# Appendix

## Appendix A - Questionnaire

**Company locations of the future**

**Welcome!**

The survey is primarily aimed at **students from vocational colleges in the skilled trades and manufacturing industries** and from **universities (of applied studies) in the manufacturing sector in the Ruhr region**. These can be professions or companies that produce locally, e.g. bakeries or suppliers, as well as companies that have orders elsewhere, e.g. construction trades.

In order to be able to better plan the city of the future, the anonymised results are passed on to city planning offices, business development agencies, as well as to politicians, associations and academia.

Participation in the survey takes about 10-15 minutes. It is also possible to pause the online survey and continue later. In the survey, you have the possibility to choose from answers and to give your own opinion in a text field.

I am looking forward to a large participation, to collect ideas, which can be implemented in the long term. It is always about your personal opinion. Your information will be treated confidentially.

If you have any questions, please do not hesitate to contact me.

Thank you for your participation!

**General information**

Questions marked with \* must be answered in order to continue.

**1 What is the name of your vocational college/ university (of applied sciences)? \***

Please select one of the following answers:

|  |  |
| --- | --- |
| * Alice-Salomon-Berufskolleg, Bochum * Berufskolleg für Technik, Hagen * Berufskolleg für Technik und Gestaltung, Gelsenkirchen * Berufskolleg, Gladbeck * Berufskolleg, Hattingen * Berufskolleg Königstraße, Gelsenkirchen * Berufskolleg Mitte, Essen * Berufskolleg Ost, Essen * Berufskolleg Ostvest, Kreis Recklinghausen * Berufskolleg Stadtmitte, Mülheim an der Ruhr * Berufskolleg West, Witten * Berufskolleg Witten, Ennepe-Ruhr-Kreis * Cuno-Berufskolleg II, Hagen * Emschertal Berufskolleg, Herne * Fachhochschule Dortmund * Fritz-Henßler-Berufskolleg, Dortmund | * Gisbert-von-Romberg-Berufskolleg, Dortmund * Hans-Böckler Berufskolleg, Marl/Haltern am See * Hans-Sachs-Berufskolleg, Oberhausen * Hans-Schwier-Berufskolleg, Gelsenkirchen * Hertwig Blankertz Berufskolleg, Recklinghausen * Hochschule Bochum * Käthe-Kollwitz-Berufskolleg, Hagen * Max Born Berufskolleg, Recklinghausen * Paul-Ehrlich-Berufskolleg, Dortmund * Robert-Bosch-Berufskolleg, Dortmund * Ruhr-Universität Bochum * Technische Berufschule, Bochum * TU Dortmund * Universität Duisburg-Essen * Walter-Gropius Berufskolleg, Bochum * Westfälische Hochschule, Gelsenkirchen, Bocholt, Recklinghausen * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**2 What is the name of your education/ subject? \***

Please select one of the following answers:

|  |  |
| --- | --- |
| * Building Mechanic for Demolition and Concrete Cutting * Plant mechanic * Processing mechanic * Skilled interior construction worker * Automation & Robotics * Baker * Construction and wood technician * Civil Engineer * Construction technician * Building and object coater * Biochemist * Bioengineer * Biomedical technician * Bionics * Brewer and maltster * Distiller, distillate maker * Bookbinder * Scene painter and Scene sculptor * Chemist * Chemical engineer * Chemical technician * Computational Mechanics * Electronics Technician * Electrical Engineer * Energy technician * Vehicle developer * Vehicle painter * Vehicle technician * Exterior finisher * Polisher * Furnace and chimney builder * Butcher * Florist * Garden- and landscaper * Gardener * Design technician * Glazier * Goldsmith/silversmith * Skilled building construction worker * Woodworker * Wood technician * Hearing aid acoustician | * Industrial mechanic * Coachbuilder * Automotive mechatronics technician * Confectioner * Recycling and waste management technician * Food technician * Painter and varnisher * Mechanical Engineering * Bricklayer * Mechatronics technician * Printing media technician * Medical Technology * Metal technician * Optician * Orthopedic and rehabilitation technician * Orthopedic shoemaker * Upholstery and decoration sewer * *Preparation technician* * Polymer chemist * Interior decorator * Recycling technician * Sign and illuminated advertising manufacturer * Concretor * Stonemasonry and stone sculptor * Road and traffic technician * Plasterer * Technical model maker * Technical product designer * Joiner * Drywall construction fitter * Environmental engineer * Event technician * Water management technician * Tool engineer * Dental technician * Machinist * Carpenter * [Cutting machine operator](https://www.linguee.de/englisch-deutsch/uebersetzung/cutting+machine+operator.html) * Plant Mechanic for HVAC and Sanitary Engineering and control technology * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**3 Can you imagine becoming self-employed and taking over or building up a company/ business?**

Please select one of the following answers:

* Yes, in my current profession
* Yes, in another profession
* No
* Don't know

**4 In which property would you start your own business?**

Rent property or space; buy property or real estate; or is there a possibility of inheriting a business?

Please select one of the following answers:

* rent
* buy
* inherit

**(Training-)Company**

**5 Approximately how many employees (incl. boss) are there in your company?**

**Please select one of the following answers:**

* 1-2
* 3-10
* 11-50
* 51-250
* 251-1.000
* over 1.000

**6 What uses could you imagine in the company building/ on the company premises?**

**E.g. if rooms were currently vacant or a building was added on to or empty basement rooms were made usable.**

Please select the applying answer for each item:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Yes | No | I don‘t know | Already is in the company building |
| * Residential |  |  |  |  |
| * Gastronomy |  |  |  |  |
| * Service (e.g. office use) |  |  |  |  |
| * Additional workshop/ production facility |  |  |  |  |
| * Retail (store) |  |  |  |  |
| * Social institution (e.g. day care centre or educational institution) |  |  |  |  |
| * Cultural institution |  |  |  |  |
| * Other |  |  |  |  |

**7 Can you imagine sharing the following spaces with another business? \***

Please select the applying answer for each item:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Yes | No | I don’t know | Already shared with other company |
| * Storage space |  |  |  |  |
| * Canteen |  |  |  |  |
| * Kitchenette |  |  |  |  |
| * Showroom/ presentation room |  |  |  |  |
| * Office & administration |  |  |  |  |
| * Parking spaces/ parking garage |  |  |  |  |
| * Production rooms |  |  |  |  |
| * Single machines |  |  |  |  |

**8 Does the Company cause…**

Please select the applying answer for each item:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | No | Little | Medium | Strong | I don´t know |
| * Noise |  |  |  |  |  |
| * Dust/ Pollutants |  |  |  |  |  |
| * Odour |  |  |  |  |  |
| * Vibration |  |  |  |  |  |
| * Other |  |  |  |  |  |
| * Ambient light |  |  |  |  |  |

**9 What is the relationship of your company to the company's neighbourhood?**

Please select only one of the following answers:

* 1 very bad
* 2 bad
* 3 ok
* 4 good
* 5 very good

**Wishes in the future**

The following questions deal with the following scenario:

Imagine you could redefine the location of the company in which you work. Where would it be and what would it look like?

**10 What criteria should the site meet? \***

Please select the applying answer for each item:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Very important | Important | Less important | Unimportant |
| Proximity to local amenities (e.g. supermarket, bakery, restaurants, etc.) |  |  |  |  |
| Proximity to research facilities, universities and colleges |  |  |  |  |
| Proximity to other companies |  |  |  |  |
| Proximity to recreational and green spaces (e.g. parks) |  |  |  |  |
| Location in a commercial/ industrial area |  |  |  |  |
| Loading and unloading facilities for trucks |  |  |  |  |
| good connection to motorway |  |  |  |  |
| good bus/ train connections |  |  |  |  |
| good cycle path connections |  |  |  |  |
| offer of parking lots/ parking spaces |  |  |  |  |
| charging station for electric vehicles |  |  |  |  |
| attractiveness/ image of the district |  |  |  |  |
| possibility to live in direct neighbourhood |  |  |  |  |
| good quality of internet and mobile network |  |  |  |  |
| Safety |  |  |  |  |

**11 What characteristics should the property have? \***

Please select the applying answer for each item:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Very important | Important | Less important | Unimportant |
| Availability of expansion/ extension space |  |  |  |  |
| Possibility to live in the same building |  |  |  |  |
| low real estate costs |  |  |  |  |
| Ground floor location |  |  |  |  |
| Possibility of shop-window design |  |  |  |  |

**12 Where should the company be located where you want to work in the future?**

Please number the answers in order of preference. Highest preference: 1, to lowest preference: 6

|  |  |
| --- | --- |
| Downtown location |  |
| District centre |  |
| City outskirts |  |
| Commercial/ industrial area |  |
| Mixed area (residential and commercial mixed) |  |
| Residential area |  |

**13 There are more and more vacancies in city centres and district centres (pedestrian zones). Can you imagine your business using such a vacancy?**

Please select one of the following answers:

* Yes
* No
* Don't know

**14 What for could your business use a vacant storefront downtown?**

Please select the answers that apply:

* as a showroom/ presentation space
* as glass production/ production site
* as salesroom/ store
* as office
* as storage room
* Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**15 Can you imagine working in a commercial courtyard/ business park (see photos) with other businesses?**

|  |  |  |
| --- | --- | --- |
| Handerwerhof2_Credits_Yvonne Rokita-2.jpg |  | **C:\Users\ke18308\OneDrive - Westfälische Hochschule Gelsenkirchen Bocholt Recklinghausen\Promotion\05_Paper2\Urban Planning\Abbildungen\Fotos\2017_Handwerkerhof-Ottensen3.jpg** |
| Commercial Courtyard in Hamburg-Ottensen. Source: Yvonne Rokita. | Common room in the commercial courtyard in Hamburg-Ottensen. Source: #Marcel Schonlau. | Load aisle outside at the commercial courtyard in Hamburg-Ottensen. Source: #Marcel Schonlau. |

* Yes
* No
* I don’t know

**16 Ideally, what distance from home to work would you like to face in the long term?**

Please select one of the following answers:

* under 1 km
* 1 to under 10 km
* 10 to under 25 km
* 25 to under 50 km
* over 50 km

**17 Which mode(s) of transportation would you like to use in the future to get to work?**

Please select all applying answers:

* on foot
* bicycle
* scooter/ motorcycle
* public transport (bus, streetcar, train)
* by car
* carpooling

**Socioeconomic data and closing questions**

**18 How old are you?**

Please enter your answer here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**19 Gender**

Please select one of the following responses:

* male
* female
* diverse

**20 Could you imagine...**

Please select the applying answer for each item:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Yes | No | I don’t know |
| ...to give a tour of your company to show others your work? |  |  |  |
| ...to give a workshop at another place to teach interested people something from your work? |  |  |  |
| ...to work visibly for others (e.g. in the pedestrian zone, in the shop window)? |  |  |  |
| ...to become a financial partner of your business if it were transformed into a cooperative or a joint-stock company? |  |  |  |
| ...to shoot a video (in consultation with your boss) of you at work and publish it on YouTube or Instagram? |  |  |  |
| ...to give a podcast interview about your work? |  |  |  |

**21 Do you have any questions, comments or issue?**

Please enter your response here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Appendix B – Further Results of the studies

Table 1. Analysis of location factors from different sources. Source: Own elaboration based on studies from Domenech, 2020, p. 32 (Old Oak and Park Royal, London); Hausleitner et al., 2022, p. 96ff. (Conditions for manufacturing and production with focus on circular economy); HWK Düsseldorf, 2022, p. 15 (importance high, not regarding medium and low); LGH, 2005, p. 57 (Emscher-Lippe-Region, Germany); StadtGUUT, 2022; Steinborn, 2020; ZDH, 2019, p. 8 (Germany, extrapolated for entire craft sector).



Table 2. Craft groups and frequencies in samples – Apprentices and SUM.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Craft group** | **Craft group (differentiated)** | **Examples of crafts** | **Frequencies in samples** | | |
|  |  |  | **SUMs (n=80)** | **App-rentices (n=279)** |
| **Construction site crafts** | Construction | Civil engineers, building mechanics for demolition and concrete cutting, construction fitters | 0% | 28% |
| Interior Construction | Skilled interior construction workers, carpenters, HVAC plant mechanics, electrical engineers | 14% | 10% |
| **Workshop crafts** | Crafts for commercial use | Plant mechanics, mechanical engineers | 9% | 32% |
| Automotive | Automotive mechatronics technicians | 1% | 4% |
| **Store crafts** | Food (Technology) | Bakers, coffee rosters, confectioners | 26% | 7% |
| Health Craft | Orthopaedic and rehabilitation technicians, opticians | 8% | 18% |
| Service providers | Musical instrument makers, alterations tailors, goldsmiths | 43% | 1% |

Table 3. Participants' profiles – Apprentices Survey in the Ruhr area.

|  |  |  |
| --- | --- | --- |
| **Educational System** | n | Percentage |
| Vocational College | 224 | 79% |
| University of Applied Sciences | 26 | 9% |
| University | 33 | 12% |
| Total | 283 | 100% |
| **Self-employment conceivable** | n | Percentage |
| Yes | 153 | 56% |
| Maybe | 68 | 25% |
| No | 54 | 20% |
| **Age** | n | mean |
|  | 173 | 23 |

Table 4. Factor analysis - Rotated factor matrix of location factors

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Location factors** | **Factor** | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Proximity to local amenities (e.g. supermarket, bakery, etc.) |  |  |  | 0.441 |  |  |  |
| Proximity to research facilities, universities and colleges |  |  |  | 0.394 |  |  | -0.487 |
| Proximity to other companies |  |  |  | 0.300 |  |  |  |
| Proximity to recreational and green spaces (e.g. parks) |  |  |  | 0.759 |  |  |  |
| Location in a commercial/ industrial area |  |  |  |  | 0.900 |  |  |
| Loading and unloading facilities for trucks |  |  |  |  | 0.332 |  | 0.302 |
| Good connection to motorway |  | 0.496 |  |  |  |  |  |
| Good bus/ train connection | 0.811 |  |  |  |  |  |  |
| Good cycle path connections | 0.682 |  |  |  |  |  |  |
| Offer of parking lots |  | 0.489 |  |  |  |  |  |
| Charging station for electric vehicles | 0.350 |  |  |  |  |  |  |
| Attractiveness/ image of the district |  |  | 0.342 |  |  |  |  |
| Possibility to live in direct neighbourhood |  |  |  |  |  | 0.448 |  |
| Good quality of internet and mobile network |  | 0.320 |  |  |  |  |  |
| Safety |  | 0.459 |  |  |  |  |  |
| Availability of expansion space |  | 0.377 |  |  |  |  |  |
| Possibility to live in the same building |  |  |  |  |  | 0.757 |  |
| Low real estate costs |  |  |  |  |  |  | 0.433 |
| Ground-floor location |  |  | 0.379 |  |  |  | 0.374 |
| Possibility of shop window design |  |  | 0.980 |  |  |  |  |
| Extraction method: maximum likelihood. Rotation method: varimax with Kaiser normalization. The rotation is converged in 9 iterations. | | | | | | | | |

Table 5. Existing shared spaces in actual company buildings of apprentices by craft group. Values of 0 “not existing”; 1 “existing”.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Construction site crafts** | | | **Workshop crafts** | | | **Store crafts** | | | **Total** | | |
| Values of 0 "not existent"; 1 "existent" | | | | | | | | |  |  |  |
| n | mean | SD | n | mean | SD | n | mean | SD | n | mean | SD |
| Storage space | 77 | 0.10 | 0.31 | 61 | 0.00 | 0.00 | 45 | 0.11 | 0.32 | 183 | 0.07 | 0.26 |
| Canteen | 78 | 0.05 | 0.22 | 61 | 0.00 | 0.00 | 45 | 0.11 | 0.32 | 184 | 0.05 | 0.22 |
| Kitchenette | 78 | 0.04 | 0.19 | 61 | 0.00 | 0.00 | 45 | 0.04 | 0.21 | 184 | 0.03 | 0.16 |
| Showroom/ presentation room | 77 | 0.01 | 0.11 | 61 | 0.00 | 0.00 | 45 | 0.02 | 0.15 | 183 | 0.01 | 0.10 |
| Office & administration | 77 | 0.03 | 0.16 | 61 | 0.00 | 0.00 | 45 | 0.02 | 0.15 | 183 | 0.02 | 0.13 |
| Parking spaces/ parking garage | 78 | 0.06 | 0.25 | 61 | 0.02 | 0.13 | 45 | 0.22 | 0.42 | 184 | 0.09 | 0.28 |
| Production rooms | 76 | 0.01 | 0.11 | 61 | 0.02 | 0.13 | 45 | 0.00 | 0.00 | 182 | 0.01 | 0.10 |
| Individual machines | 77 | 0.03 | 0.16 | 61 | 0.02 | 0.13 | 45 | 0.00 | 0.00 | 183 | 0.02 | 0.13 |

Table 6. Existing additional uses in actual company buildings of apprentices and SUMs. Values of 0 “not existing”; 1 “existing”.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Existing additional use** | **Apprentices** | | | **SUMs** | | | **t-test for equality of means** | |
|  | Values of 0 "not existing"; 1 "existing" | | | | | | Significance | Mean difference |
| n | mean | SD | n | mean | SD | Two-sided p |
| Residential | 183 | 0.07 | 0.26 | 77 | 0.42 | 0.50 | 0.00\* | -0.34 |
| Gastronomy | 183 | 0.13 | 0.33 | 77 | 0.10 | 0.31 | 0.62 | 0.02 |
| Service (e.g. office use) | 181 | 0.33 | 0.47 | 77 | 0.30 | 0.46 | 0.61 | 0.03 |
| Additional workshop/ production facility | 182 | 0.16 | 0.37 | 77 | 0.17 | 0.38 | 0.85 | -0.01 |
| Retail (store) | 182 | 0.16 | 0.37 | 77 | 0.12 | 0.32 | 0.33 | 0.05 |
| Social institution (e.g. day care centre) | 182 | 0.05 | 0.22 | 77 | 0.04 | 0.19 | 0.71 | 0.01 |
| Cultural institution | 182 | 0.02 | 0.15 | 77 | 0.05 | 0.22 | 0.20 | -0.03 |
| Other (e.g. educational institution) | 182 | 0.01 | 0.10 | 77 | 0.03 | 0.16 | 0.37 | -0.01 |