

Operationalisation and multivariate analyses

Table 1

Questions on the variables in the BIBB Training Panel on which the operationalisation of systematic competence management is based

Variable	In your company...	1:Yes	0:No
<i>ko001_1</i>	1: ... Employee competences are taken into account, e.g. in personnel planning, but not systematically recorded or documented	<input type="checkbox"/>	<input type="checkbox"/>
<i>ko001_2</i>	2: ... Employee competences are systematically recorded and documented	<input type="checkbox"/>	<input type="checkbox"/>
<i>ko001_4</i>	3: ... existing and required competences of individual employees are compared	<input type="checkbox"/>	<input type="checkbox"/>
<i>ko001_5</i>	4: ... specifically social, personal, communicative or methodological competence of employees are taken into account in addition to professional competences when deploying staff	<input type="checkbox"/>	<input type="checkbox"/>
<i>ko001_6</i>	5: Results of competence assessment and documentation are stored via software	<input type="checkbox"/>	<input type="checkbox"/>

Variable	Do you offer any of the following incentives to employees in your organisation?	1= yes, for all employees	2= yes, for some of the employees	0 = no
<i>be001_2</i>	2: Target agreements with employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Variable	Which of the following regulations relating to working hours, place of work and personnel exist in your company?	1= yes, for all employees	2= yes, for some of the employees	0 = no
<i>be001_5</i>	3: Systematic personnel development or written promotion criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table 2

Operationalisation of systematic competence management

Variable	Variable description	SCM 0 "not"	SCM 1 "weak"	SCM 2 "strong"
<i>ko001_1</i>	Competence management: employee competence is taken into account but not recorded	*	*	*
<i>ko001_2</i>	Employee expertise is systematically recorded	0	0	1
<i>ko001_4</i>	Employees' existing/required competences are compared	0	1	1
<i>ko001_5</i>	Consideration of social/personal/methodological competences	*	1	1
<i>ko001_6</i>	Documentation of the results via a software	0	*	1
<i>be001_2</i>	Target agreements with employees	*	1	1
<i>be001_5</i>	Systematic personnel development or written promotion criteria	0	*	1

Legend: 1: Must be fulfilled; 0: Must not be fulfilled; *: No hard condition

Table 3

Descriptive statistics of the included analysis variables

Variable	n	Min	Max	Mean	SD
Systematic competence management (SKM)	4,031	0	2	0.72	0.68
CVET participation rate (WBT): low qualified	2,253	0	1	0.27	0.39
CVET participation rate (WBT): (highly) qualified	3,321	0	1	0.54	0.33
Company size groups	4,050	1	5	3.41	1.31
Organisational structure	3,729	1	6	2.68	1.88
Digitalisation index	4,050	0	1	0.56	0.15
Industry	4,050	1	8	5.19	2.24
West(1)/East(2)	4,050	1	2	1.30	0.46
Collective labour agreement	4,044	0	1	0.56	0.50
Cooperation network with other companies	4,037	0	1	0.63	0.48
Chamber membership	4,037	0	1	0.88	0.33
High competition in the market segment	4,036	0	1	0.36	0.48
Decline in demand in the market segment	4,034	0	1	0.15	0.35
Advice on the introduction of SCM	3,215	0	1	0.22	0.41
Company co-determination	4,047	0	1	0.50	0.50

Source: BIBB Training Panel 2018; unweighted data

Table 4

Ordinal logistic regression models to explain the characteristics of systematic competence management in the company

Variable	SKM
1-4 employees	Reference category
5-19 employees	1.169
20-99 employees	1.280
100-199 employees	1.341
200+ employees	2.878*
Structure: simply organised	Reference category
Structure: functional company organisation	1.521
Structure: divisional company organisation	3.739***
Structure: Matrix organisation	2.189+
Structure: Network organisation	1.053
Structure: Expert organisation	1.780
Digitalisation index	12.250**
Agriculture/mining/energy	Reference category
Manufacturing industry	0.847
Construction industry	1.510
Trade and Repair	1.166
Company related services	2.446
Other personal services	1.546
Medical services	2.637
Public services and education	1.458
West	Reference category
East	0.832
Collective agreement: yes=1	1.563+
Cooperation network with other companies: yes=1	0.851
Chamber membership: yes=1	1.273
High competition: yes=1	1.254
Decline in demand: yes=1	0.827
SKM consulting: yes=1	1.982*
Company co-determination: yes=1	0.731
cut1	6.112*
cut2	316.432***
N	2,902

Notes: Exponentiated coefficients (odds); BIBB Training Panel 2018; listwise deletion of missing values; unweighted data; robust standard errors; ***>0.001, **>0.01, *>0.05, +>0.1.

Table 5

Operationalisation of CVET participation rates in the BIBB Qualification Panel

Continuing vocational education and training (forms and participants)	
All companies:	Did employees at your company take part in other continuing vocational education and training measures in 2017 in the form of <i>internal or external courses or training programmes</i> organised by the company that were fully or partially subsidised? (yes/no)
If yes:	And how many employees in total participated in one or more of these CVET programmes in 2017? (number of employees)
	And how were these employees distributed among the employee groups with simple, qualified and highly qualified jobs? (Number of participants in CVET with simple/qualified/highly qualified jobs)
Job requirement level of the employees or training participants	
All companies:	<p>Employees performing <i>unskilled</i> tasks [low-skilled workers] that usually do not require vocational education and training.</p> <p><i>We understand these to include</i></p> <ul style="list-style-type: none"> • <i>tasks which encompass simple cleaning, waste disposal, warehousing, transport works or simple sales activities</i> • <i>and which usually do not require vocational education and training and can, for instance, be performed by unskilled and semi-skilled workers.</i> <p>Employees performing <i>skilled</i> tasks that usually require completed vocational education and training or corresponding professional experience.</p> <p><i>We understand these to include</i></p> <ul style="list-style-type: none"> • <i>in which products and goods are manufactured, tasks in which repair and maintenance works are carried out in a qualified manner or tasks which involve qualified services such as commercial activities or IT work</i> • <i>and which usually, although not necessarily always, require completion of in-company or school-based VET or relevant occupational experience and are performed by staff such as skilled workers, journeypersons or specialist commercial clerks.</i> <p>Employees performing <i>highly skilled</i> tasks that usually require a degree from an institute of higher education/university of applied sciences or a master craftsperson, technician or comparable qualification.</p> <p><i>We understand these to include,</i></p> <ul style="list-style-type: none"> • <i>tasks which encompass research, development, analytical, consultancy and construction works or management, training and organisational responsibilities</i> • <i>and which usually, although not necessarily always, require a degree from an institute of higher education/university of applied sciences or a master craftsperson, technician or comparable qualification and which are, for example, performed by employees such as certified senior clerks, group leaders, scientists, master craftspersons or managers.</i>

Table 6

Two linear OLS regression models to calculate the influence of systematic competence management (SCM) on the participation rate of low-skilled (TPR_low) and (high-)skilled employees (TPR_high) in continuing vocational education and training

Variable	TPR_low	TPR_high
SKM: not available	Reference category	
SKM: weakly pronounced	0.053**	0.040**
SKM: strongly pronounced	0.049+	0.087***
1–4 employees	Reference category	
5–19 employees	-0.105	-0.180***
20–99 employees	-0.048	-0.303***
100–199 employees	-0.062	-0.324***
200+ employees	-0.077	-0.358***
Structure: simply organised	Reference category	
Structure: functional company organisation	0.015	-0.032+
Structure: divisional company organisation	-0.030	-0.019
Structure: matrix organisation	-0.003	-0.029
Structure: network organisation	0.020	-0.071
Structure: expert organisation	0.015	-0.015
Digitalisation index	0.176*	0.135*
Agriculture/mining/energy	Reference category	
Manufacturing industry	-0.006	-0.041
Construction industry	-0.060	-0.001
Trade and Repair	-0.085	-0.035
Company-related services	-0.073	0.009
Other personal services	-0.020	0.005
Medical services	0.192***	0.135***
Public services and education	-0.051	0.094**
West	Reference category	
East	-0.024	0.021
Collective agreement: yes=1	0.035*	0.038**
Co-operation network with other companies: yes=1	0.045*	0.056***
Chamber membership: yes=1	-0.026	0.003
High competition: yes=1	0.048**	0.030*
Decline in demand: yes=1	-0.053*	-0.027
constant	0.145	0.621***
r ²	0.105	0.114
N	2,052	3,006

Notes: BIBB Training Panel 2018; listwise deletion of missing values; unweighted data; robust standard errors;

***>0.001, **>0.01, *>0.05, +>0.1