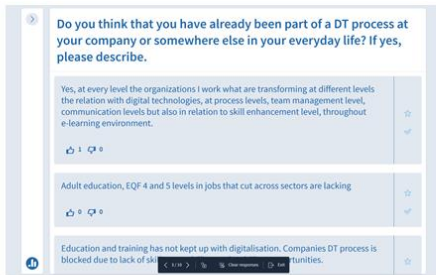
1. What are your feelings towards DT? Does it provoke stress, curiosity, anxiety, impatience, uncertainty, expectation to you? Any other feelings?
2. Of all the subdivisions the DT could focus, which are the areas your business has more interest to digital transform and why? Do you know the benefits that could result from this implementation?
3. Imagine that we meet at least 6 months from now and you tell us that your work has changed dramatically for the better as a result of your digital transformation. What does your work look like? What skills and capacities have you developed? Who benefits from the changes, and in what way?
4. What examples of best practice in digital transformation, or building digital capacity for, are you aware of?

AGREEMENT No. 2021-1-EL01-KA220-VET-000033235

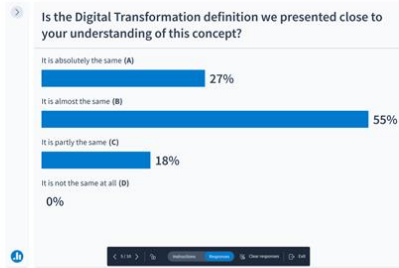


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Focus Group



Focus Group





Do you already have support for the DT at your organization/company? If yes, what kind of support? If no, why?

Nope, unfortunately no support at all. It's a too complicated and time-consuming process to find a support. We tend to find internal solutions, it's faster even if probably less effective.

Yes, we have a software house that follow us in our process of digitalization.

Mainly it's training for us. We analyze how we want to work and search for tools that can support the gaps.

Please describe your overall impression of the Event

Interesting

It is a necessary discussion. I would like to see it more focused in SME's by categorization, so it fits more specific needs.

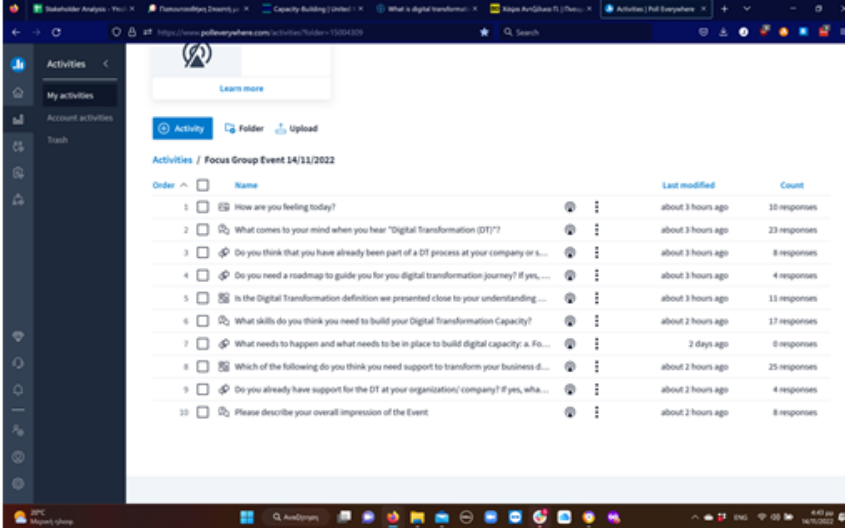
Thank you for this interesting discussion. After this event I have new reflection points about DT.

good, quite focused and needed!

Very useful

Very interesting

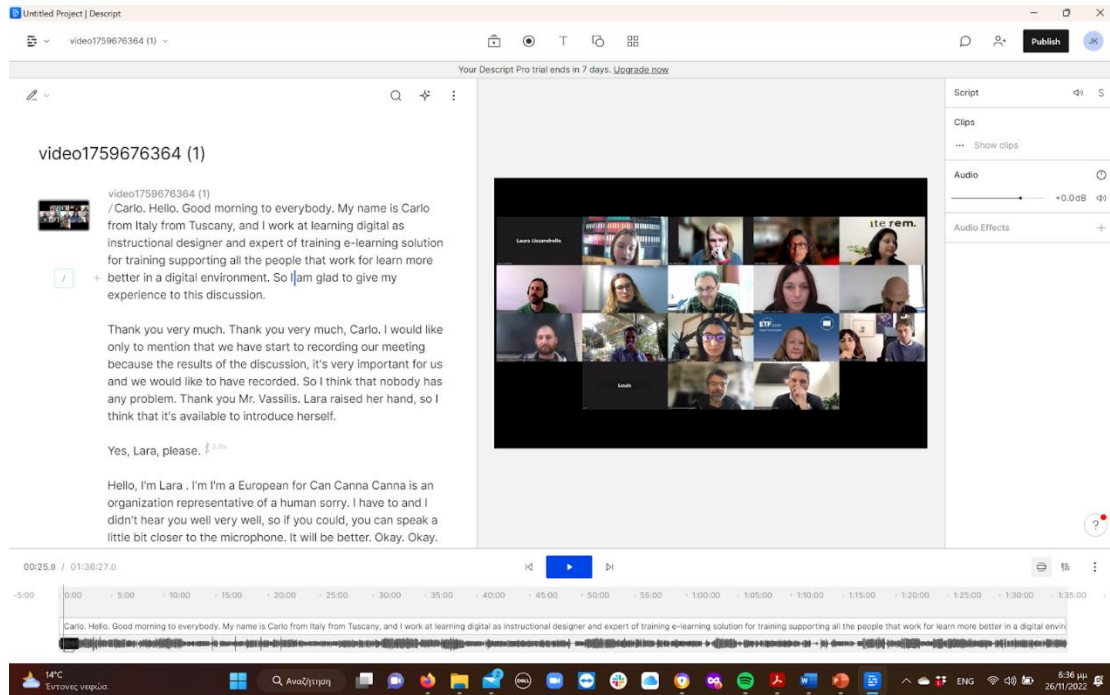
Focus Group



The screenshot displays a web application interface for managing activities. The main content area shows a list of activities for a focus group event held on 14/11/2022. The activities are listed in a table with columns for Order, Name, Last modified, and Count. The activities are numbered 1 through 10, and each has a unique icon and a response count.

Order	Name	Last modified	Count
1	How are you feeling today?	about 3 hours ago	10 responses
2	What comes to your mind when you hear "Digital Transformation (DT)"?	about 3 hours ago	23 responses
3	Do you think that you have already been part of a DT process at your company or s...	about 3 hours ago	8 responses
4	Do you need a roadmap to guide you for your digital transformation journey? If yes, ...	about 3 hours ago	4 responses
5	In the Digital Transformation definition we presented close to your understanding ...	about 3 hours ago	13 responses
6	What skills do you think you need to build your Digital Transformation Capacity?	about 2 hours ago	17 responses
7	What needs to happen and what needs to be in place to build digital capacity: a. Fo...	2 days ago	0 responses
8	Which of the following do you think you need support to transform your business d...	about 2 hours ago	25 responses
9	Do you already have support for the DT at your organization/ company? If yes, wha...	about 2 hours ago	4 responses
10	Please describe your overall impression of the Event	about 2 hours ago	8 responses

DESIGN OF #SMESGODIGITAL TOOL



Carlo. Hello. Good morning to everybody. My name is Carlo from Italy from Tuscany, and I work at learning digital as instructional designer and expert of training e-learning solution for training supporting all the people that work for learn more better in a digital environment. So I am glad to give my experience to this discussion.

Thank you very much. Thank you very much, Carlo. I would like only to mention that we have start to recording our meeting because the results of the discussion, it's very important for us and we would like to have recorded. So I think that nobody has any problem. Thank you Mr. Vassilis. Lara raised her hand, so I think that it's available to introduce herself.

Yes, Lara, please.

Hello, I'm Lara . I'm I'm a European for Can Canna Canna is an organization representative of a human sorry. I have to and I didn't hear you well very well, so if you could, you can speak a little bit closer to the microphone. It will be better. Okay. Okay. Okay. Thank very much.

Let's go now to

Hi everybody. My name is Daniel Risto, I Italy. Our company is called a e g credit and we work in the business information sector. So we provide informations on companies and people. Thank you. Thank you very much. Let's go now to the other participant with the name Akron, hp.

Which is hp please. Good morning everybody. I'm Amy from Italy, and I work for a small company. He's a family around conduction. That's the maintenance kit for F Service. And we are looking forward to start

digital information and as we are a small company. I'm very happy to be here, have information about this.

Thank you. Thank you. I go very fast to Mr. Joseph,

or excuse me. Let's put it Mr. . Okay. So, thanks. I want also to, thank to LAN and Pek. We are a startup from Barcelona, Spain, and we are building a technology to help SMEs to automate their digital process and office processes with natural language interaction. Thank you very much. I go to Mr.

Pita V from atf, European Training Foundation. I realize I look like a man. I'm actually a woman. Yeah. And so, yes, I work for the European Training Foundation. So the ETF in Italy. I'm not Italian, as you can probably tell by the accent. I lead the team that looks at skills for enterprise development. We specifically look at smart specialization and how it impacts the skills needs of companies.

And digitalization and technology transfer are very much at the top of the agenda there. And just for those who don't know, so the ETF is an agency of the European Commission. However, we are the only one that doesn't have a mandate to work inside the eu. We only work outside. That is my very loud dog.

Sorry. Thank you very much. Close. We're very close to with Ruggiero.

Hello everybody. My name is Ruggiero. I'm marketing specialist at the Creation Do it is a startup based in Sicily, in Catania specifically, and we deal in the influencer marketing and the digital services for companies in Italy and beyond. Very much. And let's go now to Miss Viv car from N eight.

Yeah. Hello to everyone. Good morning. I'm Vivianna. I work at Atto, one of the main organization operating in the vocational training sector in Italy. We're partner of the project and I'm very today and I get more information about digitalization that could help us to achieve the objective of our project.

So thank you very much and, we'll close with Paula Zap Planner from Pek. Hi, good morning to everyone. I'm the European project technician from here, PEK, the SME S Association in Catalonia, and I'm really happy to meet you all and let's get started. Okay. I hope that I didn't. Anybody. Welcome. I will give the floor to Ms.

Illa to present in brief the project as me the night, the floor

Before the night starts. I would like to inform our participants that as we wish to have a lot of interaction from them. We have created some activities that we are going to present and we would like their participation. And this will appear in a link that I'm going to share now in the chat.

And I would like to give me one time, one minute before we start so we can check that we all have this link and we can respond to this link. If you go to the chat,

then you will be able to see

this and you can vote. So we can check that it works because we will ask from you.

Perfect. I see that most of you feel it. Very well today and we're glad for that. Jenny. I think that for us we need to copy it. Copy, yes. We need to copy. Let's see.

And its not open. I need to copy it to a new browser, to a new page. The link will be the same. You will not change the link. The link will be the change. Only the slides will change. You will keep the same link for the whole ah, okay. Okay. Session. So we just checked that it works. At the moment we are going to tell you go back to this link and vote again.

Okay. The link will be the same. So keep the link open and we will just change the. Change the the slides of this. Perfect. Okay. Okay. So the night, the floor now is yours. Thank you for Okay. And excuse me for, thank you. Let me share my screen so everything's okay. Did you see my screen? Yes. Yes. So our project is SMEs.

Go dig.

Wait. Okay. As we know the, emerging new world ships away the old economy setting a prevailing role for innovation and ict. The prevailing conditions are that the global transitions, the global transition towards a digital green and distance economy and society. The SME Digital. And the covid 19 pandemic economic disruption.

So the challenge is the lack of support and orientation for SMEs to inify their needs or the value proposition and to understand the potential game changer the digital consistent provides. So the solution is an online tech hub initiative for systematic guidance and support. More specific, more specifically, once the portal, providing holistic ecosystem with a platform with resources for knowledge, skills and competencies.

A sectorial three level digitalization roadmap, current level detection and sequential feasible goals and micro-learning trajectories through participative action plans. So the project will deliver four main project results consisting of tasks and sub-tasks, framed by three virtual multiplier events for feedback and dissemination purposes.

We're in the middle of the project result one, which is the design of the SMEs Go d digital tool which is the design of the online platform, including the supportive orientation program the competence based course, the three level roadmap, and the blueprint of the technological aspects of the portal hosted on the platform following the findings of the stakeholders needs.

So this is our Facebook page. We are preparing for the website and the next days will be ready. So I will give the floor to Lana. In order to start to discuss about our research questions. Thank you, . It is important to mention here just before moving on to the research questions. What have we done so far concerning this a focus group discussion that we are now having as a consortium?

We have all SEARCHs, the existing The research, the existing publications in the fields that we will discuss during our focus group. So we have read some definitions as we understand them as a consortium. So now we are going to present them to you, discuss them with you, and reframe them in order to reach the final definitions that we are going to use as project partners.

Let's start with the first research question which focuses on the heart of our project, which is digital transformation. We would like you to use this link that Jenny provided before in order to express. What comes to your mind when you hear about digital transformation?

So please write the keywords concerning this definition as you are writing your thoughts in the link. I will just mention the definition that we have reached during our literature review. We understand digital transformation of SMEs as the profound and accelerating process of sifting in a strategic and prioritized way SMEs activities, processes, and models to fully leverage the potential of emerging technologies and their impact across the labor market and more widely across the society.

So you can see here our definition concerning digital transformation. And please use the link provided by Jenny in order to express what comes to your mind when you hear the concept digital transformation. What is digital transformation for you?

I hope that you all have access to the link.

If someone has any issues, please write in the chat so that we can write again. Here is the link for everyone in the chat and I'm going to share now my screen and see what you have written so far.

It looks like **innovation processes and technology are highlighted**. This means that most of you have thought of these words. And we definitely agree that digital transformation has to do with the upgrading up scaling of the processes that already exist in SMEs and of course integrating innovative technologies in these processes and using the appropriate tools to do so.

it looks that we all have in mind similar things when talking about digital transformation.

Some other words that I can see is **innovation, automation, business change, of course, behaviors, time, material**. We will see more concerning material and processes in the next questions that we are going to discuss. **Skills, definitely skills is a very important concept that has to do with digital transformation**. So thank you for sharing your thoughts at this point. I guess that we can move to next question concerning digital transformation.



Response, Via, Screen name, Created At

optimize, pollev.com/smesgodigital375, Aysel Palacios Ardanuy (iterem), 2022-11-14 04:31:16

automatization - optimization, pollev.com/smesgodigital375, Andrea Baglieri, 2022-11-14 04:31:14

Real time response, pollev.com/smesgodigital375, Aysel Palacios Ardanuy (iterem), 2022-11-14 04:31:07

Prediction, pollev.com/smesgodigital375, Aysel Palacios Ardanuy (iterem), 2022-11-14 04:31:01

Virtualization, pollev.com/smesgodigital375, Carlo, 2022-11-14 04:30:50

Digitisation, pollev.com/smesgodigital375, "Pirita Vuorinen, ETF", 2022-11-14 04:30:48

Fast adaptation, pollev.com/smesgodigital375, Aysel Palacios Ardanuy (iterem), 2022-11-14 04:30:32

New technologies and new business processes, pollev.com/smesgodigital375, Antonis Angelakis, 2022-11-14 04:30:17

technology - process - control, pollev.com/smesgodigital375, Andrea Baglieri, 2022-11-14 04:30:10

progress ,pollev.com/smesgodigital375,Alessandra,2022-11-14 04:30:10	
Transparency ,pollev.com/smesgodigital375,Aysel Palacios Ardanuy (iterem),2022-11-14 04:30:09	
transition ,pollev.com/smesgodigital375,Alessandra,2022-11-14 04:29:58	
change of tools ,pollev.com/smesgodigital375,Carlo,2022-11-14 04:29:53	
New channels to communicate with customers. Centralized data (so that it can be analyzed) ,pollev.com/smesgodigital375,Aysel Palacios Ardanuy (iterem),2022-11-14 04:29:45	
A process that brings material and slow behaviors into something fast and non material. ,pollev.com/smesgodigital375,Daniele Rizzetto,2022-11-14 04:29:36	
fair and just innovation ,pollev.com/smesgodigital375,Alessandra,2022-11-14 04:29:27	
technology ,pollev.com/smesgodigital375,anonymous,2022-11-14 04:29:26	
Cross-sectoral skills ,pollev.com/smesgodigital375,"Pirita Vuorinen, ETF",2022-11-14 04:29:24	
automating processes and tasks that are carried out manually and that represent a huge time investment for the company ,pollev.com/smesgodigital375,Josep Carmona,2022-11-14 04:29:06	
Technology ,pollev.com/smesgodigital375,"Pirita Vuorinen, ETF",2022-11-14 04:29:03	
innovation ,pollev.com/smesgodigital375,anonymous,2022-11-14 04:28:49	
Use of digital technologies to substitute and authomatize analogic tools and processes. ,pollev.com/smesgodigital375,Ruggero,2022-11-14 04:28:30	
Computers ,pollev.com/smesgodigital375,siomadis,2022-11-14 04:28:10	
<p>So if you think that you have already been part of a digital transformation process at your company or somewhere else in your everyday life, do you think that you have already attended a process of digital transformation, you have been part of a digital transformation.</p> <p>You could raise your hand if you want to express your opinion on this. And I think, Jenny, that will also have a relevant question in the link too. Yes, the link has changed to a new question where you can write if you don't wish to speak, but of course we welcome anyone in the floor.</p>	

Jenny, I would like to speak. Yes, of course. Yeah. The Covid Pandemic has forced business to go digital in a massive way. So **what started us, a crisis response has become the new normal, with a big implications for the for how businesses will perceive customer experience.** You see that the digital mature companies are more profitable than the less mature companies transfer, transferring a business into this digitization transformation is, makes it performs better in a digital economy. **It's a new, task for the businesses. It requires innovation. It requires leadership, technology, and vision, this is my opinion. It's, more than technical game you know.** Companies have to be engaged clients in order to perform better.

Exactly. This is what we have already found in the literature review. It's a complicated, complex process, and SMEs are a bit alone in this process.

It looks like it's not anymore an option for an SME, but it's a must. It's something, it's a need. It's something that some, an SME has to follow in order to remain. I can also see hand from Pirita, if I'm not mistaken.

Yeah. Thanks. I think **talking about SMEs, lumping them all together is actually is ... is putting together apples and oranges in a sense when we're talking about digitalization, because the vast majority of the companies that fall into this category are very small.**

And then some, and some are quite large because when we come to the upper end of the medium sized companies, then we are talking about pretty sizable companies already. But something that we've noticed working in Western Balkans, for instance, where we work in the agri AgriFood sector and we work with digital companies, biochemical companies and companies producing food supplement index **they all seem to have one thing in common.**

Digitalization. Yes, they are all relatively advanced in terms of digitalization. However one stumbling block that all of them have, irrespective of which economic area they're operating in, is that. Digitalized to an extent, but to really benefit from digitalization, to start using digital marketing, expand your market internationalize and so on.

There's really a lack of education training provision for professionals, for instance, in the marketing area who would be able to digitally market the products for different companies in different sectors of the economy. Especially when we're talking about cross-sectoral areas like like, biochemicals or digital solutions for agri food, the **digital marketing skills are really lacking.**

So it's not just about, if we're not just talking about **digitization and basic level of digitalization, definitely to really benefit from companies so the companies can internationalize, expand the sales of their products and so on.** There's a definite gap in terms of professionals that are currently put out by education and training provision, as well as adult education equipping professionals with those digital skills professionals for instance, in this case I'm referring to, for instance, **marketing specialists with those skills that are needed to drive forward the agri food sector.** So that's **what I feel is really lacking. We should really talk about digitalization on different stages of company development.** Thank you.

Let's see what other participants have shared with us in in our link. You can see their answers here.

Yes. At a very, at **every level of organizations I work what are transforming at different levels, the relation with digital technologies, at process levels, team management level, communication levels,** but also in relation to **skill enhancement level throughout e-learning environment.**

I think that the big step has been the increasing use of LinkedIn as a way to show our professional life to the world. **The correct use of this social media can have huge impacts on how businesses interact with each other. Another big change has been the use of digital project management tools.** Yes, digital project management tools are very important and that's also a fact.

We are using a Slack tool in our project in order to enhance the processes. And we could also mention that this is part of the digitalization process.

Also said that **it's no longer an option. It's a need. Digital transformation is an ongoing process to continuous improvement, otherwise organizations will be left behind.** And that's true. Yes.

We have also been working from distance since covid something, which remains as an option in our organization. That's right. Many organizations still allow their workers to choose if they want to work from distance or if they want to come to the office. So this is an impact that and a part of the digital transformation concerning SMEs.

Again, **CRM and apps are just two simple examples of digital transformation.**

I can also see that someone wrote, **education and training has not kept up with digitalization companies. Digital transformation process is blocked due to lack of skills, upskilling and reskilling opportunities.** And I would also like to agree with this comment. Training is a core option that needs to be offered not only to the SMEs, but also to schools to schools to any sector that needs to be trans digitally transferred.

Yes **at work through the use of project management platforms, which measures result and help team communication** another comments that has been included. I think that we have shared many ideas and opinions concerning digital transformation. So we now have all have an idea of what this is and how it is defined not only through the literature, but how we understand it. So I think that we could proceed with the next research question, and I give the floor to Paula, I think.

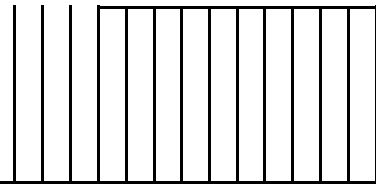
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Votes, Upvotes, Downvotes, Trending Score

Adult education, EQF 4 and 5 levels in jobs that cut across sectors are lacking, pollev.com/smesgodigital375, "Pirita Vuorinen, ETF", 2022-11-14 04:40:31, 0, 0, 0

Education and training has not kept up with digitalisation. Companies DT process is blocked due to lack of skilling, upskilling and reskilling opportunities., pollev.com/smesgodigital375, "Pirita Vuorinen, ETF", 2022-11-14 04:38:57, 0, 0, 0

yes, at work through the use of project management platform which measures results and help team communication.

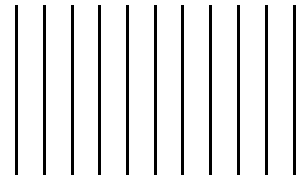
.,pollev.com/smesgodigital375,Andrea Baglieri,2022-11-14 04:38:25,0,0,0,0



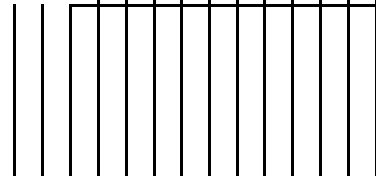
I think that a big step has been the increasing use of LinkedIn as a way to show our professional life to the world. The correct use of this social media can have huge impacts in how businesses interact with each other. Another big change has been the use of digital project management tools.,pollev.com/smesgodigital375,Ruggero,2022-11-14 04:34:36,0,0,0,0

Yes, at every level the organizations I work what are transforming at different levels the relation with digital technologies, at process levels, team management level, communication levels but also in relation to skill enhancement level, throughout e-learning environment.,pollev.com/smesgodigital375,Louis Samuel Andreotta,2022-11-14 04:34:13,1,1,0,1

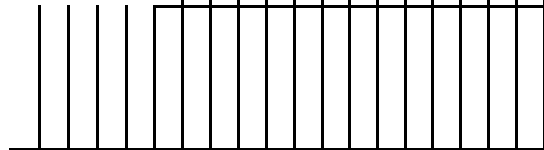
It's no longer optional. It's a need. DT is an ongoing process to continuous improvement. Otherwise, organizations will be left behind.,pollev.com/smesgodigital375,Aysel Palacios Ardanuy (iterem),2022-11-14 04:33:30,0,0,0,0



yes, we have been working from distance since COVID, something which remains as an option in our organization.,pollev.com/smesgodigital375,anonymous,2022-11-14 04:33:17,0,0,0,0



Yes of course. CRM, Apps are just two simple examples.,pollev.com/smesgodigital375,Daniele Rizzetto,2022-11-14 04:33:10,0,0,0,0



Yes, Okay. So once we had a definition of digital transformation, then we thought about the levels of this digital transformation, and with the literature review, I think we have highlighted these three different levels, consumer behavior or experience, business processes and business models.

We would like to say that levels is kind of an abstract concept. I think each of us understands level different. We also want to know from you, what are the levels you have in mind when we talk about digital transformation. These three that we can see in the screen is the ones that we have kind of selected, but we know there's many other different levels.

And just explaining instead of customer consumer behavior, we have found three main areas. In each of these three levels, we have found three main areas. But now if we, Ilona, we go to my question,

maybe we can start from the first one. When, starting a digital transformation process, what are the levels you, with your experience think of this is what we would like to know of and we I have to say again that we want to know your opinion based on your experience, cuz we know these three levels can change depending on the business.

So what do you think? I don't know if it's clear.

May I speak please? Yeah, of course. Yes. **The levels for digital transformation is my mind is technology, second demand, and third is behavior.** So the consumers impact the behavior with the expectations while when they shop and are more engaged you know and it drives the demand of a business.

This is **these are the three levels, first technology, the demand, and the behavior.** Because customers are the ones who demand, and sorry. Customers are the ones who demand and they now expect a shopping experience that is unique. So it gives comparison about that to a company to be unique in this way. Okay. Thank you very much. Welcome.

There are two participants that raise their hands, I think. I think the first was I. Let me tell you that there is a new question in the link for the participants that wish not to speak, but they are better at writing their opinions. You are welcome to share your opinion in the new questions in the link that you have.

Yes. Danaí can you proceed with the people that would like to speak. Okay. Mr. Rogero? Yes. Thank you. I think it's better for me to just speak up instead of writing in this case. In my experience I found that lots of people don't always know, like talking about small, medium enterprises, which exclude my company because I think we are already quite digitalized.

But I'm speaking about companies in my area. In Sicily, for example, where people are quite old fashioned in many ways, and they can find there are problems at all the three levels that you have found in your literature review,

I think they are, overall pretty good aspects that should be taken care of with when talking about digital transformation. taking care of of the touchpoint with your customers. You understand them and ...

Just a moment Mr. Roger Okay. Yes. Proceed. Sorry. Yes, no, there was a problem with with some noise. But now everything is fine. You can so

I think a main critical point for small medium enterprises we're talking about digital transformation, is to understand where to start. Should you start rethinking your business model, implementing digital solutions? Should you care more about how you're talking with your customers and managing your customers, or you should taking first care of your internal processes and how eventually an optimization on that, on of that aspect might lead to an improvement to your business. I think many businesses have problems understanding what is best to first tackle has a problem also because many times it's really just something that you don't really know what is best to do, but Ross is just best to start off with something and do that aspect well and then taking care of the next step.

I don't know what the, academics think is the best way to start, but that's my point of view. So it's, about putting priorities right from where to start.

I think it is because many times companies don't really have a lot of budget or a lot of professionals within their company, especially because we're talking about small, medium enterprises. So many times, even the marketing manager usually is someone old or someone that doesn't have the necessary experience to implement the changes that we know are necessary. But, and also they know that they are necessary. They just lack the time, the financial resources and the, knowledge to implement these changes.

Nice. Thank you. We could probably proceed with Pirita.

Thank you. I was just thinking, looking at the levels you had there that, for me, something that was missing and maybe it will come out through the questions elsewhere. In that case, I stand corrected, but something that I've seen emerge very much as a really pushing towards digitalization, so it's not really a choice by companies per se, because it is the only mode to survive is, for instance, in natural resources driven sectors like forest based industries because of the pollution and climate change, the forest for instance, the quality of wood is changing. And, a lot of those companies on those areas, they have to get much more creative about preserving and not wasting valuable resources, which is the quality wood they need to produce.

Furniture, whatever they're producing out of the wood. **So digitalization is the best way to actually calculate your materials, the best and, reduced waste of resources.** So actually the, and **the demand comes from the customers.** I didn't really see in the model that you showed there, the fact that **there is actually a push because of the ... of the climate change.** The other day I was discussing with a colleague saying that when I was younger we used to consider the green parties. They were like hippies a little bit. And today it's really not, **it's the only way for many businesses to survive that use these natural resources like forest based industries.**

So the really, **the demand from customers and how that is driving digitalization. So digitization might not be a choice per se, but the only way to survive** was something that, I don't know if it's gonna come later, but I thought, let me state here because I didn't know if it was gonna come later. But somewhere **the green side would be nice to see how that is driving digitalization.**

Thanks. Great, thank you. And I think there's another hand, Joseph Carona.

Yes. Can you hear me? Yes. Yeah. Yeah. I just wanted to add a different perspective here. So I think it is also from the previous speakers, I think there is **a multi-strategy here that is needed not only both top down, like a strategy coming from the organization itself, but also bottom up coming from the way people can really interact with digital tools.**

So the fact is that as someone, someone else have said already **SMEs are mostly operated with people that are non-technically skilled. Okay. And that is a fact. That also can be a barrier for adopting digitalization both ways, like top down and bottom up, because there is a resistance for this.**

So I believe here **we need to also consider how technology can, really help into the adoption of digitalization strategies, digitalization technology.** And this is something that cannot be forgotten. So I think we, **we can use the, analogy of how Alexa disrupted into the, let's say, technology so that people that was non-technically skilled could really use a very advanced technology.**

So I believe that at some point into the process of digitalization, Europe's **Europe needs to actually. face how technology can really, bridge this gap between people skills and, digitalization tools.** And, this is something that, that, that is very demanded in here. Thanks.

Thank you, Joseph. If there's no, if there's not another hand, let me just mention some of the, just a moment to show what the people have shared with us. Yes, that's what I wanted. I wanted to mention some of the comments that have been written. Okay. So I guess it's important to highlight that the word imagine we have now, we try to imagine a path and try to follow it.

So when SMEs say that they have to imagine it, this means that there's nothing that existing that could lead them in this process. And it is important to define specific levels so that this process could be.

Also another comment that says **A roadmap is definitely needed**. Of course, as already discussed it's important to have a roadmap in order to follow specific steps.

And as mentioned by another person a **general approach. Approach should be as is and to be processes, identify the gaps, and start an action plan and the technology comes after**. So it's first the processes and the general idea of digital transformation. And then the technology. The technology is just a tool to enhance the digital transformation.

So I guess Paula these are very important inputs and contributions to our levels concerning digital transformation.

Response, Via, Screen name, Created At, Net Votes, Upvotes, Downvotes, Trending Score

Yes, it is always a useful approach having a guide. Specific steps and milestones., pollev.com/smesgodigital375, Antonis Angelakis, 2022-11-14 04:54:08, 0, 0, 0, 0

It'd be helpful. When we work on DT in our company we try to imagine a path and try to follow it. It's not easy to do it just because we don't have clear skills that can handle it. So it should give easy ideas to achieve your DT's target., pollev.com/smesgodigital375, Daniele Rizzetto, 2022-11-14 04:49:53, 1, 1, 0, 1

A roadmap it's definitely needed! First it should point out best practices and lesson learned thanks to other DT projects in different contexts and sectors. Moreover, it should give framework defined on level of complexity of the area and levels achieved by the target organization., pollev.com/smesgodigital375, Louis Samuel Andreotta, 2022-11-14 04:49:06, 0, 0, 0, 0

SME's it is such a big classification. Both because of size but of kind of business (it's not the same a craftsmanship than a B2B services company than a restaurant...). But a general approach would be AS-IS and TO-BE processes. Identify the gaps and start an action plan. Technology comes after., pollev.com/smesgodigital375, Aysel Palacios Ardanuy (iterem), 2022-11-14 04:47:23, 0, 0, 0, 0

And I think that here we have completed the comments about this research question. Okay.

Can you see my screen? Yes. We can now see research question three. So the floor goes to

Okay. Yes So we come now to digital transformation capacity. It's something that we've seen from the first slide, from the first interaction that we had with you. Skills! And it ran through the whole focus group session that we had today. Everyone talked about skills and how we can build this digital transformation capacity.

So this also concerned our literature review and of course it concerns our project because it will empower the digital transformation process. Again, we start with the definition that we try to find out because as you can see the digital transformation trajectory comes hand in hand with digital capacity building.

Now, why we are trying to. To, build these definitions, to construct these definitions. It's very important because you saw that there are different perspectives. There are different levels of these perspectives perspectives from staff perspectives, from employers, from leaders. There are so many different perspectives of a certain concept.

So it's very important that we share the same understanding if we have to build a tool. For SMEs to help them for their digital transformation journey. There should be a shared understanding on the terms that we are going to use because this is one of the idiosyncrasies of SMEs and you mentioned it a lot of time during our session here there are different kinds of SMEs.

There are small micro ones with one employee, with 10 employees with 50 employees. So there are different perspectives. It is important that maybe it's boring to talk about definitions, but it is important that we share the same understanding when we're talking about something. So this was a definition that we came to the convergences of what literature review says.

And we were going to explain it better. So we let's go to the fir. Let's read first the definition Danai and then we go to explain it. Okay. The convergence of the literature review was that digital information capacity of SMEs and their manpower. Staff and leaders could be defined as the digital maturity stage facilitated by the digital literacy originating from capabilities to understand and apply digital activities in a situational, organic, and value driven way.

Now, let's explain it because it might Sound a little bit scientific. Now let's go to the next slide Danai. So imagine these dots that these are the digital activities that someone needs to do for their company. The skills that they need for doing something when they understand what they need to do to their company to go digital, how they do it, to go digital, and why they do it what benefit qui bono, who is benefited from what they do, the skills that are necessary for these activities. These are called digital capabilities for us, and the fact that they know. What they will create, what they will use, what they will manage to go digital, how they apply it, and why they do it. The appropriate tools where to use them.

This is this assesses their digital literacy level. Now, this digital literacy, this level of litter, digital literacy when it is situational, what it means, situational, when it fits the specific company. The specific context, the specific environment of these SMEs because we said that there are different SMEs, different environment, different SMEs in a capital of a country, difficult, different environment in the country of, in the countryside of a country.

When this digital literacy is embedded in the, within the context of the SME and when it is organic. That means when it is holistic when, it takes in the consideration the whole company as an organism, when it builds a culture, a digital culture. And when this is value driven, when it follows the values and the mission of the company, then it comes to digital maturity.

This, shows the digital maturity. This was the definition that we came we concluded from the digital review. And again, we have a question for you from the link that you already have. To tell us how much you agree on this, but again, you are invited to talk with us about what you have in mind when you hear digital transformation capacity.

If you agree that it is important to build it in order to have the digital transformation in your company, and if you agree that digital capabilities that we need to build are capabilities that will help you hard and soft skills that will help you with digital activities, with activities for your company to know what to create, what to use, what to manage, what to do, how to do it, and why you are doing it, who is going to benefit from this. If this affects the digital literacy, the way we have it and the digital maturity, if anyone would like to speak, is welcome. And if you do not wish to speak, then you can always you can vote in our in our sorry, can I just ask if you can switch to the slide where there is the definition? The definition?

Can you Yes. Nice. Thanks.

Just to break the ice a little bit while you're voting concerning the definition it is important to mention that there are no wrong or right answers here, right? We're expressing our view, our point of view in order to reach some final definitions descriptions that we are going to use in our project as a perspective to have a common understanding of all these concepts.

And talk about the same things when we suggest con some results when we suggest solutions and when we need some conclusions.

Okay. We, almost share. Yes. As you understand, we must give a very significant role to the different opinion option. As I can see, some of the participants, they believe that it's not the same at all. Am I right or no? No, partly. Partly the same. Yes. Partly the same, yes. Because in the previous I have seen its is not the same at all.

Are there any options? Are there any procedures, approaches in this definition in order to enrich the definition. Yes, we welcome a, if someone wants to intervene, he'll be welcome. Yeah. I was the one who press first. It is not the same at all. And then I switched it to it is partially the same. **I think that digital maturity is a concept that is a little bit derivative of the first two concepts that are the real ones that I think are important, which are the digital capabilities.**

No digital. What was the definition again? General definition and the levels. The previous two I remember there is digital literacy and the one before that. Can you show the slide? The slide? Yeah. Yeah, of course.

Okay. Stage digital literacy from, okay, **there is digital capabilities and digital literacy, and I understand these two concepts and I think that there are already very good in understanding the gap that there is**

between a company, because one thing is to understand what you need. Another thing is to understand, to know how to implement that.

And then the problem of the maturity, I understood is the element of at which level of their, of the organization that being able to understand why digital technology is implemented, is relevant for the organization or. Or not? I don't I'm **not sure to understand the digital maturity as a concept.**

The digital maturity has to do with how you embed all these capabilities within your particular context, because every SME has a different context. There are different environments in an SME. How you embed it in the whole business, the processes the products, the services, the people.

And how this is connected with the values and the missions of your company. This then maturity has to do with the, context that you embed all these capabilities. Okay. And what does this give, like knowing this, like this is a way to benchmark. If you know what to do when you, do a digital activity, when you create content, for example, for a digital marketing, okay?

But this does not take into consideration the fact your, does not take into consideration the, your customers the, place where you your business is, or the mission and the values of, your company. This is not mature. You have literacy. You can do, you can create a digital content, but it's not mature content and does not take into consideration enablers factors that would that shows the maturity of your content.

I'm on the same page with Rojero I also , you should let me come and support here. **I think capacity and maturity I would not put them in the same. A company can have the capacity to do much more, but for one reason or another, they're not at level yet. So that's why I don't think that putting the two words into a sense, I think that's where Rojero is also having the issue that he finds it maybe a bit not as positive, the statement, because capacities can be there, there can be financial reasons, there can be other reasons why the company hasn't reached the maturity yet.**

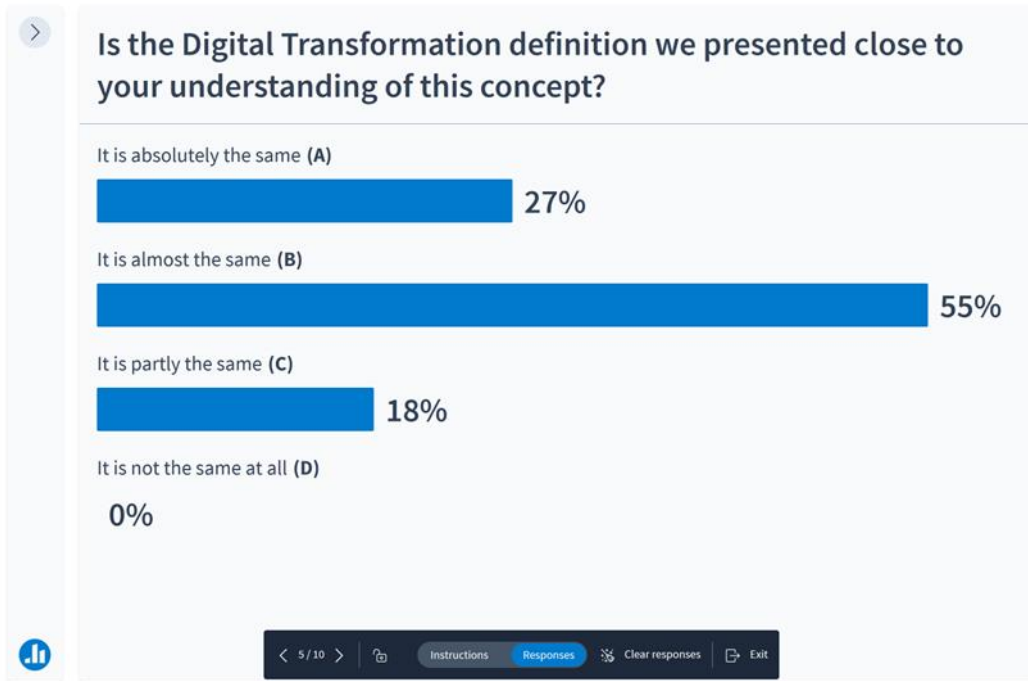
Okay. I think there's another hand. I see Palas. Yes. Palas, yes. No I, totally agree with what they said. One thing is capacity. The other one is how you achieve this maturity model one in this maturity model. I think. For me here is missing. Maybe it's implied by, but I would say **the ongoing and learning experience, keeping up to date with what are those digital activities.**

Maybe you can have this capacity in a specific point of time, but you know **digital transformation we will have constantly new channels, new digital ways of communicating of working.** So I think **it's so important also the, capacity of, keeping up to date learning and that comes with managing, measuring and being capable of optimizing constantly the continuous improvement.**

Also, I would add something like that. Thank you

Okay. We can see the final slide.

Let's see. First your let's see on the screen and see your votes. So this is the vote, the final votes, and we, now we can go to the last the last slide.



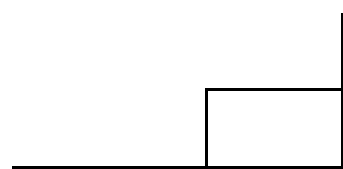
Response,Count

It is almost the same,6

It is absolutely the same,3

It is partly the same,2

Total,11



Wait a minute.

The needs. Yes. The, needs that SMEs seem to require to build their digital transformation capacity from the conclusions from the literature review can be summarized here. We found that they want support to build, change resilience skills because change and accelerating change is impacting phenomenon to them. They need support for networking and collaboration capabilities because it's not an individual endeavour it involves as I we said organically the whole company, but also the whole sector of an SME. So they need to build networks and need to collaborate in order to deal with all these changes and be resilient.

They need to support they need support to deal with the digital divide that you mentioned before. That there are people that know nothing at all, and this could be within the same company. And their need to

build soft skills empathy and skills that would, will deal with this digital divide within the company and within the sector.

Also, we found out that there is a lot of fear and negativity about technology anxiety, what's in store for the future for them. And they need support skills to to empower them. Because wellbeing is very important for People and companies. And last the support that we are going to create to build this digital capacity for SMEs should fit for SME situational context.

That is, should take into consideration their strengths and not what they don't have. But we should start with what they have. The fact, for example, that they are flexible. They, we should build upon these strengths and try to build the capacity upon this. Not start from scratch, something from scratch.

And we welcome again the discussion for what conclusions. So we have Come to or if you want to add about the needs for digital transformation capacity that SMEs require. And again, in the link there will be a new question for you to answer if you don't want to talk again.

Now the question as you will see in the link is, what skills do you think you need to build your digital transformation capacity if you are an SME? And of course comments on the needs that we have. We have concluded from the literature review are, again, welcome. Any comment on the needs that you see? Do you agree?

If I may, I think that what you write down is. It's just right because I think that perhaps **it is as much important as first to know what your company needs and how you should implement it. And then the why is extremely important because often you might feel that it's right to do something, but you also have to do a little bit of fact checking because not all the changes, digital changes are right at certain stages of your company.**

So it's good to give people also the tools to actually measure the costs of implementing something and the benefits that implementation of that digital solution might give because this is also what the decision makers and companies want. It's pointless to go to your boss and tell tell him, oh, we should open a LinkedIn page of the company. And without knowing that you should also manage the profile in a specific way. And also without giving it the, this, the, your boss some measurements of why it's good to implement this kind of change. Because I think this, and it's not only about empathy, it's also about giving facts that can support your thesis.

I see. I see. They need to know why they do it. Qui bono, as we said before, who benefits? Yes. And they should. They should.

And how much is the benefit

Yes. Some quick wins as we, you will see in the next slide where strategy is being talked about. That this was also conclusion. Some quick wins for the SMEs, okay. Anyone else would like to tell us if they agree?

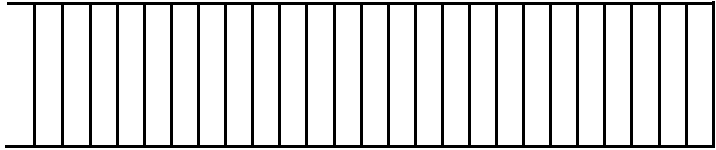
Let's see what you have written. Is there anyone that would like to talk? No. Let's share our screen with what what you have. You have written

flexibility, skills, of course. Skills, adaptability, change. Yes. Thinking, team. Yes. Soft skills. Scared. Yes. Negativity and anxiety. There is a lot of. Open-minded. Yes. Be agents of change, to be resilient in change because change is going to be forever from now on. Communication.

Collaboration, they need to have the capabilities to collaborate a network. Experience probably to to have some networking with experienced SMEs that have already gone through digital transformation.

<p>communication,pollev.com/smesgodigital375,Aysel Palacios Ardanuy (iterem),2022-11-14 05:20:36</p>	
<p>adaptability,pollev.com/smesgodigital375 ,Aysel Palacios Ardanuy (iterem),2022-11-14 05:20:28</p>	
<p>change - adaptability - soft - communication,pollev.com/smesgodigital375,Andrea Baglieri,2022-11-14 05:20:19</p>	
<p>Resilience,pollev.com/smesgodigital375,Carlo,2022-11-14 05:20:13</p>	
<p>find the he roght,pollev.com/smesgodigital375,Louis Samuel Andreotta,2022-11-14 05:20:11</p>	
<p>resilience,pollev.com/smesgodigital375,guest760,2022-11-14 05:20:06</p>	
<p>Above the mentioned literature and state of art of the digital tools, I really think a full knowledge of the workers experience and culture is central to really find the best way to convey and push the DT process and to really create a tailor-made digital environment. Then the best practices need to,pollev.com/smesgodigital375,Louis Samuel Andreotta,2022-11-14 05:19:55</p>	
<p>Data analysis,pollev.com/smesgodigital375,Aysel Palacios Ardanuy (iterem),2022-11-14 05:19:42</p>	
<p>I don't know which skills you exactly need. And this is an issue itself. A part from this I feel that you need to be creative, openminded and not scared by a new world we are all thinking and creating.,pollev.com/smesgodigital375,Daniele Rizzetto,2022-11-14 05:19:32</p>	
<p>Flexibility,pollev.com/smesgodigital375,Carlo,2022-11-14 05:17:28</p>	
<p>Digital skills, team working skills, business development skills, communication skills.,pollev.com/smesgodigital375,Antonis Angelakis,2022-11-14 05:16:51</p>	
<p>Problem solving,pollev.com/smesgodigital375 ,Carlo,2022-11-14 05:16:48</p>	

adaptability, pollev.com/smesgodigital375, anonymous, 2022-11-14 05:16:31



Okay. Thank you. Thank you very much. Is there anything else you would like to add about digital transformation capacity before we go on to, strategy and how digital transformation strategy is related to digital transformation? So we don't waste our time. Perfect. So the next that we talked that we researched in the literature review was about digital transformation strategy, if this is related to digital transformation and what we found from the literature review was that yes, it is a must.

It's also for SMEs the same way, important as in the large companies, but micro digital transformation strategy should be, should be more suitable for SMEs because because of their idiosyncrasies, as we said before because they are so different and because they are a little bit resilient to share control.

They're usually family driven, family leading companies in order to plan, implement and evaluate a strategy to harness the potential of digital transformation that should be micro strategy that will, self-assess what they need, their digital readiness, where they are now, what you said before, what it is now, and what they want to be.

Make some simple personalized quick wins. As we, again, we discussed before some things that will quickly benefit, gain, benefits, and find support in order to create this because they. They lack the resources to create a digital transformation strategy. Large companies usually have a department that plans, implements and evaluates a digital transformation strategy SMEs do not have.

Our tool probably needs to provide such services to SMEs if we go to the next this is the question for for our participants. Do you have a plan for your digital transformation? If you don't have a plan for your digital transformation, what tools could help you make it? What tools should we have in our in the tool that we are going to develop?

And there is again, a question in your link with tools suggesting tools that you can vote which ones you which tools you need

if you go to the link, and of course if you want to discuss and tell us for your digital transformation. If you have already gone through this digital transformation, did you have a plan who helped you? What tools would you need in order to have this plan would help you if you again, don't if you have not digitally transformed your company, what do you need right now?

What tools would help you to make a plan to start to, start to, to go digitally?

And let me share the screen so you can see what you have

training roadmaps for my business needs and gaps. Learn from other SMEs. Almost equal all these. Receive recommendations for business solutions. Compare solutions, not so much. Consultancy by experts

Apart from these tools. Are there other tools that you would like in order to plan your digital transformation?



Response,Count

Tailor training roadmaps for my business,5



Explore funding opportunities,4									
Learn from other SMEs that have successfully implemented digitalisation projects,4									
Identify my business digitalisation needs and gaps,4									
Receive recommendations of digital solutions based on my business needs and profile,3									
Discover consultancy services by experts,2									
" Compare digital solutions, by functions and costs"	0,2								
Know how to get started in going digital,1									
Total,25									

Okay.

Okay, so probably we need to go to the final question. Danai? Yes. And conclude our focus group so we don't get our participants more tired. Okay, so Ilona, yes. For our final question, we will try to be very short. The question is about the support that SMEs need for the digital transformation. So we have just identified some support tools that are necessary for SMEs to proceed with the digital transformation process, which are the government support, of course, financial support.

And this also came through the funding that you answered before in the question before Skills development. Access to know how centers and material also skills development and material were keywords that you mentioned in the digital transformation cloud. Appropriate infrastructure, standardization of the processes.

And finally, SMEs communities, national and international communities. And probably we could add here SMEs communities in the same fields because as you said different fields have different needs. So probably here the SMEs community could also include same fields. So now the floor is yours.

If you already have support for the digital transformation at your organization, and if yes, what kind of support? And if not, why? What do you need in order to proceed with the digital transformation as support and you didn't find it somewhere?

And the question is also in the link. What goes to.

Probably we have already mentioned most of them during the focus group. Just to enhance the process, if anyone wants to add something or to mention something or whatever, even for this question or other

issues relevant to digital transformation, just feel free to express yourself since we are now moving on the conclusion of the focus group.

Yeah. May I have a comment? Yeah, sure. I try to answer all of your questions, but I would like to have a comment as in. Cross cutting. Let's say. I think we, we think that a major issue as I think it was already mentioned, but **I wanted to go into, is to pay some focus on the resources, the necessary resources for DT.**

DT is not a, as we say, a pie in the sky. **It needs some investments and it needs some resources to adopt some new technologies or to change some business processes, even to gain some new skills.** For, as an organization representing some micros, small companies, this is the major issue or the major obstacle that our companies are facing in their efforts to digitize themselves or to, go through the digital transition.

So I don't know if it helps what I'm saying, but I wanted to make this short comment in a nutshell at the end of the, of this workshop that so **resources might be funding skills, the ability to, identify funding opportunities in order to use it for digital transformation. It might be different kind of skills to, in terms of team working to work on joint projects with others or firms or individuals to to advance ourselves as companies in terms of digital transition.**

So it might means many different things, but **it's not only skills or understanding or knowledge it's, also resources,** is my comment. Thank you very much.

And let also share with what you have already.

We have a software house that follows us in our process. So **it's important that there is support from IT companies training for us.** We analyze how we want to work, so there **should be some self-assessment where you are and where you want to be, and then search for tools.** Maybe if these tools were in one place, maybe that would help.

We already have support internally and externally. Internally, our project management and the chief technological of technological operations that scout and suggest new tools to implement, optimize our processes. This is what the SMEs are missing. They can't have a cto probably if our tool could provide them a CTO as a service on demand, maybe that would help.

SMEs. What do you think?

I think certainly yes. To have someone that is on page with the new tools, new technologies, and as an understanding of what, is the scenario in this market, because also tools have a market on their own. It is indeed fundamental. It is though complex to have someone that is doing it for you.

Cause if it's external, then it's doing it not only for you as a company, but for multiple companies. And to follow multiple companies on this, you have to understand their processes. You need to always

know which kind of tools they're using. If they're using them correctly, if they're using them their fullest potential.

Because many times we also have multiple tools to do different things in our company. But then you don't know how to make those tools communicate between each other. Like for, us, we have problems using HubSpot because we know how to use HubSpot. We know how to use type forms, but then we have problems in connecting the different lists of contacts.

And to make these, to communicate between them while still be able to update them in a free way, so now we are trying to understand how we

and

way that is good for us and perhaps there is already a solution and we dunno it yet. I see it's also important comment about the and u a format, these are training tools provided in, general and in many different, Topics. Probably if there was a common tool gathering all these and suggesting probably some specific topics for SMEs and at the national and international level, it would probably enhance the process.

And it would definitely be easier for someone to get it as a suggestion rather than going to udeimi and searching for topics. What could enhance the digital transformation of his or her SME and how it would be useful for at a level of the company, et cetera.

A common tool of training would probably be of additional value.

Yeah, I agree with this. Like having another tool that does exactly the same thing as many other platforms out there, I think it's pointless. You're just throwing another fish into the ocean. **It's rather more important to give people a window like somewhere that helps them to understand the difference offers of the market regarding training and their new technologies.**

And they'll let them choose between the list that you are giving also ranking them according to, I don't know, the offer or the language or the price, the topic, whatever. But that will be already off somehow. For many people that don't even know about you, that means that I was taking for granted. Then they said they know lot of people that have no idea that there.

Yeah. **So one place to have all the resources, the necessary resources that an SME could could have to facilitate their digital transformation regarding their training, their capacity, their funding consultancy digital tools, something like this.**

And if I may have **there is also clash between the time that SMEs have.**

Often I find that companies have to do their daily operational tasks and they know that they should still have someone in training to learn new digital tools. And perhaps the training part is something that has to be done. At a large at large within the company. But, and **they know that they should do this in office time, but at the same time, they cannot they don't have the chance to dedicate that time during office hours and they ask their employees to do it on their private life hours.**

And this might be in conflict with part of the academic literature about **the work life balance and is okay, we are telling on one side that people should. Differentiate between working life and private life, and they should respect the boundaries. But at the same time, we're living in a world where, as we say, you have to be always develop yourself, and you cannot do this in eight hours a day if you have to dedicate those eight hours of work a day to keep the business moving.**

At the same time, you also have to develop yourself as a person. And that has to like, it's something that you do for your professional life, but you have to do your private life part.

So all of this should be on a micro scale, as we said, with a micro strategy, micro-learning, everything fitting for the micro context of SMEs.

Yeah it, should be like something that has to be very surgical. Like for specific individuals within the companies and then scale it up from there. Yeah. And it's still difficult to manage. Yeah. But it has to be addressed, I think.

Thank you very much. Anyone else that I, say would Yes.

I, think that about training, know the, example of Emmy Oroma is there, and nevertheless, **most SMEs are not accessing this kind of online contents. For, instance, here, perhaps in, in Spain. Also, language is a barrier because English is not so common language.**

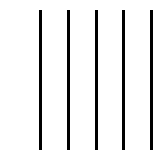
But I think that besides the language, there are three main barriers that we we're experience, we find with SMEs. **One is the the open access to training.** The ones that have that bo that, that will to do it, but the practice is sticking to that. So our **coaching, something that obliges you to, keep up with the roadmap is necessary.**

Then SMEs Have a lot of scattered tools because there are a lot of tools that cover certain needs, but they are scattered and they don't have a global operating vision. And that makes it comp more complicated for them. No they, tell you, why can't I go back to my Excel? No. Now I have three tools I have to connect and I don't know how to import export contacts or whatever.

And the third thing of course, is funding. To dedicate to internal projects because they have to day on the, on their daily operations and, activities. So of course, helping with the internal projects. It's also important for, us, would be these three tools, these three and needs also.

Response, Via, Screen name, Created At, Net
Votes, Upvotes, Downvotes, Trending Score

Nope, unfortunately no support at all. It's a too complicated and time-consuming process to find a support. We tend to find internal solutions, it's faster even if probably less effective., pollev.com/smesgodigital375, Daniele Rizzetto, 2022-11-14 05:33:22, 0, 0, 0, 0



Yes, we have a software house that follow us in our process of digitalization.,pollev.com/smesgodigital375,Emi Chemello (Maccan Italian Style Company),2022-11-14 05:33:21,0,0,0

Mainly it's training for us. We analyze how we want to work and search for tools that can support the gaps.,pollev.com/smesgodigital375,Aysel Palacios Ardanuy (iterem),2022-11-14 05:31:52,0,0,0

We already have support, both internally and externally. Internally is our PM and CTO that scout and suggest new tools to implement to optimize our processes. While externally we use training and educational tools such as Udemy and UNA Forma.,pollev.com/smesgodigital375,Ruggero,2022-11-14 05:30:52,0,0,0

Okay. Thank you very much. Everything was really, distinct. We have some, we have devoted some time for your questions at the end of the focus group session, if you have any questions about the tool that we are gonna design or you have any suggestions that you would like to take into consideration apart from the ones that you have already mentioned

that we should discuss before we end this session, which by the way, we have a last question in the Mr. Thanos She's raising his hand. Yes. Your microphone is closed, Mr. Thanos

I see. Okay. Now you hear me? Yeah. Yeah. Okay. I, think that the **SMS are are more flexible to go digital. So even they don't have the resources as Mr. Adon is told before, it's easy for them to, define, to implement business strategy, to change their mindsets, to change the supply chain of the brand and to see the customer analytics, the. The, data big data, the feedback from the clients, and they, can have a tool,**eCommerce, let's say or some other artificial intelligence some GUIs some interaction tools with the clients. These are this create more membership opportunities to improve the customer experience. So the SMEs are more flexible to do this, to go digital instead in comparison with the big companies, which are slow moving

That's, why we said that we should build upon the strengths.We should take the, strong points of SMEs and build upon these strong points.

Yeah. Correct. Yeah. Let's say they have to, check again, the strategy to plan a digital business strategy. Not I, don't think that is a micro, tool for the micro nano SMEs, but **it's a, way of of, to change the mindset of a company.** It's a, core instrument for the small companies. The SMEs is this is yes.

It's okay. Thanks. Thank you. Thank you. very much Thanos. Anyone else that would like don't forget to tell us your impression on the focus group before you leave in the link that the we have provided to you. It's the last question we are asking you in the link, the impression, your impressions from this event, one word towards whatever before you leave the session.

And anyone else that would like to add something on on this discussion about What support we should provide SMEs with to help them facilitate their digital transformation journey.

Mr. Vassilis, your microphone,

Yes, it was a really, very valuable discussion. Very productive. I think that we have faced a lot of key elements of this phenomenon and I think that it will built a very good basement in order to proceeds to the next step, which is the design of our platform, support platform. But it's the main aim of our project.

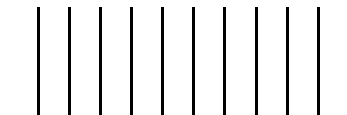
I hope to have the chance to co to cooperate with all of you. The next year we're gonna organize a multiplier event. At the end, at the 1st of December, we will send you a relevant invitation. And in this multiplier event, we're going to present you the next step of our job based course, of the conclusion of this focus group.

And we'll be welcome also to the other multiplier event. The next multiplier event going to be organized from my id like I if the other something.

Thank you very much for useful. Thank you. Thank you very much. Thank you all. Okay. For the best. Thank you. So thank you for your participation, for the time that you spend for us. It's very invaluable, your feedbacks. We will be very much appreciated.

Response, Via, Screen name, Created At

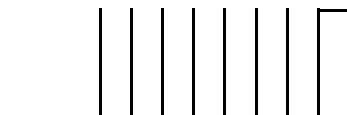
Interesting, pollev.com/smesgodigital375, Andrea Baglieri, 2022-11-14 05:50:25



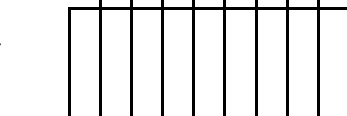
It is a necessary discussion. I would like to see it more focused in SME's by categorization, so it fits more specific needs., pollev.com/smesgodigital375, Aysel Palacios Ardanuy (iterem), 2022-11-14 05:50:15

Thank you for this interesting discussion. After this event I have new reflection points about DT., pollev.com/smesgodigital375, Emi Chemello (Maccan Italian Style Company), 2022-11-14 05:50:02

good, quite focused and needed!, pollev.com/smesgodigital375, Josep Carmona, 2022-11-14 05:48:41

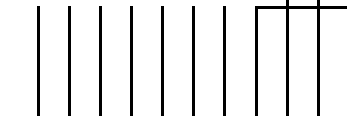


Very useful, pollev.com/smesgodigital375, Antonis Angelakis, 2022-11-14 05:48:40

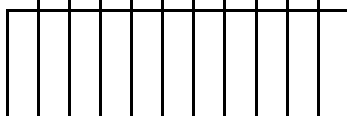


Very interesting, I liked this tool to gather responses and to create visualizations of the key words mentioned., pollev.com/smesgodigital375, Ruggero, 2022-11-14 05:48:34

Excellent!!!, pollev.com/smesgodigital375, siomadis, 2022-11-14 05:48:21



fine, pollev.com/smesgodigital375, anonymous, 2022-11-14 05:47:52



APPENDIX IV: Useful Verbs for Dee Finks Taxonomy of Significant Learning

What impact do I want this learning experience to have on students that will still be there after the course is over?

Foundational Knowledge
What key information, ideas, and perspectives are important for learners to understand and remember?

Associate	Define	Indicate	Recall
Categorize	Describe	List	Recognize
Classify	Explain	Name	Repeat
Clarify	Give examples of	Paraphrase	Restate
Compare	Identify	Predict	Summarize
Contrast	Illustrate	Recite	

Application
What kinds of critical, creative, and practical thinking and skills are important for students to be able to do, learn, or manage?

Critical Thinking Skills

Advise	Contrast	Examine	Organize
Analyze	Debate	Formulate	Predict
Apply	Decipher	Hypothesize	Propose
Assess	Deduce	Infer	Query
Audit	Derive	Interpret	Separate
Catalog	Determine	Judge	Suggest
Categorize	Differentiate	Justify	Test
Choose	Dissect	Label	Trace
Classify	Distinguish	Locate	
Compare	Evaluate	Measure	

Creative Thinking Skills

Adapt	Create	Experiment	Reform
Author	Design	Fabricate	Sketch
Compose	Develop	Imagine	Transform
Construct	Discover	Improve	
Convert	Envision	Refine	

Practical Thinking Skills

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Skills	Advise	Decide		Give evidence	Prioritize
	Apply	Determine	for		Propose
	Choose	Develop		Implement	Select
	Conduct	Diagnose		Manage	Strategize
	Coordinate	Facilitate		Organize	Supervise
	Demonstrate	Guide		Plan	Solve
				Predict	
	Performance				
	Conduct	Execute		Perform	Set up
	Demonstrate	Exhibit		Produce	Use

Integration
What connections should learners be able to recognize and make both within and beyond this course experience?

Associate	Compare	Identify	Relate
Combine	Correlate	interaction	Synthesize
Connect	Differentiate	between	
Contrast		Link	

Human Dimension
What should learners learn about themselves and about interacting with others?

Acquire	Demonstrate	Involve	Respect
Advise	Educate	Lead	See oneself
Advocate for	Embody	Mediate	as
Be aware of	Empathize	Mobilize	Serve
Collaborate	Express	Negotiate	Share
Communicate	Feel confident	Nurture	Show
Cooperate	Influence	Promote	Suggest
Decide to	Initiate	Reconcile	Support
Describe	Inspire	Reflect upon	Take responsibility

Caring
What changes in learners' feelings, interests, and values are important?

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Agree	Develop	Get excited about	Renew
Commit	Discover	Identify	Share
Decide	Explore	Pledge	State
Demonstrate	Express	Recognize	Value

Learning How to Learn
What should learners learn about learning, engaging in this inquiry, and becoming self-directed?

Describe	Inquire	Self-monitor	Identify
Construct	Research	Set goals	Predict
Critique	Reflect upon	Frame	Take
Identify resources	Self-Assess	Generalize	responsibility
			Transfer

Source: <https://intentionalcollegeteaching.org/wp-content/uploads/2021/05/fink-taxonomy-verb-list.pdf>

APPENDIX V

VERBS FOR SIGNIFICANT LEARNING OBJECTIVES *

<i>DIMENSION</i>	<i>ACTION VERBS</i>				
FOUNDATION KNOWLEDGE—WHAT KEY INFORMATION, IDEAS, PERSPECTIVES ARE IMPORTANT FOR LEARNERS TO KNOW?					
Understanding and Remembering – developing a full understanding of concepts to a degree that allows explanations, predictions, etc.	Associate	Describe	Illustrate	Paraphrase	Repeat
	Compare	Explain	Indicate	Predict	Restate
	Contrast	Give example	List	Recite	Tell
	Define	Identify	Name	Recognize	
APPLICATION—WHAT KINDS OF THINKING, COMPLEX PROJECTS AND SKILLS ARE IMPORTANT FOR LEARNERS TO BE ABLE TO DO/MANAGE?					
Critical Thinking – analyzing and critiquing issues and situations	Analyze	Compare	Diagram	Hypothesize	Organize
	Assess	Contrast	Differentiate	Infer	Query
	Audit	Decipher	Dissect	Interpret	Separate
	Catalog	Deduce	Distinguish	Label	Trace
	Categorize	Derive	Examine	Locate	
	Classify	Determine	Formulate	Measure	
Practical Thinking – developing problem-solving and decision-making capabilities	Advise	Choose	Diagnose	Predict	Select
	Answer	Consult	Evaluate	Prescribe	Solve
	Apply	Debate	Give evidence	Propose	Suggest
	Calculate	Decide	Judge	Prove	Test
	Certify	Determine	Justify	Rank	
Creative Thinking – creating new ideas, products, and perspectives	Abstract	Construct	Devise	Fabricate	Sketch
	Adapt	Convert	Discover	Imagine	Theorize
	Amend	Create	Draw	Improve	Transform
	Author	Design	Envision	Refine	Write
	Compose	Develop	Experiment	Reform	
Managing Complex Projects – being able to coordinate and sequence multiple tasks in a single project/case and/or multiple projects/cases)	Administer	Conduct	Facilitate	Organize	Summarize
	Assign	Coordinate	Follow up	Plan	Teach
	Coach	Delegate	Guide	Prioritize	Time-line
	Communicate	Develop	Implement	Strategize	Train
	Complete	Evaluate	Manage	Supervise	
Performance Skills – developing capabilities in carrying out psychomotor activities	Conduct	Employ	Operate	Set up	
	Demonstrate	Execute	Perform	Use	
	Do	Exhibit	Produce		
INTEGRATION—WHAT CONNECTIONS SHOULD LEARNERS BE ABLE TO RECOGNIZE AND MAKE WITHIN AND BEYOND THIS LEARNING EXPERIENCE?					
Interdisciplinary Learning – connecting ideas, disciplines, perspectives, contexts	Associate	Concept map	Connect	Differentiate	Relate
Learning Communities – connecting people	Combine	Contrast/ compare	Correlate	Link	Synthesize
Learning and Living/Working – connecting different realms of life					

DESIGN OF #SMESGODIGITAL TOOL

HUMAN DIMENSION— WHAT SHOULD LEARNERS LEARN ABOUT THEMSELVES AND ABOUT INTERACTING WITH OTHERS?					
Interpersonal Relationships – with peers, patients, others Self-Authorship – learning to create and take responsibility for one’s own life Leadership – becoming an effective leader Ethics, Character Building – living by ethical principles Multicultural Education – being culturally sensitive Working as a Member of a Team – knowing how to contribute to a team Citizenship in one’s profession, community, nation state, other political entity Environmental Ethics – having ethical principles in relation to nonhuman world	Acquire Advise Advocate Balance Be aware of Behave Collaborate Communicate Comply Cooperate Decide to	Describe Demonstrate Educate Embody Empathize Express Feel confident Give feedback Help Influence Initiate	Inspire Interact with Involve Lead Mediate Mobilize Motivate Negotiate Nurture Offer Promote	Protect Reconcile Reform Respect See oneself as Settle Share Show Suggest Support Sustain	Unite Critically reflect Resolve conflict Respond sensitively Serve as role model Suspend judgment Take responsibility
CARING— WHAT CHANGES IN LEARNERS’ FEELINGS, INTERESTS, VALUES ARE IMPORTANT?					
– Wanting to Be a Good Learner – Becoming Excited About a Particular Activity/Subject – Developing a Commitment to Live Right (i.e., deciding to take care of one’s health/ well-being, live by a certain code)	Agree to Be ready to Commit to Decide to	Demonstrate Develop Discover Explore	Express Identify Pledge Revitalize	Share State Take time to Value	Get excited about Recognize value of Renew interest
LEARNING HOW TO LEARN— WHAT SHOULD LEARNERS LEARN ABOUT LEARNING, ENGAGING IN INQUIRY, AND BECOMING SELF-DIRECTED?					
How to Be a Better Learner – engaging in self-regulated or deep learning How to Inquire and Construct Knowledge – how to engage discipline-specific inquiry How to Pursue Self-Directed or Intentional Learning – becoming an intentional learner, being a reflective practitioner, developing a learning agenda or plan	Describe how to Research Inquire Reflect Self-assess Self-regulate Self-monitor	Construct knowledge about Develop a learning plan Frame useful questions Generalize knowledge	Identify sources and resources Identify what you need to know Predict performance Set a learning agenda	Take responsibility for Transfer knowledge	

*Adapted from “Example Action Verbs for Each Dimension of Learning,” Teacher & Educational Development, University of Mexico School of Medicine, 2005.

Source: <https://bpb-us-w2.wpmucdn.com/sites.udel.edu/dist/2/719/files/2020/06/tot-2020-verbs-for-significant-learning-objectives-3.pdf>