Data report – SME data maturity

Author: Franziska Bay – Economic Geography Department, Faculty of Spatial Sciences, University of Groningen

About Futures by Design

Futures by Design is a joint Interreg project carried out in the North Sea Region between January 2019 and July 2022 with the aim to support small to medium enterprises (SMEs) in becoming more successful via digitizing business processes, increasing productivity and stimulating growth. While SMEs are the drivers of local economic development and success, not all of them are natural innovators who embrace the change towards digital business processes and modern technologies. Futures by Design is set to help the companies that struggle with digitization and want to improve their efficiency and productivity.

Within the project, partners in Groningen and Friesland, the Netherlands, Antwerp, Belgium, Osterholz, Germany, Cambridgeshire, UK, and Halland, Sweden collaborate with local SEMs for them to become more data-driven and skilled in technologies that facilitate their sustainable growth, innovativeness and productivity. The project partners provide support to the firms via workshops, knowledge sharing and customized digital tools. During their individual digital transformation journey, the companies define their own projects and goals their want to achieve via their participation in Futures by Design. These projects and corresponding goals are as diverse as the participating companies themselves.

Current state of digitization

Academic, non-academic and governmental sources have been stressing the need for businesses to digitize their work and processes long before the COVID-19 pandemic made it an urgent adaption that is crucial to many companies' survival throughout mandatory closures of physical shops (SOURCES). Different institutions monitor and support the digital transition of businesses on the local, regional and international scale. Regardless of the measurement level, they all come to the same conclusions: Companies which are leaders in their field or sector are faster in adopting new technologies, digitizing their business processes and including their leading tech staff in important business decisions (Noord-Nederlandse Innovatiemonitor 2021, McKinsey 2021). The pace that new technologies are implemented with can be decisive for the top players in the industry. Most smaller businesses, however, seem to find it difficult to adopt new procedures and technologies while keeping up their regular business processes.

As the most recent McKinsey Global survey on digital strategy shows, most companies know that they will need to change their business model to include more digital technologies in order to stay economically viable in the near future. Currently, relatively larger companies make use of disruptive digital technologies more often, which can be explained by their higher available R&D budget, human capital and higher level of innovative potential (Noord-

Nederlandse Innovatiemonitor 2021). This translates into a lag that small to medium-sized enterprises (SMEs) experience in their digitization compared to their larger competitors, often putting them at a disadvantage. This is where many local initiatives come into play to support SMEs in staying competitive. These initiatives are often a cooperation between local governments and research organizations or educational institutions, as is also the case in the Futures by Design project. Having identified a clear need for digitization, especially in SMEs, our project seeks to benchmark the data maturity (i.e., state of digitization and use of data for all kinds of business processes) of all participating companies, help them advance their skills and digitize data, and finally measure the impact of our work by evaluating the improvement of the SMEs' data maturity. This report is an interim report that focuses on the first steps – mainly the data maturity that we observe in the participating SMEs – and insights while the project is still running.

Introduction

In this report, we describe (regional) variation, patterns and insights that we gained from working with SMEs in the aforementioned regions throughout the Futures by Design project. The structure of this report follows the structure of the project in that way that the results are presented in the order that SMEs would follow via their digitization journey with Futures by Design.

Typically, an SME gets in contact with the Futures by Design project at a regional networking event or congress and fill in a short survey to evaluate their data maturity after voicing their interest to participate in Futures by Design. The data maturity relates to the company's skills, knowledge and ability of digital tools and business processes on several levels of complexity. The dimensions measured in the data maturity scan are *culture, privacy, tooling, datatype, safety, competences, data quality, knowledge and (digital) infrastructure* – all measured on a five-point Likert scale. After this first step, the SME will be contacted by the regional beneficiary of Futures by Design and the next step would be defining a project goal that the company wants to achieve in their participation. For instance, some SMEs choose wanting to harmonize their customer database with external booking or sales tools that they use regularly. After such a project goal has been defined, the Futures by Design beneficiary and the SME work together in either workshops, one-on-one or student-facilitated sessions to achieve the chosen goal. They are presented with tools (- digital as well as pen and paper) which might be helpful for their further digital transition developed for use in the Futures by Design. After the contact hours provided to all project participants have been conducted, the obtained results are assessed via a survey. The SMEs indicate whether they see their efficiency to be improved, their growth ambitions or potential to be changed or their innovativeness to be increased.

Trends and Insights

Build upon that with our own data, explain and visualize trends, (regional) patterns and lead over to questions that arise

This report is written at a time when the project is still ongoing and the SMEs are still working on their projects and achieving their set goals. Therefore, the main source of data for this report is the data maturity scan and all demographic information gathered at the start of the collaboration between the SMEs and the FBD project partners. All results and visible trends are preliminary to some extent but we do not believe that the companies who participate in FBD in the final months of the project phase will change the trends we find now significantly.

Global analysis and trends

Up until now, 218 companies have filled in the maturity scan and provided their demographic information as part of their project with FBD. Making use of all data collected so far, we see a normal distribution of the data maturity, i.e., most companies fall into the middle data maturity level and only a small number of SMEs show very low or very high levels of data maturity. The overall mean score of data maturity is 2.96 (SD .761) on a scale from 1 to 5. For the subscales measured in the scan, on average, SMEs reported the highest skills in terms of data privacy (4.09) and safety (4.08). This is most likely a consequence of the enforcement of the GDPR by the European Union. Regardless, this is a good base to start from, as the companies can have some certainty that their (customer) data is protected and can securely be worked with. Overall, the lowest average scoring dimension was found to be the tooling (2.12), i.e., use of different software packages and solutions for data collection, storage, and analysis. A full overview of the means and standard distributions of all dimensions of the maturity scan can be found in Table 1.

Table 1

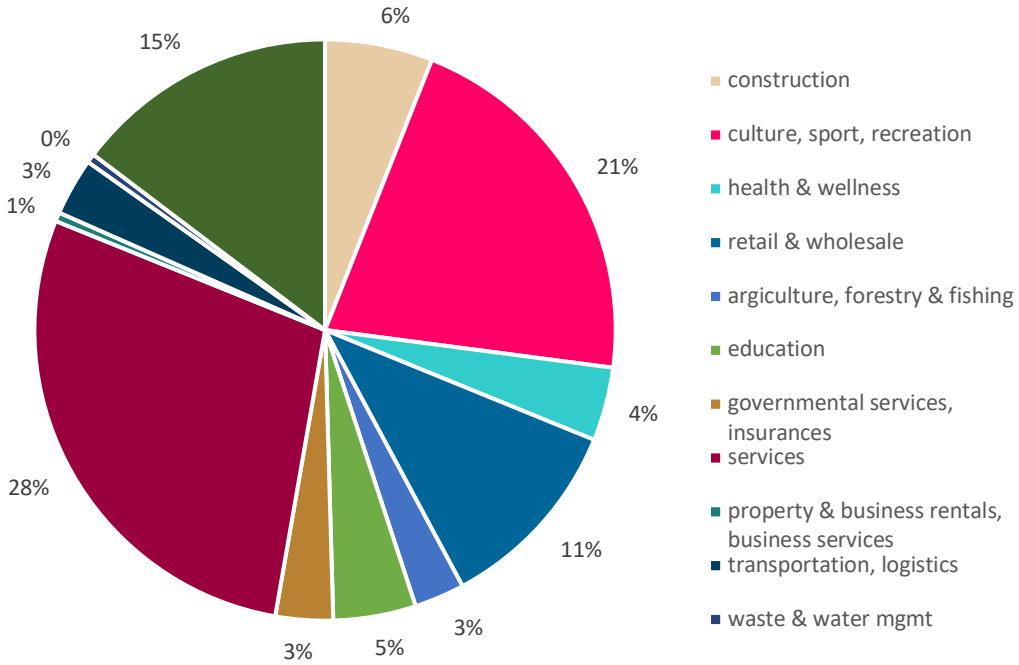
Means and standard deviations of the nine dimensions of data maturity used in Futures by Design.

Dimension	Culture	Privacy	Tooling	Datatype	Safety	Competences	Data quality	Knowledge	Infrastructure
Mean	2.86	4.09	2.12	3.40	4.08	3.30	3.58	2.72	3.50
SD	.98	.83	1.12	1.01	.94	.90	1.01	1.10	.97

The age distribution of the SME representative participating in FBD follows the normal distribution with the most participants (32.2%) falling into the age category of 41-50 years. Their mean highest achieved education is a higher educational degree of some sorts, from a university or university of applied sciences. Neither the respondent age nor their highest obtained education shows any clear link with the data maturity reported. We find the data maturity to be normally distributed across all age categories, therefore we conclude that digital natives are not any more likely to already work with digital business processes than their older counterparts. For the educational attainment, we see the same effect of a normal distribution of data maturity across all educational levels. Working with digital tools and processes therefore also seems to be independent of the educational achievements of the SME representative. The largest group of the participating companies is active in the service

sector (31.6%), followed by the culture, sport and recreational sector (21.1%). A full overview of all sectors and their distribution across the participants can be found in Figure 1. The heterogeneity of the group of SMEs working with FBD cannot only be seen in the broad variety of sectors represented but also in other firm characteristics. The number of employees measured in full-time employment hours (FTE) shows a very uneven distribution with a mean of 110.86 and a median of 3.5, this can be understood as the sample including some SMEs that are on the larger side and many small to micro firms. A similar disparity is visible in the annual company turnover of the participating SMEs with the mean being 10,465,570.6 € and a median of 35,000 €. The interpretation of these values parallels the one of the company sizes. In our sample of SMEs, only a few have a very high yearly turnover.

Figure 1
Distribution of sectors of all SMEs participating in Futures by Design



Regional analyses and trends

When looking at our data on a regional level, at first glance, there are not many striking differences between the regions or countries in terms of the SMEs that are participating in Futures by Design. A general overview of regional characteristics of the SMEs can be found in Table 2.

For all regions, we can see a mean data maturity level that is somewhere around the middle score of the scale (2.80 – 3.07 on a scale from 1-5). There is some variation in the age of the SMEs that the beneficiaries in the different regions work with. The youngest companies with a median age of five years are in the Cambridgeshire region and the oldest ones are the companies from Friesland & Groningen with a median age of 13 years. All other regions can

be found in between this age range. The respondents that work with the FBD beneficiaries are mostly between the ages of 41 and 50 or older. This could show that especially company owners in this age bracket are aware of the advantages of digitization as well as their lack of skills in that area and therefore this target group is the biggest population in our sample. In terms of the company size, we have some outliers, i.e., larger companies, therefore we look at the median of full-time employment positions per company (FTE). In and around Antwerp, Belgium, and Halland, Sweden, the companies are comparably larger with 10 and 11 FTE, respectively. The SMEs in Bremen/ Osterholz, Germany, have a median of 4.5 FTE and whereas Cambridgeshire, UK, and Friesland/ Groningen, the Netherlands, represent the smallest SMEs in our sample with 2 FTE each. Most SMEs that participate in FBD are active in the service sector and overall, their strongest skills as measured in our data maturity survey are data safety and privacy.

Table 2

Characteristics of SMEs per FBD region: Data maturity mean scores, median age of the company in years, mode age group of the respondents in years, median FTE (full-time employment), SMEs' strongest skill of all data maturity dimensions, largest sector among participants

Region	**Maturity mean**	**Age of company median**	**Age of respondent mode**	**FTE median**	**Strongest skill**	**Largest sector**
Antwerp	2.87	10	>60 & 41-50	10.0	privacy	services
Bremen/ Osterholz	2.83	10	41-50	4.5	safety	services
Cambridge-shire	3.07	5	41-60	2.0	privacy	services
Fryslân/ Groningen	2.80	13	51-60	2.0	privacy	culture & recreation
Halland	2.96	12	41-50	11.0	privacy	other

Using the Dutch regions of Friesland and Groningen, we took a closer look at the dimensions of data maturity that we measure in the questionnaire. As mentioned before, the highest scores that we observe are the ones for data safety – concerning the security of the stored data within the company for example via antivirus software and encryption – and data privacy – i.e., the anonymization of sensitive data or the active obtaining of customer consent to store their data. The distributions of scores of these two dimensions are both skewed to the left with very few SMEs reporting low values. The culture and datatype dimensions – concerning the work culture and atmosphere for learning and adapting new technologies and the usage of adequate datatypes, respectively – are roughly normally distributed. Tooling – a measure of how advanced the digital tools of an SME are – and knowledge – measuring the general

awareness and expertise on different technologies – are skewed to the right in the Dutch subsample, showing that on average, the level of digital skills and tools used by SMEs in the Northern Netherlands is rather low. The data quality dimension shows values at all skill levels but with a slight tendency towards the higher scores. This indicates that SMEs are aware that their data quality is of immense importance for making informed decisions and predictions based on data.

Future perspective

As this report is being written, the regional FBD partners are still working on the data and digitization projects with participating SMEs. Once the operation phase has been concluded, we will be able to gain the full data collected and gain insights into what skills the SMEs were able to improve and how their successful participation in FBD reflects in their innovative potential and business processes. Future reports will build on the insights and SME profiles presented in this report and present a comprehensive overview of the projects that SMEs went through during their collaboration with the FBD beneficiary organizations.

Not only do we plan to analyze the projects and what specifically helped which type of SME but we also seek to develop a business model for Futures by Design in such a way that the very important work and services will continue to be available to companies in need of support with their digital transition after the official end of the Interreg project. A report on the organization of this project legacy will be published in the near future. This goes hand in hand with the report on further results and best practices of approaching companies, defining digitization projects and ensuring success of the collaboration. All future reports will be published on the official project website and openly accessible for everyone.

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