Work engagement and work pressure: still in balance? A well being study among UT employees

UNIVERSITY OF TWENTE.

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PREFACE

Scientific research and education are both activities performed by people. It is therefore essential to know how employees of the University of Twente experience their job, job conditions and the organization they work for. Particularly, employee experiences of work engagement and work pressure/strain are important as they reflect employees' well-being. In line with these considerations, an employee well-being research was performed at the University of Twente in the beginning of 2019. This report presents and summarizes the results of this study.

Acknowledgements
The research team wants to thank those who contributed to the employee well-being study. In the first place, we acknowledge the employees who took the time to fill out the survey on which the employee well-being study is based. Secondly, we want to thank the expert group for the help in setting up this study. In addition, we thank the URaad and OPUT for their valuable input and comments on earlier versions of the survey and proposed data collection procedure. Also, we want to thank the group of employee-pilot testers for their willingness, time and useful remarks on the draft survey. Thirdly, we want to thank Ipsos for the efforts in organizing the data collection. Finally, thank the CvB for the trust to organize, analyze and report the results of this important study.

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MANAGEMENT SUMMARY

Work engagement and work pressure should be in balance for the employees of our university. However, the findings of the well-being study among employees of 2019 show that it is a fragile balance. The results show that employees are engaged in their work and committed to the organization. At the same time, they report being strained. The work pressure has increased over the last four years, covering an increasing amount of UT employees experiencing a workload which they consider to be too high.

The most important findings are:

1. Employees at the UT are both very much engaged and strained. The work engagement of UT employees, in general, is high: on average 5.3 (scale 1-7). The work pressure of UT employees, in general, is high as well. The results on strain show a mean of 3.21 (scale 1-5). Employee spends excessive overtime hours and/or spend sick days or vacation days for finishing work. The results on work engagement and work pressure are not the same for all UT employees. Full Professors report the highest level of work engagement and the highest level of strain of all employees at the UT.
2. The overall satisfaction of employees with UT is a 7.2 (on a scale from 1-10), which is neither undesirable, nor good in comparison to other organizations.
3. Work engagement can be influenced by increasing job crafting and self-efficacy. However, employees that pro-actively take on extra responsibilities (i.e. crafting job demands) run the risk of increasing their role overload and strain. Job crafting focusing on increasing social resources, such as asking coaching and feedback, and increasing structural resources, such as knowledge and skills, help to reduce strain.
4. The relationship with the supervisor/manager is strongly related to strain. The results indicated an indirect and negative relation between strain and satisfaction with HRM (via leader-member exchange). The implication is that HRM practices help to control strain through improving the relationship between managers and their employees.
5. The prevalence of aggressive behaviors (especially intimidation) is in line with other findings based on national surveys among comparable organizations. One out of seven employees has experienced a type of aggressive behavior during the past two years.

Based on these findings we recommend:

1. To keep a healthy and productive balance between work engagement and work pressure (strain) we recommend that the UT particularly invests in the following activities and job resources: job crafting, HRM, autonomy, self-efficacy and high-quality leader-member relationships.
2. Investing in job crafting practices should be done with care. Especially job crafting that is focused on increasing challenging job demands should be avoided. Instead, job crafting policies focusing on increasing social resources (such as investing in asking for coaching and feedback) or on increasing structural resources (such as developing knowledge and skills) can lead to less strain and more work engagement.
3. Investing in HRM practices do offer good possibilities to reduce strain and increase work engagement. Our findings indicate that better HRM can lead to higher commitment, better team cohesion, better leader-member relations and less role overload. Investments in leader-member exchange are essential here as employees' reports indicated that this job resource type is the least developed of all job resources included in the current study.
4. Investing in development and career opportunities, such as offering permanent contracts, is recommended.
5. Investing in the reduction of drivers of overtime. Here, reducing administration and management tasks and bureaucracy must be prioritized.
6. A special recommendation is to invest in an open climate to discuss aggressive and violent behaviors at the UT. Special focus should be to communicate more about the role and the position of the confidential person for these matters.

1. AIMs AND BACKGROUND OF THE STUDY

The Executive Board (CvB) of the University of Twente (UT) and the indirect participation bodies (university council and OPUT) ascribe great importance to safeguarding employee well-being at UT. They therefore commissioned a study into employee well-being and its antecedents. Moreover, regulations on working conditions (in Dutch: ARBO) pose the requirement to monitor the psychological strain of employees as part of the *Risico-inventarisatie & Evaluatie* (RIE). In line with this requirement, this well-being study assesses the risks of work pressure (strain) and its antecedents. Taken together the aims of the survey are therefore

1. To measure employee well-being, which is defined as employees' perceptions of work engagement and work pressure (strain).
2. To measure relevant antecedents – i.e. human resource management (HRM), job crafting, job demands and job resources – of employee well-being.
3. To test hypotheses on the relationship between employee well-being and its antecedents.
4. To measure employees' perceptions of aggression and violence at work.
5. The fulfillment of the aforementioned aims can contribute to an improvement of the UT's HRM policies and practices as well as support priority setting.

On the basis of the research results, recommendations for policy and management will be formulated on how to safeguard employee well-being at the UT. With the results of this survey, we hope to contribute to the plans – required by the *CAO* – of the university to reduce work pressure.

To realize these five aims, the research team developed a conceptual model on the basis of the Job-Demands-Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti et al, 2001; Schaufeli, Bakker & Salanova, 2006). The JD-R model is frequently used in academic research into employee well-being at work. We enriched this model by adding insights from recent job crafting studies (Tims et al, 2012) and scholarly work into human resource management (HRM). The conceptual model served as the basis for the development of an employee survey used to measure employee well-being and its antecedents at the UT. To this survey, we added additional questions to measure employees' experiences of specific UT facilities as well as perceived aggression and violence at work. For the sake of comparability, we reused several of the well-being and satisfaction survey questions that were included in the previous UT employee survey.

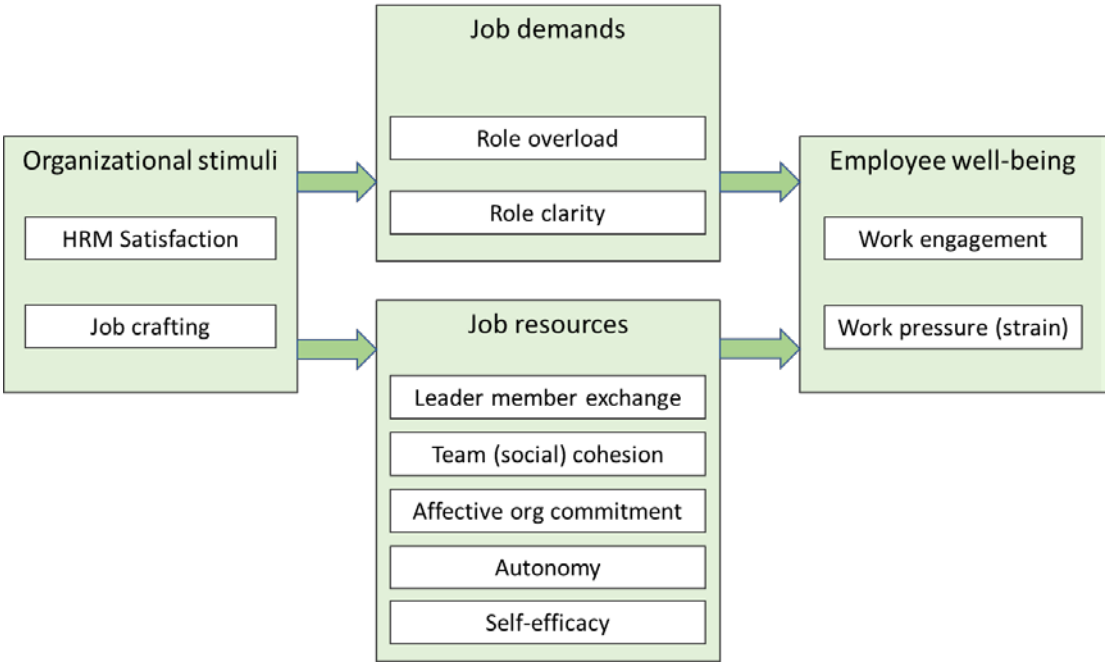
2. THEORETICAL BACKGROUND

2.1 Conceptual model

To ensure that the current well-being study is grounded in both theory and practice, the research team decided to draw on both the academic literature on well-being at work as well insights gained from exploratory studies into stress/strain at the UT. These conceptual and empirical insights were combined to arrive at a conceptual model that explains employee well-being and its antecedents (see Figure 1). The core of the conceptual model is based on the Job-Demands-Resources (JD-R) model (Bakker & Demerouti, 2007). The JD-R model predicts that employee well-being is a function of job demands (i.e. job characteristics that drain energy, such as role overload and poor role clarity (also called: role ambiguity)) versus job resources (i.e. job characteristics which enable employees to realize their goals and which are energizing). We included job resources that relate to the job (autonomy and self-efficacy), the supervisor (leader-member exchange (LMX)), the team (team cohesion) and the organization (commitment).

To examine how organizational policies/practices impact job demands and job resources, and how employees themselves can safeguard their well-being, we decided to examine employee satisfaction with HRM activities such as training, appraisal and feedback (as relevant organizational policies/practices that may impact well-being) as well as employee reports of job crafting (i.e. employee-initiated changes to job demands/resources for sustaining well-being). Since HRM activities and job crafting are unlikely to have a direct relationship with employee well-being, we hypothesize that job demands and job resources mediate between employee satisfaction with HRM / job crafting and employee well-being. Employee well-being is conceptualized as work engagement and work pressure/strain to tap into both the desirable dimensions of well-being (i.e. work engagement) as well as its undesirable dimensions (i.e. work pressure/strain). In the following section, we define each of the concepts included in the conceptual model.

Figure 1: Conceptual model on employee well-being and its antecedents



2.2 Definition of relevant concepts

This section offers the definitions of the variables included in the conceptual model (see Figure 1).

2.2.1 Organizational and employee stimuli

- *Satisfaction with Human Resource Management (HRM)* is defined as employees' satisfaction with the following HRM practices: training/education opportunities, opportunities to change jobs, opportunities to develop within current position, performance appraisal, performance feedback, pay, benefits other than pay (working times, vacation days, pension arrangements, etc.), family-friendly policies and facilities, recognition for performance, influencing decisions related to issues that concern the employee, support during and after illness, support for new employees, information from an HR specialist (about pay, benefits, leave, training opportunities, etc.) and support when employees have a problem related to HR issues (pay, benefits, contracts, etc.).
- *Job crafting* refers to the self-initiated job changes pro-actively realized by employees themselves in order to align the job better to their own needs and strengths (Tims et al., 2012; Dorenbosch et al., 2013). In this study, three types of job crafting were examined:
    - Increasing structural resources, which are employee-initiated actions for (pro-actively) acquiring personal resources needed to effectively execute one's work, including knowledge and skills, and autonomy.
    - Increasing social resources, which are employee-initiated actions for (pro-actively) acquiring support from others, including asking for performance feedback from a supervisor and/or co-workers and asking colleagues to offer coaching services.
    - Increasing challenging demands, which refer to employee-initiated actions for (pro-actively) enacting additional responsibilities at work, such as starting new projects or taking on extra tasks even if the employees do not receive a salary for these tasks.

2.2.2 Job Demands

- *Role overload* describes situations in which employees feel there are too many responsibilities or activities expected of them in light of the time available, their abilities, and other constraints (Rizzo et al., 1970).
- *Role clarity* refers to the availability of information about the responsibilities of an employee such that the employee knows what is expected of him/her (Rizzo et al., 1970). The opposite of role clarity is role ambiguity.

2.2.3 Job Resources

- *Leader-member exchange (LMX)* describes the quality of the relationship between supervisor/manager and the employee, as experienced by the employee. Low-quality LMX-relations are characterized by top-down interventions, economic exchange relationships, and formal job descriptions. High-quality LMX-relations consists of mutual trust, respect and mutual obligations between the supervisor and the employee (Basu & Green, 1997; Graen en Uhl-Bien, 1995).
- *Team cohesion* is the resultant of all the forces acting on an employee to remain in the team s/he works (Sargent & Sue-Chan, 2001). As such, it describes whether employees feel a sense of belongingness with their colleagues and whether they like their colleagues. We focused on the affective side of team cohesion, since affective team cohesion as a form of social support of the colleagues may serve as a job resource (see e.g. Costa et al., 2014).
- *Affective organizational commitment* describes an employee's positive emotional attachment to the organization, in terms of identification with the goals of the organization (Allen and Meyer, 1990). As a state of mind or attitude, affective commitment is a predictor for employee behavior, such as the desire to remain a part of the organization.
- *Autonomy* refers to the degree to which employees perceived they have the opportunity to decide when, where, and how their job is to be done (Clark, 2001)
- *Self-efficacy* described employees' beliefs about their knowledge, skills and abilities to perform their job. The more confident employees are about their knowledge, skills and abilities, the higher the level of self-efficacy (Bandura, 2010).

2.2.4 Employee Well-Being

- *Work engagement* refers to employees' dedication and attachment toward their performance in their job (Schaufeli, Bakker, & Salanova, 2006). For this study, two sub-dimensions of work engagement were examined: vigor (Characterized by high levels of energy and mental resilience at work, the willingness to put effort into the job, and persistence when confronted with difficulties) and dedication (i.e. being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride and challenge).
- *Strain* refers to the level of cognitive irritation experienced by employees that occurs when employees experience difficulties to relax at home after work or worry about their work-related problems when being at home or on vacation.

In addition to work engagement and strain, a number of variables were included to further assess the well-being of employees at the UT. These included, amongst others, the perceived workload of employees, average weekly overtime, perceived aggression at work, satisfaction with the University of Twente, whether employees called in sick/took vacation days for getting work done. Although the antecedents of these variables were not examined, these variables were included to measure employee well-being at the UT.

Finally, two open questions were included which provided respondents the possibility to indicated (1) what they most like about their job/the University of Twente and (2) what they

perceived to be major points for improvement in their job at the UT. The last question of the survey was also an open question to let the respondents free to put all remarks they want.

3. FINDINGS ON WORK ENGAGEMENT, STRAIN and other well-being indicators

This chapter reports on the main findings of the UT employee wellbeing research 2019. Appendix 1 contains a description of the survey methodology.

The chapter proceeds as follows. Section 3.1 describes the average scores on work engagement, strain and the overall satisfaction with the UT. Section 3.2 provides an overview of descriptive statistics on well-being related variables such as perceived workload, average weekly overtime and whether employees call in sick/took vacation days for getting work done. Section 3.3 concludes with the overview of the relationship between employee well-being (i.e. work engagement and strain) and its antecedents.

3.1 Satisfaction with the UT, work engagement and strain

As shown in Table 3.1, the average satisfaction with the University of Twente among the respondents is 7.2 (on a scale of 1-10). The average work engagement among the employees of the UT is 5.3 (on a scale 1-7, 1=never engagement, 7=always engaged). For strain, the average/mean score is 3.21 (on a scale 1-5, 1=fully disagree, 5=fully agree).

The next two subsections describe the average scores across faculties and support units and across job functions. Anova/Bonferroni analysis was used to investigate whether the differences are significant.

3.1.1 Satisfaction, work engagement and strain across faculties and support units

Table 3.1 also shows the average scores across the different faculties/support units.

Table 3.1: General satisfaction with UT, work engagement and strain per organizational unit

Organizational unit	**General satisfaction UT[1]**		**Work Engagement[2]**		**Strain[3]**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
BMS	6.75	1.68	5.15	1.06	3.44	.97
ET	7.20	1.62	5.31	1.10	3.30	1.02
EEMCS/EW	7.28	1.43	5.32	.97	3.19	.92
TNW	7.37	1.36	5.43	1.05	3.11	.90
ITC	6.82	1.53	5.25	1.14	3.30	.91
AZ	7.58	0.91	5.64	.66	3.18	.69
CFM	7.49	1.03	5.42	1.16	3.11	.89
CES	7.19	1.17	5.23	.96	2.97	1.03
FEZ	6.46	1.07	4.51	1.22	3.42	.89
HR	7.20	1.18	5.34	.90	3.13	.90
LISA	7.41	1.24	5.08	1.31	3.19	.91
M&C	7.79	0.98	5.44	.86	3.00	.91
S&B	7.50	0.89	5.39	.87	3.32	.70
University of Twente	7.20	1.42	5.30	1.06	3.21	.94

[1] Scale = 1 to 10
[2] Scale = 1 to 7
[3] Scale = 1 to 5
SD = standard deviation

Average satisfaction with UT across faculties and support units

The Anova/Bonferroni analysis show that the mean score for satisfaction with the UT is significantly lower for BMS in comparison to EWI, TNW, CFM, LISA and M&C ($p < .05$). Moreover, the mean score for satisfaction with the UT is significantly lower for ITC and FEZ in

comparison to M&C ($p < .05$). The remaining mean scores for satisfaction with the UT do not significantly differ across organizational units.

Average work engagement across faculties and support units
The mean score for work engagement is significantly lower for FEZ in comparison to ET, EWI, AZ, CFM, and M&C ($p < .05$). The remaining mean scores for work engagement do not significantly differ across organizational units.

Average strain across faculties and support units
The mean score for the strain is significantly higher for BMS in comparison to TNW and CES ($p < .01$). The remaining mean scores for strain do not significantly differ across organizational units.

3.1.2 Satisfaction, work engagement and strain across job functions

Table 3.2 presents the difference in mean scores of satisfaction with the UT, work engagement and strain across different functions.

Table 3.2: General satisfaction with UT, work engagement and strain per function

Function	**General satisfaction UT[1]**		**Work Engagement[2]**		**Strain[3]**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
PhD Candidate / PhD Student	7.65	1.24	5.21	1.12	3.28	0.96
Researcher / Postdoc	7.38	1.56	5.23	1.25	3.15	0.95
Teacher	6.54	1.60	4.97	1.03	3.21	1.06
Assistant Professor	6.62	1.75	5.24	1.11	3.56	0.91
Associate Professor	6.76	1.45	5.39	0.82	3.57	0.91
Full professor	6.81	1.63	5.89	0.72	3.58	0.71
Manager (support service)	7.65	1.07	5.72	0.81	3.37	0.84
Manager (faculties)	7.63	0.79	5.83	0.69	3.40	0.96
Support staff	7.40	1.08	5.31	1.03	3.00	0.91
Respondent preferred not to discuss function	6.13	1.96	4.88	1.19	3.35	0.89

[1] Scale = 1 to 10
[2] Scale = 1 to 7
[3] Scale = 1 to 5
SD = standard deviation

Average satisfaction with UT across job functions
Table 3.2 shows that PhD Students and Managers are the most satisfied of all employees at the UT. Also Support staff report to be highly satisfied. Scientific staff (Teachers, Assistant, Associate and Full Professors) show the least satisfaction with UT. The differences between scientific staff (Teachers, Assistant, Associate and Full Professors) on the one hand and the PhD Students, Support staff and Managers on the other hand are significant ($p < .05$). Also the mean score for satisfaction with UT is significantly lower for those who preferred not to disclose their function and the other function categories ($p < .05$).

Average work engagement across job functions
As can be seen in Table 3.2, of all employees, Full Professors are the most engaged. In fact, the mean score for work engagement is significantly higher for Full Professors in comparison to PhD candidates / PhD students, Researchers / Postdocs, Teachers, Assistant Professors, Support Staff and those who preferred not to disclose their function ($p < .05$). Moreover, the mean score for work engagement is significantly higher for Managers (support services) in comparison to PhD candidates / PhD students, Teachers, and those who preferred not to disclose their function ($p < .05$). Surprisingly, the results show that Researchers / Post-docs, Teachers, Assistant Professors and Associate Professors do not significantly differ in the extent to which they are engaged at work.

Average strain across job functions
Table 3.2 shows that Full Professors are also the most strained of all employees at the UT. At the same time, the average level of strain reported by Full Professors does not significantly differ from other scientific staff members (e.g. Assistant or Associate Professors). Support Staff employees report to be least strained of all employees. In fact, the mean score for Strain is significantly lower for Support Staff in comparison to PhD candidates / Phd students, Assistant Professors, Associate Professors, Full Professors and those who preferred not to disclose their function ($p < .05$).

3.1.3 Satisfaction, work engagement and strain across country of birth

Table 3.3 presents the difference in mean scores of satisfaction with the UT, work engagement and strain across different countries of birth: we made distinctions between, the Netherlands, Europe and non-Europe.

Table 3.3: General satisfaction with UT, work engagement and strain per country of birth

	General satisfaction UT[1]		**Work Engagement[2]**		**Strain[3]**	
Country of birth	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
NL (N=1048)	7.23	1,285	5.33	0.972	3.14	0.900
Europe (N=140)	7.16	1,542	5.19	1.228	3.50	1.004
non-Europe (N=135)	7.80	1,559	5.46	1.220	3.39	1.038
I prefer not to disclose country of birth (N=106)	6.06	1,856	4.76	1.380	3.41	0.967

[1] Scale = 1 to 10
[2] Scale = 1 to 7
[3] Scale = 1 to 5
SD = standard deviation

Average satisfaction with UT across country of birth
Table 3.3 shows that employees from outside Europe are the most satisfied employees (significantly different with the other categories; $p < .05$). Also, the mean score for satisfaction with UT is significantly lower for those who preferred not to disclose their nationality and the other categories ($p < .05$). The differences between the employees with the Netherlands or Europe as a country of birth are not significant.

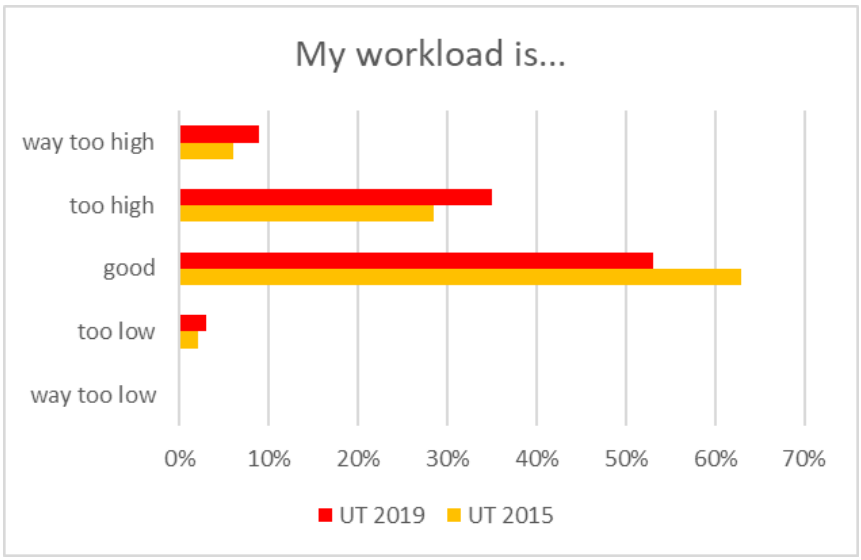
Average work engagement across country of birth
As can be seen in Table 3.3, of all employees, those born outside Europe are the most engaged, however this result is not significant. The only significant result is the mean score for work engagement those who preferred not to disclose their function with the other three categories ($p < .05$).

Average strain across country of birth
Table 3.3 shows that employees born in The Netherlands are the least strained of all employees at the UT. This is the only significant result ($p < .05$) of the differences in the mean score of strain. This result could be explained by the fact that most people from Support staff are from the Netherlands, also the least strained category of employees.

3.2 Perceived workload

Similar to the UT Employee Satisfaction survey that took place in 2015, the UT employees were asked during the current survey (in 2019) to report on their workload. The respondents had indicate whether they perceived their workload to be (1) way too high, (2) too high, (3) good, (4) too low, or (5) way too low. As can be seen in Figure 3.1., the results indicate an increase in the percentage of employees who perceive that their workload is (way) too high. As a matter of fact, in 2019, 44% of the respondents perceive their workload to be (way) too high.

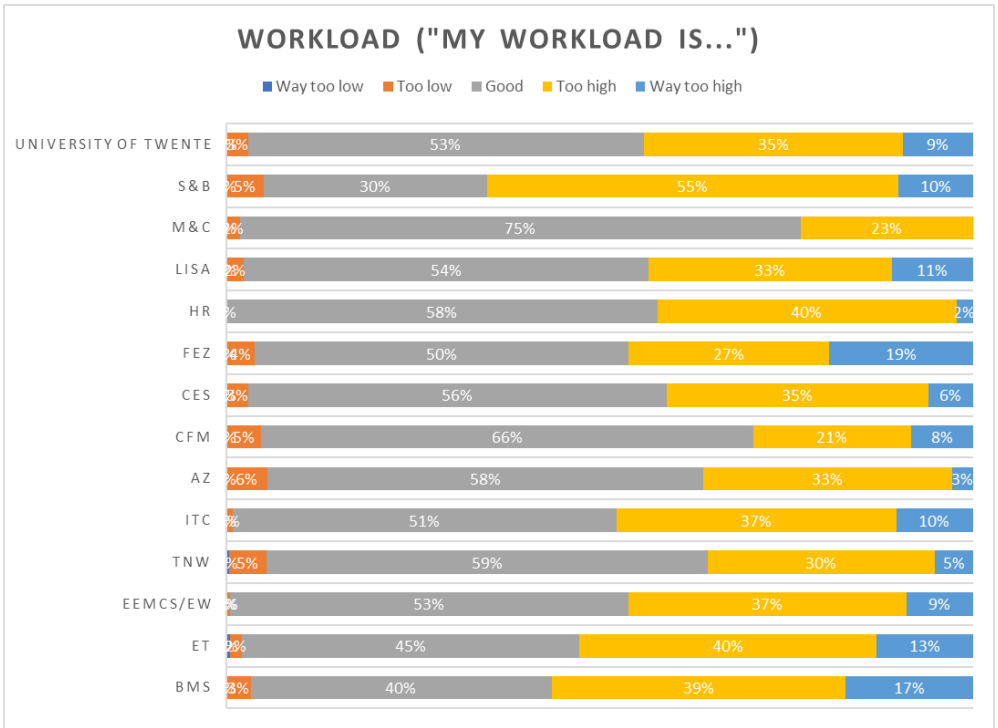
Figure 3.1: Distribution of perceived workload in 2015 and 2019



3.2.1 Distribution of perceived workload across faculties and support units

Figure 3.2. presents the workload distribution scores per organizational unit. As can be seen, the organizational units where the majority of employees (i.e. > 50%) perceive workload to be (way) too higher are BMS, ET and S&B. Organizational units where more than 10% of the employees experience a workload that is considered way to high include BSM, ET, ITC, FEZ, LISA and S&B. Organizational units where a large majority of employees (> 60%) perceived their workload to be good include M&C and CFM.

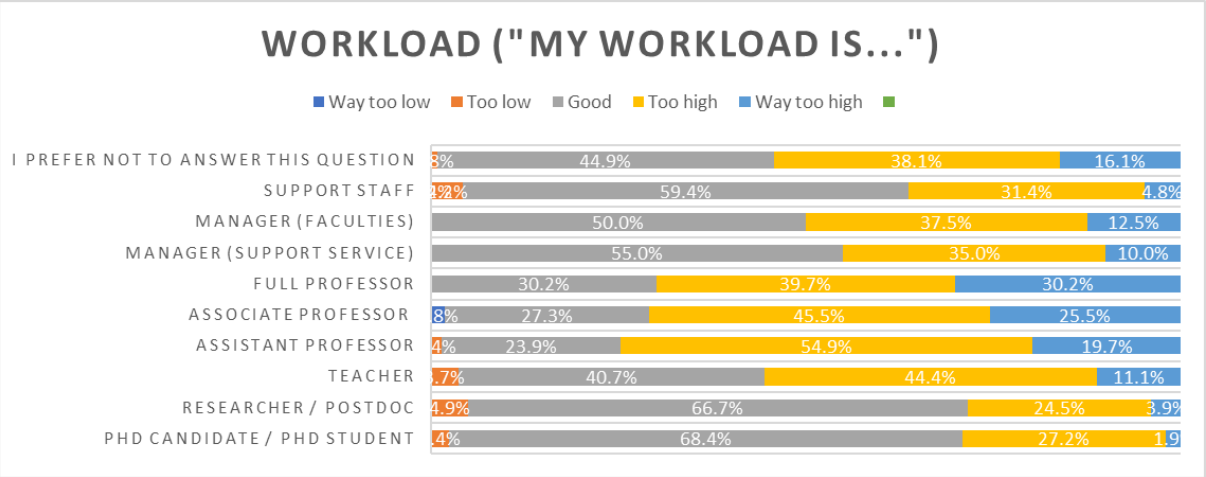
Figure 3.2: Workload per organizational unit



3.2.2 Distribution of perceived workload across functions

Figure 3.3. presents the workload distribution scores per organizational unit. As can be seen, more than 70% of the assistant professors, associate professors and full professors find their workload (way) too high. Among teachers, 55% finds its workload (way) too high). The percentage of managers and support staff who find their workload (way) too high lies between 35% and 50%. The majority (approximately 66%) of PhD candidates/researchers and postdocs finds its workload good.

Figure 3.3: Workload per function



3.3 Overtime

This section reports on the results on overtime by showing the results of the self-assessed average number of hours per week beyond contractual hours per week and two additional questions on the number of days taking vacation or calling in sick to finish the work.

3.3.1 Overtime across organizational units and functions

Table 3.4 shows the number of average weekly number of hours of overwork. These numbers are calculated as the difference between the (1) average number of hours which an employee actually works a week during the last three months (self-report by employee) and (2) the number of hours an employee has to work according to his/her contract (self-report by employee). As can be seen in Table 3.4 the average employee at the UT reports to work 4.2 hours more per week in comparison to what s/he is expected to work according to his/her contract. The average overtime is the highest at ET (on average, 6.3 hours of overwork per week) and BMS (on average, 6.0 hours of overwork). In fact, the mean score for weekly overtime is significantly higher for BMS and ET in comparison to CFM, CES, FES and LISA ($p < .05$). The remaining mean scores for weekly overtime do not significantly differ across organizational units.

Table 3.4: Average overtime per week (in hours)

Organizational unit	**Weekly overtime**	
	Mean	*SD*
BMS	6.0 [a]	7.74
ET	6.3 [a]	8.15
EEMCS/EW	4.3	7.94
TNW	4.5	7.83
ITC	4.9	6.85
AZ	3.8	4.86
CFM	2.2	5.35

CES	1.7	4.87
FEZ	-.3	7.80
HR	2.6	3.90
LISA	2.1	4.79
M&C	2.6	5.47
S&B	3.8	7.02
University of Twente	4.2	7.25

SD = standard deviation

Table 3.5 presents the results on overtime per function. These numbers are in line with the results presented in Figure 3.3. Full Professors are reporting the most overtime per week (around 38% of their contractual amount of hours). Associate and Assistant Professors report also huge overtime hours, more than 20% of their contractual amount of hours. Next come Managers, with 15% of contractual hours. Then PhD Students, Researchers and Teachers, with more than 10%. Support staff work on average 5% extra hours.

Table 3.5: Average overtime per function per week (in hours)

Function	**Weekly overtime**	**Standard deviation**
PhD Candidate / PhD Student	5.3	7.1
Researcher / Postdoc	4.5	6.3
Teacher	5.2	6.7
Assistant Professor	8.8	8.8
Associate Professor	9.5	8.2
Full professor	14.5	9.4
Manager (support service)	6.1	7.9
Manager (faculties)	6.1	5.4
Support staff	2.1	4.7

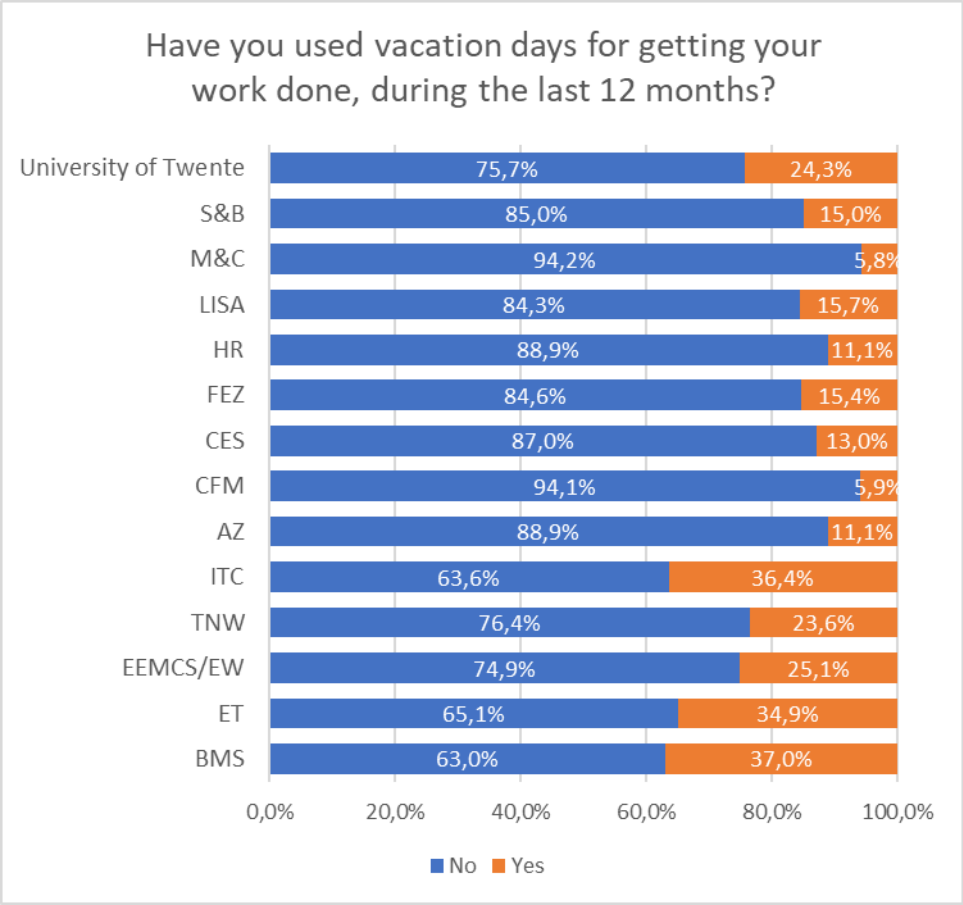
These numbers on overtime are similar in comparison to other universities. According to the Rathenau Instituut (Koens et al., 2018), researchers at universities spend on average about 25% of their contractual hours extra. The higher the function, the more overtime. Most quoted reason is that time spent on teaching and management activities exceeds the formal agreements.
In Appendix 6 (Time spent on specific tasks) the results are presented on how much time each function group on average spend on six core tasks: teaching, research, valorization, management, administration and meetings. Not surprisingly some results stand out:

- Full professors spend too little time on research and too much time on teaching. They spend however far too much time on management, administration and meetings. 80% of them agree that they spend too much time on administration.
- For Associate and Assistant Professor similar results are visible. Especially Assistant Professors spend too much time on teaching. Associate Professors also spend too much time on management and administration.
- Support staff spend too much time on meetings and administration.

3.3.2 Taking vacation days to complete work activities

Figure 3.4 shows the percentage of employees who reported to take / use vacation days for getting work done. As can be seen, almost 25% of the employees have used vacation days to get work done and/or continue working during vacation/leave. This percentage seems to be caused by the fact that many employees (up to ~35% at ITC, ET and BMS) working in the faculties use vacation days to get work done and/or continue working during vacation/leave.

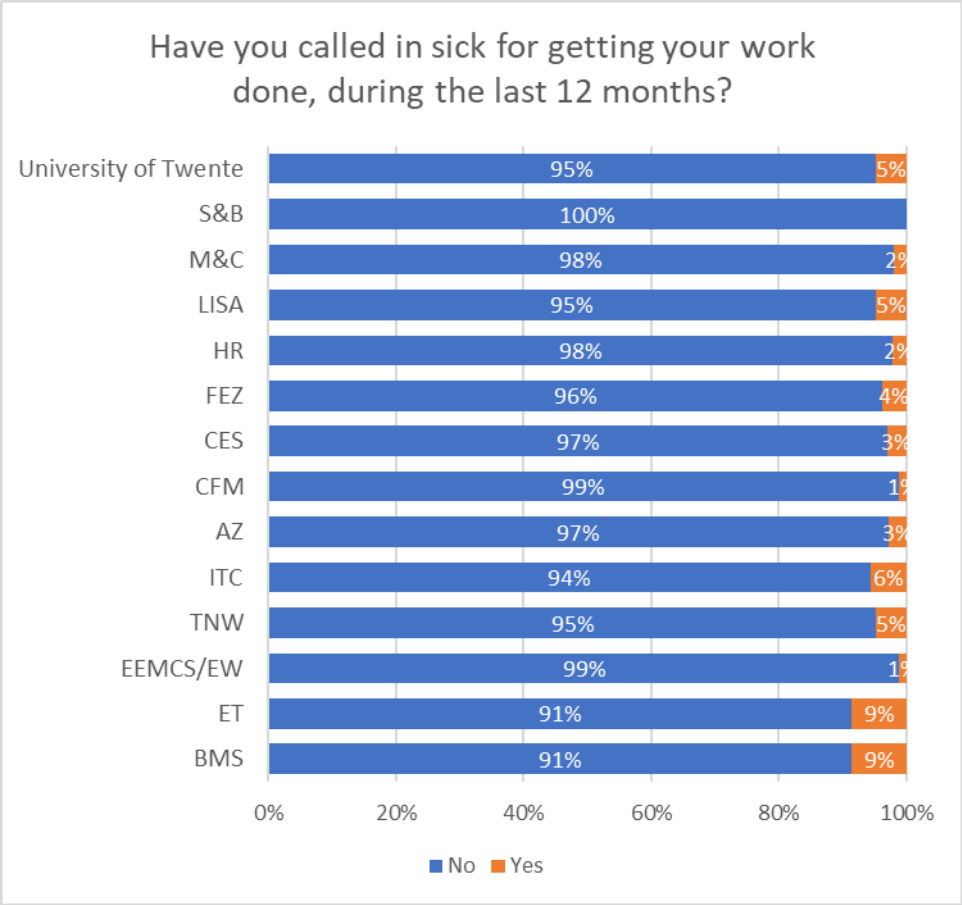
Figure 3.4: Vacation days used to finish work



3.3.3 Calling in sick to complete work activities

Figure 3.5 shows the percentage of employees who reported to take sick leave / call in sick for getting work done. As can be seen, 5% of the UT employees report to have done so in the last 12 months. The percentage of employees who call in sick to complete work activities is the highest at BMS and ET (both 9%).

Figure 3.5: Sick leave used to finish work



3.4 Correlations

Table 3.6 presents the correlations among the variables included in the current well-being study. These correlations provide a first indication for the observed difference in employees' work engagement, strain and workload perceptions.

3.4.1 Correlates of work engagement

As can be seen in Table 3.6, work engagement is positively correlated with age ($r = .09$, $p < .01$) and tenure ($r = .06$, $p < .05$). This implies that older employees and those who have worked for the UT for a long time are more engaged that younger employees and those who joined the UT more recently. Also, engaged employees seem to be more satisfied with the UT ($r = .42$, $p < .01$).

3.4.2 Correlates of strain

As can be seen in Table 3.6, strain is positively correlated with education ($r = .21$, $p < .01$). This implies employees with a higher level of education (i.e. PhD) are more likely to experience strain than those with lower levels of education (e.g. bachelor or master). This finding is in line with the observation that assistant/associate/full professors experience higher levels of workload in comparison to e.g. support staff and PhD students. Age and tenure are not correlated with strain. However, strain is negatively correlated with gender ($r = -.06$, $p < .05$). This finding implies that female employees experience less strain compared to male employees. Although it is a small effect, it is a significant association. Finally, employees who experience strain are less satisfied with the UT in comparison to those who experience little strain ($r = -.26$, $p < .01$).

3.4.3 Correlates of workload / role overload

Table 3.6 shows that workload / role overload is positively correlated with age (r =.15, p < .01), education (r = .20, p < .01) and tenure (-.14, p < .01). This implies that role overload and high-level workload is more likely to occur among older workers, with a higher education and those who have worked at the UT for a longer time. The positive correlation between education and role overload is again in line with the finding that assistant/associate/full professors experience higher levels of workload in comparison to e.g. support staff and PhD students. Finally, employees who experience high-level workloads are less satisfied with the UT (r = -.30, p < .01).

In an additional Anova/Bonferroni analysis we found no significant (p < .05) differences between workload / role overload and country of birth; only those who preferred not to answer their country of origin indicated to have a higher mean of workload.

3.4.4 Gender

The correlation table (Table 3.6) indicated some interesting results on gender. As stated earlier, female employees experience less strain (r = -.06, p <.05). Female workers also experience less self-efficacy (r = -.09, p < .05). Compared to men, women report higher on increasing social resources (r = .08, p < .01) and lower on structural resources (r = -.06, p < .05). Despite the small sizes of these correlations, they indicate that female employees are less strained and are better in increasing social resources, such as asking for coaching and feedback. Male employees are slightly better in increasing structural resources, such as developing professional capabilities and learning new things.

All other differences between male and female workers are not significant.

Table 3.6: Correlations among employee-wellbeing and its antecedents

Variable	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	42	12																	
2. Education	x	x	-.25**																
3. Gender	.52	.50	-.10**	-.17**															
4. Tenure	11	10	.75**	-.29**	-.10**														
5. Satisfaction with UT	7.19	1.44	-.14**	-.12**	.07**	-.13**													
6. Satisfaction with HRM	3.91	.72	-.16**	.04	-.01	-.16**	.51**												
7. Increasing Structural Resources	5.35	.89	-.06*	.15**	-.06*	-.07*	.29**	.35**											
8. Increasing Social Resources	4.43	1.13	-.30**	.04	.08**	-.27**	.22**	.23**	.25**										
9. Increasing Challenging Demands	.65	.48	.04	.17**	-.07*	.01	-.02	.02	.34**	.26**									
10. Role Clarity	3.95	.65	.14**	-.09**	.06*	.13**	.25**	.29**	.36**	.07**	.10**								
11. Role Overload	3.50	.71	.15**	.20**	-.05	.14**	-.30**	-.28**	-.07**	-.08**	.21**	-.15**							
12. Leader-Member exchange	3.65	.82	-.02	-.02	.02	.00	.40**	.45**	.39**	.27**	.07**	.54**	-.21**						
13. Team Cohesion	4.10	.64	.02	-.01	.07*	.04	.27**	.30**	.26**	.17**	.12**	.32**	-.13**	.38**					
14. Autonomy	4.03	.72	.02	.12**	-.03	.00	.28**	.32**	.51**	.02	.17**	.43**	-.14**	.46**	.27**				
15. Self-Efficacy	4.09	.61	.25**	-.08**	-.09**	.20**	.00	.02	.18**	-.11**	.21**	.44**	-.02	.13**	.16**	.24**			
16. Commitment	3.56	.60	.09**	-.07**	.02	.08**	.53**	.37**	.33**	.23**	.21**	.27**	-.12**	.35**	.38**	.25**	.18**		
17. Work Engagement	5.30	1.06	.09**	-.02	.02	.06*	.42**	.40**	.65**	.25**	.31**	.44**	-.13**	.47**	.40**	.39**	.31**	.52**	
18. Strain	3.21	.94	.02	.21**	-.06*	.04	-.26**	-.23**	-.10**	-.02	.17**	-.18**	.43**	-.23**	-.17**	-.15**	-.13**	-.13**	-.25**

*** p < .001, ** p < .01, * p < .05

3.5 Relating employee well-being with its antecedents

To examine the relationships between well-being and its antecedents (including HRM, job crafting, autonomy, self-efficacy, leader-member exchange, commitment and team cohesion), we tested the conceptual model as outlined in Chapter 2. For an overview of the average score of each antecedent (across organizational units), we refer to Appendix 3. The most important results are highlighted in **bold**.

To examine these relationships, we first assessed – through structural equation modeling in AMOS – how well the conceptual model fitted the survey data. For an overview of these model improvements, we refer to Appendix 4. This procedure resulted in a model that had a close to acceptable model fit ($\chi2(921) = 3808.99$; $p = .00$; CFI = .88; GFI = .85; RMSEA = .05) and which was used to examine the relationship between employee well-being and its antecedents. Figure 3.6. provides an overview of the relationships among the key variables of interest. For the sake of visibility, we only include the relationships which were found to be significant ($p < .05$) and exclude the significant relationships among the job resources/job demands. The full overview of the observed relationships can be found in Appendix 5.

First, as can be seen in Figure 3.6., work engagement is most strongly and positively influenced by commitment ($\beta = .16$, $p < .001$) and self-efficacy ($\beta = .17$, $p < .001$). This implies that **employees who experience a strong bond with the UT and who are confident in their abilities to execute their job are more likely to experience high-level work engagement** than those who do not experience this bond and are insecure about their abilities. Strain, on the other hand, is most strongly and positively influenced by role overload ($\beta = .45$, $p < .001$). This shows that **those who experience their workload to be too high are more likely to experience cognitive irritation (e.g. worry about problems at work).** On the other hand, self-efficacy ($\beta = -.17$, $p < .001$) and leader-member exchange ($\beta = -.13$, $p < .01$) are negatively related with strain. This implies that **employees' strain decreases when the confidence in their abilities and relationship with their supervisor/manager improve**.

Second, in most cases, job crafting and satisfaction with HRM are indirectly related to work engagement and strain through the mediating role of job demands and job resources. An exception is the direct and positive relationship between job crafting and work engagement ($\beta = .72$, $p < .001$). This shows that employees can improve their dedication and vigor at work through pro-actively increasing structural job resources (e.g. knowledge and skills), increasing social job resources (e.g. feedback) and increasing challenging job demands (e.g. taking on additional responsibilities they find intellectually stimulating). In other cases, job crafting and satisfaction with HRM are indirectly related to work engagement and strain.

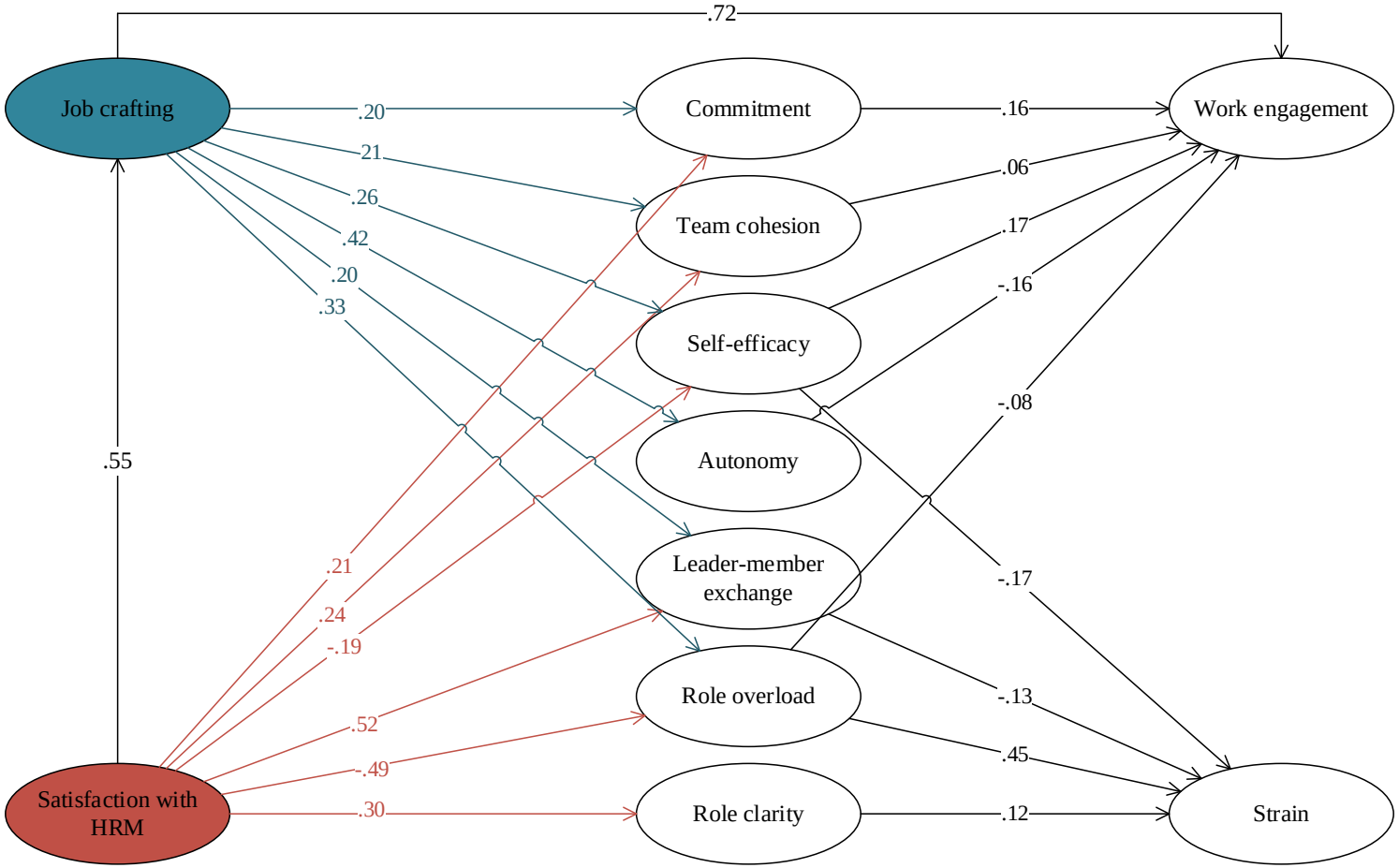
Third, Figure 1 shows that satisfaction with HRM is indirectly and positively related with work engagement through its positive effects on team cohesion ($\beta = .24$, $p < .001$) and commitment ($\beta = .21$, $p < .001$), and negative effect on role overload ($\beta = -.49$, $p < .001$). This implies that **satisfaction with HRM relates positively with work engagement, because it provides employees a feeling they strongly belong to a team and to the UT, while reducing their workload perceptions. Satisfaction with HRM is indirectly and negatively related to strain through its positive relationship with leader-member exchange** ($\beta = .52$, $p < .001$).

Fourth, the positive, indirect relationship between job crafting and work engagement can be best explained by the finding that job crafting relates positively to commitment ($\beta = .20$, $p < .001$), team cohesion ($\beta = .21$, $p < .001$) and self-efficacy ($\beta = .26$, $p < .001$). This shows that **job crafting helps to improve work engagement when it provides employees a feeling of belongingness to their team and the UT and offering employees confidence in their abilities**. Finally, **job crafting and strain are indirectly and negatively related as job crafting is positively related with self-efficacy ($\beta = .26$, $p < .001$) and leader-member exchange ($\beta = .20$, $p < .001$).**

Finally, Figure 1 presents several unexpected results. First, role clarity is positively related with strain ($\beta = .12$, $p < .05$) which implies that **less ambiguity in one's job results in higher levels of strain**. This could be explained by the notion that employees who experience high-level role

clarity are also better aware of the main responsibilities they might have and experience these responsibilities as a burden. Second, we found that satisfaction with HRM is negatively related with self-efficacy ($\beta = -.19$, $p < .01$). As we rely on cross-sectional data, we cannot rule out the possibility that self-efficacy is a causal condition to satisfaction with HRM. Namely, those with high-level (experienced) knowledge, skills and abilities may be more critical about / have higher expectations of HRM activities, which causes them to be dissatisfied with HRM activities (e.g. perceived that training and feedback are not helpful as they do not improve their skills). Third, we found that job crafting is positively related with role overload ($\beta = .33$, $p < .001$). This implies that **employees who frequently engage in job crafting experience higher levels of workload than those who do so infrequently**. A reason for this might lie in the notion that job crafting is time consuming (e.g. improving skills, requesting feedback) and involves taking on additional responsibilities (i.e. increasing challenging demands) which cause higher levels of workload. Finally, our analysis shows that **autonomy is negatively related with work engagement** ($\beta = -.16$, $p < .01$). This can be explained by the idea that autonomy can also have a controlling effect and be perceived as a job demands that reduces work engagement when employees take the freedom associated with autonomy to take too many responsibilities on their shoulders.

Figure 3.6: Significant relationships among the variables of interest (at p < .05).



Significant relationships among job demands/job resources are excluded, for reasons of simplicity and overview

4. FINDINGS ON PERCEIVED AGGRESSIVE BEHAVIORS

The survey included three extra questions on employee experiences of aggressive behaviors at work. These questions were included to satisfy the obligation of the *Risico- Inventarisatie & -Evaluatie* of the *ARBO*-law. As shown in Table 4.1, although 82% of the respondents did not experience any type of aggressive behaviors during the last two years, 14% (18% minus 4% who preferred not to answer) reported having experienced a type of aggression at work during the last two years. This is in line with results on aggressive behavior in (higher) education (TNO, 2012; TNO, 2016). The most frequently reported type of aggression (by 8% of the respondents) is intimidation at work, such as shouting and threats. Nine respondents indicated to have been subject to sexual harassment and six respondents indicated to have been subject to physical violence during the last two years.

Two remarks are important on the interpretation of these results. First, it is good to remind that respondents could have been tick more than one category, so it could possibly be that some respondents have experienced more than one of the aggressive behaviors. The same applies for Table 4.2 and 4.3. Second, we do not report on comparisons between gender, age, tenure, country of birth, job functions and organizational unit because of the low numbers. Low numbers of observations can easily lead toward Type-1 mistakes, indicating that the hypothesis that there is a significant difference would have been rejected unjustified. Due to low numbers, the null hypothesis could be rejected falsely, inferring the existence of something that is in fact not real (e.g. we might suppose a difference between groups, which is not true but just a coincidence).

Table 4.1: During the last two years, have you experienced one or more of the following aggressive behaviors against yourself at the UT?

	N	%
No	1155	82%
Bullying	53	4%
Discrimination	48	3%
Intimidation (shouting, threats, etc.)	115	8%
Sexual harassment	9	1%
Physical violence	6	1%
Yes, but none of the aforementioned forms of aggression	59	4%
I prefer not to answer this question	61	4%

Table 4.2 presents the findings on those who have been a witness of aggression at work. As shown, 20% (24% minus 4% who preferred not to answer) reported having been a witness of a type of aggression at work during the last two years. Again, intimidation at work is more frequently reported (by 10% of the respondents). This finding is similar to outcomes from national surveys that report intimidation to be the largest proportion of aggressive behaviors (TNO, 2016).

Table 4.2: During the last two years, have you been a witness of any of the following aggressive behaviors at the UT?

	N	%
No	1077	76%
Bullying	89	6%
Discrimination	75	5%
Intimidation (shouting, threats, etc.)	144	10%
Sexual harassment	19	1%
Physical violence	9	1%
Yes, but none of the aforementioned forms of aggression	72	5%
I prefer not to answer this question	58	4%

Table 4.3 shows that employees most often share their experiences of aggression behavior with their colleagues (16%) or supervisor (8%).

Table 4.3: If you perceived aggressive behaviors against yourself or others, did you share your experience(s) with others?

	N	%
Not applicable	1058	76%
Yes, with colleagues	227	16%
Yes, with my supervisor	117	8%
Yes, with somebody from HR	41	3%
Yes, with a confidential	26	2%
Yes, with someone from the UT, but none of the persons mentioned above	45	3%
I did not share this experience with others	29	2%

5. FINDINGS ON SATISFACTION WITH FACILITIES AND TOP-3

5.1 Satisfaction with ARBO and campus facilities

The survey included about ARBO (work conditions) and other services of the UT. In Table 5.1 the results of the means and standard deviations (between brackets) are presented. On average, the respondents indicate to be satisfied with the library, cultural activities, sport facilities and lecture room facilities on campus. The respondents are least satisfied with the catering services on campus.

Table 5.1: Satisfaction with services: means per organizational unit (standard deviation)

	Arbo facilities (company doctors, health services, psychologists)	Catering	Library	Cultural activities	Sport facilities	Lecture rooms
BMS	3,44 (0,93)	2,94 (1,10)	3,93 (0,85)	3,84 (0,83)	4,19 (0,80)	3,82 (0,86)
ET	3,67 (0,95)	2,45 (1,06)	3,83 (0,82)	3,74 (0,78)	4,28 (0,69)	3,57 (0,94)
EEMCS/EW	3,69 (0,87)	2,86 (1,04)	3,87 (0,77)	3,93 (0,70)	4,27 (0,72)	3,69 (0,83)
TNW	3,79 (0,83)	2,74 (1,06)	3,83 (0,79)	3,98 (0,74)	4,31 (0,71)	3,62 (0,80)
ITC	3,67 (1,04)	3,40 (1,03)	4,24 (0,72)	3,71 (0,78)	4,12 (0,84)	3,81 (0,78)
AZ	3,80 (0,91)	3,14 (1,12)	3,75 (0,64)	3,90 (0,70)	4,24 (0,83)	3,47 (0,80)
CFM	3,76 (0,78)	3,19 (1,03)	3,86 (0,68)	4,00 (0,79)	4,32 (0,76)	3,77 (0,69)
CES	3,72 (0,69)	2,79 (0,98)	3,79 (0,77)	3,95 (0,80)	4,18 (0,86)	3,43 (0,93)
FEZ	3,89 (0,74)	3,05 (1,02)	3,56 (0,73)	4,00 (0,71)	4,50 (0,52)	3,70 (0,82)
HR	4,00 (0,72)	3,02 (1,03)	3,85 (0,81)	4,16 (0,68)	4,42 (0,60)	3,38 (0,81)
LISA	3,76 (0,82)	2,86 (1,13)	4,26 (0,76)	4,07 (0,60)	4,39 (0,64)	3,88 (0,77)
M&C	3,85 (0,80)	3,04 (0,88)	3,70 (0,80)	4,09 (0,68)	4,38 (0,62)	3,47 (0,84)
S&B	3,79 (0,70)	3,20 (1,06)	4,25 (0,45)	4,33 (0,49)	4,56 (0,51)	3,80 (0,63)
Total	3,70 (0,87)	2,87 (1,07)	3,90 (0,79)	3,92 (0,76)	4,28 (0,74)	3,67 (0,85)

5.2 Top 3 best and top 3 to improve

In an open question, the respondents were asked to fill in the top-3 aspects they like most at the UT, and what the top-3 aspects that they most dislike.

Table 5.2 provides an overview of the aspects respondents most like about their job and work at the UT. Most often the respondents like the freedom and autonomy and independence at work. Colleagues and a good atmosphere to work in are also appreciated. Work itself is often valued

and mentioned in three categories (4. the variety and diversity of the job and 5. the extent to which the job is challenging and interesting and 10. relevance and meaningful work). Finally, flexibility (in working hours) is valued as well.

Table 5.2 What employees value in their work at the UT (frequencies)

1. (Academic) freedom	195
2. Autonomy and independence	121
3. Colleagues and positive climate	97
4. Variety and diversity of jobs/tasks	80
5. Challenging and interesting work	58
6. Flexibility (especially working hours)	44
7. Working with students	42
8. Training & development	40
9. Payment and other conditions	38
10. Relevance and meaningful work	38
11. Other remarks	347
Missing	387
Total	1487

Table 5.3 provides an overview of what the respondents consider to be major points for improvement. In line with earlier results, work pressure (stress, work overload, etc) is mentioned most often, as well as bureaucracy and administration. Moreover, employees voice the need to improve HR policies and practices, and career possibilities at the UT.

Table 5.3 Major points for improvement (frequencies)

1. Work pressure (stress, work overload)	125
2. Administrative burden and bureaucracy	85
3. HR policies and practices (including salary)	72
4. Career possibilities	54
5. Catering	34
6. Communication	28
7. Other remarks	649
Missing	440
Total	1487

6. CONCLUSIONS

1. Work engagement of UT employees in general is high: on average 5.3 (scale 1-7). Work engagement is positively influenced by job crafting, affective organizational commitment and self-efficacy. The results on work engagement can be illustrated by the Top-3 positive aspects that respondents expressed in the survey. They appreciate the academic freedom of the job, the autonomy and the variety/diversity of the jobs. They experience their jobs to be interesting and challenging, and they like their colleagues.
2. The work pressure of UT employees in general is also high. The results on strain show a mean of 3.21 (scale 1-5). The relative high strain can be substantiated by a number of other workload-related findings. The perceived workload is for 53% of the employees good, for 44% (way) too high, implying an increase compared to the 2015 measurement: in 2015, 35% of the respondents reported a (way) too high workload. Next to it, 5% report to use sick days for getting the work done and 24% of the respondents are using vacation days for getting the work done. In addition, the weekly overtime in hours is 4.2, or in other words more than 10%. Especially, Full Professors, Associate and Assistant Professors are working overtime, up to 20-40 % of their contract hours. Work pressure is also the number 1 of the Top-3 negative aspects mentioned by the respondents. Next to work pressure, the administrative burden and bureaucracy and HR policies and career possibilities must be improved.
3. The overall satisfaction of employees with UT is a 7.2 (on a scale from 1-10), which is neither undesirable, nor good in comparison to other organizations.
4. Employee reports on work engagement and work pressure differ across employees. In general, the Full Professors show the highest work engagement and the highest strain of all employees at the UT. The average level of strain reported by Full Professors is similar to other scientific staff (such as Assistant or Associate Professors). Employees working for a faculty also report a higher number of overtime hours compared to those working in the support service department. Female employees report lower levels of strain in comparison to males.
5. Work engagement is influenced by job crafting, organizational commitment and self-efficacy. Job crafting is directly related to work engagement, implying employees who pro-actively increase their knowledge and skills, ask feedback and take on extra responsibilities are more engaged. However, too much of job crafting results in higher levels of role overload and thus higher levels of strain. A difference is observed in types of job crafting: increasing challenges demands (such as to take on extra projects and extra responsibilities) is making the job more interesting, but also more straining. Increasing structural resources (especially male employees are pursuing this strategy in learning new things and developing professional capabilities) and increasing social resources (especially female employees are following this type by asking for coaching and feedback) seems to be better in enhancing work engagement and reducing strain.
6. Strain (work pressure) is most strongly influenced by role overload. In other words, performing many tasks (too many) is causing work pressure. The strain is positively influenced by self-efficacy and leader-member exchange. Confident employees show less strain. More interestingly, those who view the relationship with their supervisor/manager better, report being less strained. In other words, building trusting and high-quality relationships among supervisor/managers and their employees is an important mean for reducing strain. The results indicate an indirect and negative relation between strain and satisfaction with HRM (via leader-member exchange). The implication is that HRM practices help to control strain through improving the relationship between managers and their employees.

7. The prevalence of aggressive behaviors (especially intimidation) is comparable to the results of national surveys on these behaviors. One of out of seven employees has experienced a type of aggressive behaviors during the last two years. Although these statistics represent similar numbers of national surveys, the results indicate some problems here, especially the finding that the confidential person is consulted the least frequently compared to supervisors, colleagues or other non-UT people.

7. RECOMMENDATIONS

1. To sustain/improve work engagement, we recommend the UT and its employees to invest in job crafting, commitment, team cohesion, self-efficacy and to reduce role overload.
2. To reduce work pressure, it is recommended to reduce role overload, ensure strong and trusting leader-membership relations, and to invest in high-quality HRM practices.
3. Job crafting in general will lead to a higher work engagement and lower strain, furthermore, also higher mobility and sustainable employability (which are important given the CAO) are influenced by job crafting practices. We recommend employees to engage in job crafting practices, yet do this with care since some job crafting activities reduce work engagement and/or increase work pressure. Especially job crafting that is focused on increasing challenging job demands should be avoided, since this increases role overload. In other words, seeking and executing extra jobs or projects can be seen making your job more interesting, however, that can lead to role overload and ultimately, higher levels of work pressure. Instead, job crafting activities focusing on increasing social resources (such as asking for coaching and feedback and investing in team cohesion) or increasing structural resources (such as developing knowledge and skills) can lead to less strain and more work engagement.
4. Investing in HRM practices does offer good possibilities to reduce strain and increase work engagement. Our findings indicate that better HRM can lead to higher affective organizational commitment, better team cohesion (including team sciences), better leader-member relations and less role overload. So, investing in HRM activities should focus on enhancing commitment and team cohesion. Moreover, building trusting and strong leader-member relations through HRM is important. After all, the supervisor/manager is the one who is implementing most of the HRM practices.
5. In line with the former suggestion, investing in the development of supervisors and managers is recommended. We found a negative relationship between leader-member exchange and strain. The supervisors and managers have an important role in implementing HRM practices for reducing strain. Therefore, investing in leadership skills in general and in specific skills to recognize possible strain signals, skills to coach employees in dealing with workload and skills in helping employees to reduce and prevent excessive workload.
6. Another recommendation is to invest in the reduction of some sources of overtime. Many employees work excessive hours. This can be explained by the observed high level of commitment to the UT and high-level work engagement. The respondents report to spent too much time on administration, management activities and meetings. Reducing administration tasks and bureaucracy must be prioritized.
7. Investing in career opportunities is also recommended. Many remarks were made on the downside of not offering permanent contracts to young staff members.
8. A special recommendation is to invest in a trusted climate to discuss aggressive and violent behaviors at work. Here, we particularly recommend signaling to employees the possibility to share their concerns with a confidential advisor. Now, only a limited amount of cases are shared with the confidential advisors.

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9. APPENDIX 1: METHOD

Organization of the research

In May 2018, a guiding expert group was installed. This group consisted of 10 members representing central and local indirect participation bodies (OPUT, university council, faculty and service councils), services and faculties. Moreover, for communicating the research an expert from the M&C department was involved. The last employee research (2015) and in particular the way of reporting caused several problems including issues related to a lack of confidentiality like results that could be traced back to individual employees. Moreover, the data analysis was limited to descriptive statistics (percentages, frequencies, mean values). Consequently, insight into relationships between variables were missing. The aforementioned problem lead to a restricted usability of the results: indeed, how to decide on which measures to take for limiting work pressure and enhancing satisfaction if insight into variable relationships is missing? Given this sketch of the past, the expert group decided not to outsource the research, but choose for an in-house approach and execution. Two experienced researchers of the HRM department, BMS faculty have been attracted to conduct the research. They designed the theoretical model and questionnaire and performed data analysis. Data-collection was outsourced to a specialized company: Ipsos. By outsourcing data-collection and providing a link to employees outside the UT, an improvement of confidentiality is possible. In the case of this research, the researchers only received the raw data. Moreover, related to confidentiality, it was decided not to analyze on the level of teams and departments, but on the level of faculties and service departments. Moreover, concerning a number of questions employees could choose for the option “I prefer not wish to answer this question” (function, gender, country of birth and marital status).
The concept questionnaire and report on the background of the research has been presented to the executive board, OPUT and university council. The background report discussed the following contents: composition and decision-making of the expert group, theoretical model and explanation of the variables. To guarantee the questionnaires completeness, user-friendliness and language correctness, the university council requested pilot-testing. 13 UT employees participated in testing the Dutch and the English version of the questionnaire. The testers background was diverse and consisted of males and females, scientific and support staff, high educated and lower educated employees (for example, secretaries and professors), native and non-native English speakers and employees from technical faculties and BMS. The testing lead to language and content adaptations and additions.

Data collection

The questionnaire was online from January 31st to February 21st 2019.
Several channels were used to inform employees about the research:

- An interview with the two researchers was published by UToday, two days before the start of data collection;
- All employees with a so-called m-number (medewerkers/employee number) received an invitation to participate by email including a link to the questionnaire, Dutch employees received the invitation in Dutch, all non-Dutch in English;
- Employees have been alerted three times by the online employee portal;
- HR managers informed their units several times;
- MT’s informed their units several times;
- UT associations (e.g. ambassadors network, Female Faculty Network Twente, P-NUT) informed their members/network.

Measures

The table below provides an overview of the measures used to measure the variables of interest, the source of the measure and its reliability/Cronbach alpha. For a complete overview of the survey items, we refer to Appendix 2.

Variable	Cronbach alpha	Source
Satisfaction with HRM	.80	Purcell & Hutchinson (2006)
Job crafting	.81	Tims et al. (2012)
Role overload	n/a – single item	UT Employee survey 2015
Role clarity	.76	Rizzo et al. (1970)
Leader-member exchange	.91	Graen & Uhl-Bien (1995)
Team cohesion	.82	Sargent & Sue-Chan (2001)
Affective organizational commitment	.75	Allen & Meyer (1990)
Autonomy	.86	Spreitzer (1995)
Self-efficacy	.80	Spreitzer (1995)
Work engagement	.93	Schaufeli et al. (2006)
Strain	.81	Mohr et al. (2006)

Response and representativeness

Response rate: 47 percent

Employees with a temporary or permanent contract of employment with the UT and guest employees without an UT contract of employment have been invited to participate in the research. The main reason for requesting the participation of guest employees is the large group of PhD candidates without a contract of employment with the UT. 402 out of 1029 PhD candidates (39%; 21 February 2019; HR data) have no UT contract of employment. The HR service department has no data about this group that can provide insight into their well-being (for example sick leave data). Research among Dutch and Flemish PhD candidates showed that independent of the type of contract the mental well-being of PhD candidates often suffers (ScienceGuide, 2017). The non-response among UT guest employees was very high: only 82 out of 1303 guest employees (response rate: 6,29%) filled in the questionnaire. Given this high non-response, we unfortunately had to exclude guest employees from further analysis.

1434 out of 3078 employees participated in the research. Thus, the total response rate of employees with a temporary or permanent contract of employment with the UT was 46,6 percent. A meta-analysis of response rates in organizational research covering more than 100,000 organizations and 400,000 individual employees shows that the average response rate for studies that utilized data collected from individual employees was 52.7 percent with a standard deviation of 20.4. The authors suggested a benchmark of around 50 percent for organizational studies seeking responses from individual employees (Baruch & Holtom, 2008). However, Kerlinger (1986) suggested that with regard to mail surveys “returns of less than 40 or 50 percentage common” (p. 380) and Cook et al. (2000) report a mean response rate for 68 surveys reported in 49 studies of 39.6% (SD = 19.6%). Moreover, there is some evidence that response rates are

declining. Scholars mention disillusionment with science and research, increased frequency of contacts by research groups, and increasing complexity of life in the 21st Century as reasons of reduced research participation (Morton et al., 2012). Taking the aforementioned into account, we can conclude that the total response rate of our UT employee well-being research is acceptable.

Representativeness

It should be noted that the response rate is just one element to consider in evaluating the quality of empirical studies. More important is that the respondents are representative of the population being studied: that they are not systematically different in any meaningful way from the overall group. In general, higher response rates will lead to a higher probability of a sample being representative of a population. Because representativeness is important, we investigated to what extent the sample is similar to the population on a number of personal characteristics: gender, tenure, function, country of birth and type of contract.

Personal characteristics	**Population**	**Sample**
Age	Average age: 42 years (WP&OBP)	Average age: 42 years (WP&OBP)
Gender	Males: 58%; Females: 42%	Males: 45%, Females: 43%; 12% did not want to give an answer (of the respondents that answered: 51% Male, 49% Female)
Tenure	12 years	11 years
Function	WP = 59%; OBP = 41%* Full professor=5% Associate professor=5% Assistant professor=10% PhD candidate=20%	WP=52%, OBP=48%* Full professor=4% Associate professor=4% Assistant professor=10% PhD candidate=14%
Country of birth	Dutch=74%, EU=12%, non-EU=15%	Dutch=73%, EU=12%, non-EU=9%
Type of contract	Permanent contract=59%, temporary contract=41%	Permanent contract=69%, temporary contract=25%, temporary with opportunity for permanent contract 6%

*Table 1: Comparison population and sample characteristics UT total (*WP = scientific staff, OBP = support staff)*

Using a 10 percent difference as a demarcation line, table 1 shows that males and employees with a temporary contract are slightly underrepresented in the total sample. As a consequence, drawing conclusions related to these personal characteristics should be done with caution. The questions about gender, function and country of birth provided also the following answer opportunity: “I prefer not to answer this question”. A relatively large number of respondents have chosen not to reveal information about these characteristics: 118 did not supply information about their function, 168 not about their gender and 106 not about their country of birth. If we take these into account, the sample characteristics on gender are more similar to the population, so representativeness is quite good.

In 2000, Rogelberg and his colleagues examined nonresponse bias by studying “non-compliants” who explicitly refused to take a satisfaction survey for their employers. Compared with people who indicated a willingness to participate in organizational surveys, noncompliants were shown to be less committed to their organizations, less satisfied with their supervisors and jobs, and more likely to quit. Noncompliants were also more inclined to believe that their employer would not act on survey data collected. The UT employee well-being

questionnaire contained an item that offered participants the opportunity to express opinions: “We would like to give you the opportunity to explain your answers or to bring forward matters that are not included in this questionnaire”. Several participants shared grievances and the rather high standard deviation (SD) on ‘satisfaction with the UT’ shows that also those employees who are less satisfied are represented in the sample.

Explanations for non-response

According to the company that conducted the UT employee research in 2015, the total response rate was 53 percent in 2015. The response rate of the well-being research 2019 was 46,6 percent, a total drop of more than 6 percent. What might be reasons for the declined total response? The introduction to the well-being research included an email address as well as the name of the project leader and urged employees to get in contact in the case of questions. The project leader received 25 mails and 4 telephone calls as well as dozens of face-to-face comments. A content analysis of remarks regarding the well-being research shows that seven comment categories can be identified. These categories or clusters of comments can provide insight into the causes of non-response.

1) Lack of trust concerning confidentiality. The largest amount of remarks concerned this issue. Employees remembered vividly the confidentiality issues of the research conducted in 2015. Despite the fact that employees could opt for answering several personal questions with “I do not prefer to answer this question” and the level of analysis was higher (not the team/department, but on the level of faculties and service departments), many of those who contacted the project leader remarked that they are not confident concerning confidentiality. The large majority of those who expressed no or a low level of ‘confidentiality trust’ referred to the 2015research and were afraid that their responses might be shared with their supervisor on an individual level.
2) Promising a raffle. Another issue raised questions about confidentiality. In the interview with UToday, the researchers announced that there would be a raffle among the respondents for an anti-stress workshop. However, it was forgotten to add the opportunity for leaving the email address in the questionnaire, so a raffle was not possible in the end. Several employees remarked “how can you do a raffle if you don’t know who participated, so you must know who did?”.
3) Lack of trust concerning implementation. Several employees declared that nothing has been done with the results of former employee research. This was mentioned as a reason for an unwillingness to invest precious time into research participation.
4) Too abstract level of analysis. One employee remarked that the level of analysis was too abstract. He expected that the research would include the opportunity that “something could be done about the circumstances in his team”.
5) Preference for research outside the UT. Two employees referred to the FNV/VAWO work pressure research among Dutch university employees and remarked that such a research would be better for a comparison across university and confidentiality issues.
6) Survey fatigue. Three employees wrote they had no interest in participating in another research and referred to a large number of requests to participate in research from inside and outside the UT.
7) Concerns on data security. Within 48 hours after informing employees about the start of the questionnaire, two researchers contacted the project leader. They had discovered that the link to the questionnaire had an http instead of a secure https link. Ipsos admitted this mistake but guaranteed the link would be still secure. Ipsos transformed the http into an https link and after the first week of data collection the questionnaire reminder referred to the https link.

This input as well as qualitative expressions made by employees on the item “We would like to give you the opportunity to explain your answers or to bring forward matters that are not included

in this questionnaire" will be used to improve the response for the next well-being research (2021/2022).

Response organizational units

Table 2 reports on the response rates per organizational unit. The response rates concern employees with a temporary or permanent contract of employment with the UT.

Organizational Unit	**Total number of employees (N)** (date: 21/02/2019)	**Number of respondents (n)**	**Response rate**
BMS	472	211	44,7%
ET	465	186	40,0%
EEMCS/EWI	513	191	37,2%
TNW	712	276	38,8%
ITC	240	107	44,6%
AZ	60	36	60,0%
CES	152	100	65,7%
CFM	147	85	57,8%
FIN	44	26	59,1%
HR	55	45	81,8%
LISA	153	83	54,2%
M&C	74	52	70,3%
SP	32	20	62,5%

Table 2: Response rates per organizational unit

Table 2 shows differences in response rates between faculties and service departments. The response rates among service departments are all above 50 percent (response rates between 54,2% and 81,8%), but all faculty response rates are below 50 percent (response rates between 37,2& and 44,7%). Thus, compared to the service departments, relative lower response rates among faculty employees had a relatively strong effect on the total response rate. Therefore, it can be concluded that there is a high probability that the samples of the service departments represent their population while the representativeness of the faculty samples needs further investigation. Therefore, we compared the population and sample for each faculty on gender, function, country of birth and type of contract.

Comparison population and sample characteristics per faculty

Tables 3 to 7 show comparisons between the population and the sample for each faculty on gender, function, country of birth and type of contract. If the distribution differs more than 10 percent, we characterize this difference as underrepresentation (>=-10%) or (>=+10%) overrepresentation.

Personal characteristics	**Population**	**Sample**
Gender	Males: 46%; Females: 54%	Males: 30%, Females: 52%
Function	WP = 80%; OBP = 20%* Full professor=9% Associate professor=9% Assistant professor=22% PhD candidate=15%	WP=64%, OBP=23%* Full professor=6% Associate professor=7% Assistant professor=18% PhD candidate=16%

Country of birth	Dutch=77%, EU=15%, non-EU=8%	Dutch=77%, EU=15%, non-EU=5%
Type of contract	Permanent contract=58%, temporary contract=42%	Permanent contract=67%, temporary contract=33%

*Table 3: Comparison population and sample characteristics BMS faculty (*WP = scientific staff, OBP = support staff)*

In the sample of the BMS faculty males and WP and employees with a non-permanent contract are slightly underrepresented. Referring to the function, a conclusion has to be drawn that is also applicable to the other faculties. While it is possible to investigate with the data similarities and differences between functions on the level of the university, given the rather small frequencies on the faculty level, comparing different scientific functions (WP) in relation to several outcomes is not possible. However, on the faculty level it is possible to compare WP and OBP (support staff).

Personal characteristics	**Population**	**Sample**
Gender	Males: 69%; Females: 31%	Males: 64%, Females: 27%
Function	WP =82% ; OBP = 18%* Full professor=6% Associate professor=7% Assistant professor=15% PhD candidate=32%	WP=71%, OBP=22%* Full professor=7,5% Associate professor=7% Assistant professor=18% PhD candidate=25%
Country of birth	Dutch=59%, EU=14%, non-EU=27%	Dutch=58%, EU=15%, non-EU=20%
Type of contract	Permanent contract=45%, temporary contract=55%	Permanent contract=57%, temporary contract=44%

*Table 4: Comparison population and sample characteristics ET faculty (*WP = scientific staff, OBP = support staff)*

In the sample of the ET faculty, WP and employees with a temporary contract are slightly underrepresented; employees with a permanent contract are overrepresented.

Personal characteristics	**Population**	**Sample**
Gender	Males: 68%; Females: 32%	Males: 54%, Females: 40%
Function	WP = 76% ; OBP = 24%* Full professor=8% Associate professor=7% Assistant professor=10% PhD candidate=32%	WP=62%, OBP=32%* Full professor=6% Associate professor=5% Assistant professor=11% PhD candidate=25%
Country of birth	Dutch=70%, EU=12%, non-EU=18%	Dutch=71%, EU=9%, non-EU=15%
Type of contract	Permanent contract=46%, temporary contract=54%	Permanent contract=61%, temporary contract=39%

*Table 5: Comparison population and sample characteristics EEMCS/EWI faculty (*WP = scientific staff, OBP = support staff)*

In the sample of the EEMCS/EWI faculty, males, WP, PhD candidates and employees with a temporary contract are slightly underrepresented; employees with a permanent contract are overrepresented.

Personal characteristics	**Population**	**Sample**
Gender	Males: 63%; Females: 37%	Males: 53%, Females: 41%
Function	WP = 69% ; OBP = 31%*	WP= 59%, OBP=36%*

	Full professor=6% Associate professor=4% Assistant professor=6% PhD candidate=31%	Full professor=5% Associate professor=4% Assistant professor=9% PhD candidate=25%
Country of birth	Dutch=66%, EU=15%, non-EU=20%	Dutch=70%, EU=11%, non-EU=14%
Type of contract	Permanent contract=46%, temporary contract=54%	Permanent contract=55%, temporary contract=45%

*Table 6: Comparison population and sample characteristics TNW faculty (*WP = scientific staff, OBP = support staff)*

In the sample of the TNW faculty, males and WP are slightly underrepresented.

Personal characteristics	**Population**	**Sample**
Gender	Males: 60%; Females: 40%	Males: 48%, Females: 41%
Function	WP = 70% ; OBP = 30%* Full professor=9% Associate professor=7% Assistant professor=24% PhD candidate=18%	WP= 59%, OBP=36%* Full professor=9% Associate professor=4% Assistant professor=23% PhD candidate=9%
Country of birth	Dutch=58%, EU=20%, non-EU=23%	Dutch=61%, EU=17%, non-EU=12%
Type of contract	Permanent contract=66%, temporary contract=34%	Permanent contract=74%, temporary contract=25%

*Table 7: Comparison population and sample characteristics ITC faculty (*WP = scientific staff, OBP = support staff)*

In the ITC sample, males, WP and non-EU employees and employees with a temporary contract are slightly underrepresented.

Concerning gender and type of contract, given the number of respondents it is possible to investigate on the level of faculties if these characteristics are related to other variables. We discussed earlier the relatively limited number of respondents for each scientific function category. Consequently, on the level of faculties only analysis on a more abstract level is possible: between WP (scientific staff)and OBP (support staff). The same might be true for the country of birth and especially the non-Dutch respondents: splitting non-Dutch into two categories (EU and non-EU) produces too small samples.

Data analysis

The significance of differences in mean values across different groups (e.g. faculties/support units and types of employees) was assessed through Anova/Bonferroni tests.

To examine the relationships between employee well-being (i.e. work engagement and strain) and its antecedents, structural equation modelling in AMOS was performed. The respondents are nested in organizational units (i.e. faculty or support unit) such that the independence of observations may not be guaranteed. Therefore, before testing our research hypotheses, we examined to what extent there were significant differences in work engagement and strain on the organizational unit level. Here, we estimated a null model, in which independent variables were not specified, and determined the significance level of the organizational level variance (τ_0^2) and the employee level (or residual) variance (σ^2) of the intercept. Although the employee level variance was found to be significant for both work engagement and strain, the organizational level variance was not (for work engagement: $\tau_0^2 = .02$, $p = .29$; $\sigma^2 = 1.12$, $p < .001$; for strain: $\tau_0^2 = .01$, $p = .14$; $\sigma^2 = .87$, $p < .001$). This shows that the variance in both work engagement and strain cannot be attributed to differences in faculties/support units.

10. APPENDIX 2: QUESTIONNAIRE

WELL-BEING RESEARCH
University of Twente

Datum December 2018

Auteur Jeroen Meijerink
Jan de Leede
Nicole Torka

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With this survey, we intend to measure your well-being at work. We ask for your opinion and your opinion does count. Everyone who works at the University of Twente will get the opportunity to fill in this survey. Thus, also those of you have not a contract with the UT such as PhD candidates with a scholarship can help us to monitor and improve our policies and practices.

This survey is anonymous. You can, if you want to, answer personal questions with the option “I prefer not to answer this question”. Furthermore, the data will be kept confidential. The survey is online available and the data will be collected by Ipsos. The raw data (without any link to any email address) will be sent to BMS faculty researchers. The analysis will be done by them. The results will be reported only at group level (faculty/service, age groups, educational groups, etc.) and not at the level of your team or department. Never will be reported on individual level! The research is under supervision of an expert group. The research has been granted ethical approval by the Ethical Commission of BMS.

It is important to fill in the entire survey. Only with complete surveys we can produce valuable results. Please, read the questions carefully and choose the best answer. It will take you 10-15 minutes.

Final submission date is **10 February, 2019**

Many thanks for submitting the survey!

Yours sincerely,

Dr. Jeroen Meijerink (assistant professor HRM)
Dr. Jan de Leede (assistant professor HRM)
Dr. Nicole Torka (HR policy advisor)

Part I

How often does the following occur?
(tick only one answer)

	Never	Almost never / a few times a year or less	Rarely / Once a month or less	Sometimes / a few times a month	Often / once a week	Very often / a few times a week	Always / every day
1. At my work, I feel full of energy	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
2. My job gives me energy	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
3. When I get up in the morning, I feel like going to work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
4. I am enthusiastic about my job	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
5. I am proud of the work that I do	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
6. My job inspires me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
7. I develop my knowledge and professional skills	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
8. I learn new things at work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
9. At my work, I use my knowledge and skills to their fullest	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
10. I decide on my own how I do things	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
11. I ask my supervisor to coach me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
12. I ask if my supervisor is satisfied with my work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
13. I ask others for feedback on my job performance	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
14. I ask colleagues for advice	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
15. I start new projects at work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
16. I regularly take on extra tasks even though I do not receive extra salary for them	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

Part II

To what extent do you agree with the following statements?
(tick only one answer)

	Fully disagree	Disagree	Neither agree or disagree	Agree	Fully agree
17. I have difficulties relaxing after work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
18. Problems at work stay on my mind when I am not at work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
19. Problems at work occupy my thoughts even during my vacation	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
20. I know what my responsibilities are	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
21. I know what my supervisor expects of me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
22. It is clear to me what I need to do in my job	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
23. I know how satisfied my supervisor is with what I do	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
24. My supervisor understands my needs well	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
25. My supervisor recognizes my qualities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
26. The probability that my supervisor uses his/her influence to advance my interests at work is high	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
27. I have enough confidence in my supervisor.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
28. My working relationship with my supervisor is good	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

	Fully disagree	Disagree	Neither agree or disagree	Agree	Fully agree
29. I feel a sense of belonging with my colleagues	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
30. I get along well with my colleagues	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
31. I like my colleagues	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
32. I have autonomy in determining how I do my job	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
33. I can decide on my own how I do my work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
34. I have considerable opportunity for independence and freedom in how I do my work	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
35. I am confident about my ability to do my job	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
36. I am self-assured about my knowledge and skills necessary for doing my job	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
37. I have mastered the knowledge and skills necessary for my job	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

PART III

The following questions relate to what the University of Twente offers you.
How satisfied are you with ...

	Very dissatisfied	Dissatisfied	Neither agree or disagree	Satisfied	Very satisfied	Does not apply
38. training/education opportunities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
39. opportunities to change jobs	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
40. opportunities to develop within current position	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
41. performance appraisal	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
42. performance feedback	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
43. pay	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
44. benefits other than pay (working times, vacation days, pension arrangements, etc.)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
45. family-friendly policies and facilities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
46. recognition for performance	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
47. influencing decisions related to issues that concern you	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
48. support during and after illness	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
49. support for new employees	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
50. information from HR Central and HR at your faculty/service (about pay, benefits, leave, training opportunities, etc.)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
51. support when you have a problem related to HR issues (pay, benefits, contracts, etc.)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
52. Arbo (work conditions) facilities (company doctors, health services, psychologists, etc.)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
53. Campus facilities						
53a. catering	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
53b. library	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
53c. cultural activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
53d. sport facilities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
53e. lecture rooms	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

PART IV

	Fully disagree	Disagree	Neither agree or disagree	Agree	Fully agree
54. I enjoy talking positively about UT with people outside of it.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
55. I really feel as if the UT's challenges are my own.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
56. I think that I could easily become as attached to another organization as I am to the UT	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
57. I feel like 'a part of the community' at the UT	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
58. I feel 'emotionally attached' to the UT	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
59. feel a 'strong' sense of belonging to the UT	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

60. How much time do you spend on the following tasks?	Far too little	Too little	Just good	Too much	Far too much	Does not apply
- Teaching	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
- Research	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
- Valorisation	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
- Managerial activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
- Administration	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
- Meetings	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

	Way too low	Too low	Good	Too high	Way too high
61. My workload is ….	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

62. Have you used vacation days for getting your work done, in the past 12 months?
No ☐ 1
Yes ☐ 2

63. Have you called in sick for getting your work done, in the past 12 months?
No ☐ 1
Yes ☐ 2

	Never	Seldom	Regularly	Often	Very often

64. How often do you take part in educational/training activities provided by the UT ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

65. I make use of the following opportunities for career support

No ☐ 1
I am a member of one or more career networks and visit their meetings regularly (e.g. FFNT, OBP Vrouwennetwerk) ☐ 2
I had meetings or have planned a meeting with a career coach ☐ 3
I make sure to let people know that I am open to other jobs at the UT ☐ 4
I make sure to let people know that I am open to jobs outside the UT ☐ 5
I am a member of one or more career networks outside the UT and visit their meetings regularly ☐ 6

66. Have you applied for another job at the UT in the last 12 months?
No ☐ 1
Yes ☐ 2

67. Have you applied for another job outside the UT in the last 12 months?
No ☐ 1
Yes ☐ 2

PART V

The aim of the next two questions is to give you an opportunity to report about issues that should be improved on and what you like most about your job at the UT

68. In your opinion, what are the top 3 things you like most about your job/the University of Twente?
69. In your opinion, what are the top 3 things you dislike most about your job/the University of Twente?

70. I am satisfied with the UT as an organization ……
(1= not at all; 10=very much)

PART VI

71. What is your age?
….. (in years) 4
I prefer not to answer this question ☐

72. What is the upper level of your education?
Primary school ☐ 1
Secondary education ☐ 2
Senior secondary vocational education ☐ 3
BA ☐ 4
BSc ☐ 5
MSc, MA or LLM ☐ 6
PhD ☐ 7

73. Which job title best describes your job?
Phd Candidate / Student ☐ 1
Researcher / Postdoc ☐ 2
Teacher ☐ 3
Assistant Professor – non tenure track ☐ 4
Assistant Professor –tenure track ☐ 5
Associate Professor – non tenure track ☐ 6
Associate Professor –tenure track ☐ 7
Full professor ☐ 8
Manager (support service) ☐ 9
Manager (faculties) ☐10
Support staff ☐11
I prefer not to answer this question ☐12

74. What is your gender?
Male ☐ 1
Female ☐ 2
Other ☐ 3
I prefer not to answer this question ☐ 4

75. What is your family status? (multiple answers can be given)
Single ☐ 1
In a relationship ☐ 2
Other ☐ 3
I prefer not to answer this question ☐ 4

76. What is your home situation? (multiple answers can be given)
Without children ☐ 1
With children at home ☐ 2
With independent children ☐ 3
Informal carer (for parents, siblings, etc.) ☐ 4
I prefer not to answer this question ☐ 5

77. How long have you been working at the University of Twente?
…. Years
…. Months
I prefer not to answer this question ☐ 2

78. Where were you born?

In the Netherlands ☐ 1
In an EU country, but not the Netherlands ☐ 2
In Europe, but not an EU country ☐ 3
Africa ☐ 4
Asia ☐ 5
North-America ☐ 6
South-America ☐ 7
Australia ☐ 8
I prefer not to answer this question ☐ 9

79. What is your contract status with the University of Twente?

I have a permanent employment contract ☐ 1
I have a temporary employment contract ☐ 2
I have a temporary employment contract with an opportunity for a permanent contract ☐ 3
I do not have a contract status with the UT (e.g. PhD candidates with a scholarship or PNUT) ☐ 4

80. Which organizational unit do you work for?

- Faculty of Behavioural, Management and Social Sciences (BMS)
- Faculty of Engineering Technology (ET)
- Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS/EWI)
- Faculty of Science and Technology (TNW)
- Faculty of Geo-Information Science and Earth Observation (ITC)
- AZ
- CFM
- CES
- FEZ
- HR
- LISA
- M&C
- S&B

81. According to your contract, how many hours a week are you expected to work?

……. hours a week

82. How many hours a week did you actually work on average a week, in the last three months?

……. hours a week

83. During the last two years, have you experienced one or more of the following aggressive behaviours against yourself at the UT? *(multiple answers can be given)*

- No ☐ 1
- Bullying ☐ 2
- Discrimination ☐ 3
- Intimidation (shouting, threats, etc.) ☐ 4
- Sexual harassment ☐ 5
- Physical violence ☐ 6
- Yes, but none of the aforementioned forms of aggression ☐ 7
- I prefer not to answer this question ☐ 8

84. During the last two years, have you been a witness of any of the following aggressive behaviours at the UT *(multiple answers can be given)*

- No ☐ 1
- Bullying ☐ 2
- Discrimination ☐ 3
- Intimidation (shouting, threats, etc.) ☐ 4
- Sexual harassment ☐ 5
- Physical violence ☐ 6
- Yes, but none of the aforementioned forms of aggression ☐ 7
- I prefer not to answer this question ☐ 8

85. If you perceived aggressive behaviours against yourself or others, did you share your experience(s) with others? *(multiple answers can be given)*

- Not applicable ☐ 1
- Yes, with colleagues ☐ 2
- Yes, with my supervisor ☐ 3
- Yes, with somebody from HR ☐ 4
- Yes, with a confidential advisor ☐ 5
- Yes, with someone from the UT, but none of the persons mentioned above ☐ 6
- Yes, with someone from outside the UT ☐ 7
- I did not share this experience with others ☐ 8

Why didn't you share this experience with others?

Part VII

Finally

We would like to give you the opportunity to explain your answers or to bring forward matters that are not included in this questionnaire.

Space for comments:

Thank you for filling in the questionnaire!

11. APPENDIX 3: MEANS SCORES FOR ANTECEDENTS OF EMPLOYEE WELL-BEING

Organizational unit	Satisfaction with HRM[1]		Increasing Structural Resources[2]		Increasing Social Resources[2]		Increasing Challenging Demands[2]	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
BMS	3.07 [a]	.62	5.29	.98	3.53	.91	4.50	1.12
ET	3.52	.69	5.47	.85	3.60	.93	4.53	1.20
EEMCS/EW	3.55	.69	5.46	.78	3.61	1.01	4.24	1.17
TNW	3.55	.51	5.56 [b]	.80	3.73	.96	4.49	1.11
ITC	3.14	.63	5.31	.81	3.25 [c]	.90	4.27	1.15
AZ	3.46	.43	5.24	.90	3.99	.75	4.67	.93
CFM	3.40	.66	5.15	.92	3.57	.88	4.44	1.28
CES	3.34	.57	5.13	.91	3.58	.92	4.33	1.13
FEZ	3.02	.53	4.86	.85	3.28	.91	4.04	.97
HR	3.60	.54	5.28	.76	3.86	.74	4.36	.93
LISA	3.28	.81	5.10	1.18	3.57	.99	4.28	1.09
M&C	3.70	.49	5.33	.73	3.72	.82	4.67	.99
S&B	3.55	.45	5.20	.66	4.09	1.05	4.95	1.04
University of Twente	3.39	.64	5.35	.89	3.61	.94	4.43	1.13

[1] Scale = 1 to 5

[2] Scale = 1 to 7

[a] The mean score for HRM satisfaction is significantly lower for BMS in comparison to ET, EWI, TNW, and M&C ($p < .05$). The remaining mean scores for HRM satisfaction do not significantly differ across organizational units.

[b] The mean score for Increasing Structural Resources is significantly higher for TNW in comparison to CMF, CES, FES and LISA ($p < .05$). The remaining mean scores for Increasing Structural Resources do not significantly differ across organizational units.

[c] The mean score for Increasing Social Resources is significantly lower for ITC in comparison to TNW, AZ, HR and S&B ($p < .05$). The remaining mean scores for Increasing Social Resources do not significantly differ across organizational units.

Organizational unit	**Role Clarity[1]**		**Leader - Member Exchange[1]**		**Team Cohesion[1]**		**Autonomy[1]**		**Self-efficacy[1]**		**Commitment[1]**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
BMS	3.91	.74	3.51	.95	4.08	.71	3.97	.81	4.12	.61	3.42	.68
ET	3.92	.66	3.75	.78	4.09	.62	4.11	.69	3.97	.73	3.52	.62
EEMCS/EW	3.95	.59	3.73	.72	4.08	.63	4.08	.66	4.02	.64	3.61	.59
TNW	4.02	.59	3.82	.72	4.17	.60	4.26 [d]	.60	4.10	.60	3.58	.57
ITC	3.95	.64	3.59	.77	4.07	.72	3.89	.71	4.12	.56	3.24	.63
AZ	3.94	.75	3.53	.91	4.18	.71	3.98	.72	4.19	.40	3.75	.43
CFM	4.04	.63	3.54	.86	3.84 [c]	.67	3.81	.71	4.25 [e]	.47	3.71	.53
CES	4.00	.64	3.56	.86	4.07	.63	3.96	.71	4.10	.65	3.61	.51
FEZ	3.46 [a]	.72	2.83	1.02	4.12	.58	3.33 [d]	.89	3.97	.62	3.36	.62
HR	4.01	.49	3.73	.52	4.27	.55	3.86	.70	4.10	.65	3.59	.49
LISA	3.90	.70	3.47	.99	4.05	.52	3.85	.85	4.24	.52	3.62	.55
M&C	4.03	.61	3.81	.72	4.22	.58	4.22	.61	4.13	.51	3.90	.45
S&B	3.78	.54	3.73	.48	4.23	.68	3.97	.61	3.92	.37	3.93	.36
University of Twente	3.95	.65	3.65	.82	4.10	.64	4.03	.72	4.09	.61	3.56	.60

[1] Scale = 1 to 5

[a] The mean score for Role clarity is significantly lower for FEZ in comparison to EWI, TNW, ITC, CFM, CES, HR and M&C ($p < .05$). The remaining mean scores for Role clarity do not significantly differ across organizational units.

[b] The mean score for Leader-member exchange is significantly lower for FEZ in comparison to BMS, ET, EWI, ITC, CFM, CES, HR, LISA, M&C and S&B ($p < .05$). The remaining mean scores for Leader-member exchange do not significantly differ across organizational units.

[c] The mean score for Team cohesion is significantly lower for CFM in comparison to TNW and HR ($p < .05$). The remaining mean scores for Leader-member exchange do not significantly differ across organizational units.

[d] The mean score for Autonomy is significantly higher for TNW in comparison to BMS, ITC, CFM, CES, FEZ, HR, and LISA ($p < .05$). Moreover, the mean score for Autonomy is lower for FEZ in comparison to BMS, ET, EWI, TNW, ITC, AZ, CES, and M&C ($p < .05$). The remaining mean scores for Autonomy do not significantly differ across organizational units.
[e] The mean score for Self-efficacy is significantly higher for CFM in comparison to ET ($p < .05$). The remaining mean scores for Self-efficacy do not significantly differ across organizational units.

12. APPENDIX 4 : MODEL FIT COMPARISON

Model	χ^2	*df*	$\Delta \chi^2$	CFI	GFI	RMSEA
Theoretical model (Figure 1)	4296.90	934		.86	.82	.06
Alternative model 1[a]	4276.92	933	19.98*** [b]	.86	.82	.06
Alternative model 2[c]	4274.17	932	2.75[d]	.86	.82	.06
Alternative model 3[e]	4132.09	932	142.08*** [d]	.87	.83	.06
Alternative model 4[f]	4120.63	931	11.46*** [g]	.87	.83	.06
Alternative model 5[h]	4098.64	930	21.99*** [i]	.87	.83	.06
Alternative model 6[j]	4098.19	929	.45[k]	.87	.83	.06
Alternative model 7[l]	4090.90	929	7.74*** [k]	.87	.83	.06
Alternative model 8[m]	4075.44	928	15.46*** [n]	.87	.83	.06
Alternative model 9[o]	4036.94	927	38.5*** [p]	.87	.84	.06
Alternative model 10[q]	4015.05	926	21.89*** [r]	.87	.84	.06
Alternative model 11[s]	3997.34	925	17.71*** [t]	.87	.84	.06
Alternative model 12[u]	3980.53	924	16.81*** [v]	.87	.84	.06
Alternative model 13[w]	3893.79	923	86.74*** [x]	.88	.84	.06
Alternative model 14[y]	3819.41	922	74.38*** [z]	.88	.84	.06
Alternative model 15[aa]	3808.99	921	10.42*** [bb]	.88	.85	.05

N = 985 individual employees
*** $p < .001$
[a] Adds the direct path from employee satisfaction with HRM to work engagement
[b] Model fit compared with the theoretical model (Figure 1)
[c] Adds the direct path from employee satisfaction with HRM to strain
[d] Model fit compared with Alternative model 1
[e] Adds the direct path from increasing structural resources to work engagement
[f] Adds the direct path from increasing structural resources to strain
[g] Model fit compared with Alternative model 3
[h] Adds the direct path from increasing social resources to work engagement
[i] Model fit compared with Alternative model 4
[j] Adds the direct path from increasing social resources to strain
[k] Model fit compared with Alternative model 5
[l] Adds the direct path from increasing challenging demands to work engagement
[m] Adds the direct path from increasing challenging demands to strain
[n] Model fit compared with Alternative model 7
[o] Adds the direct path from team cohesion to commitment
[p] Model fit compared with Alternative model 8
[q] Adds the direct path from team cohesion to self-efficacy
[r] Model fit compared with Alternative model 9
[s] Adds the direct path from leader-member exchange to self-efficacy
[t] Model fit compared with Alternative model 10
[u] Adds the direct path from leader-member exchange to autonomy
[v] Model fit compared with Alternative model 11

[w] Adds the direct path from self-efficacy to role clarity
[x] Model fit compared with Alternative model 12
[y] Adds the direct path from autonomy to role clarity
[z] Model fit compared with Alternative model 13
[aa] Adds the direct path from self-efficacy to role overload
[bb] Model fit compared with Alternative model 13

13. APPENDIX 5: COMPLETE OVERVIEW OF SEM RESULTS

Variable	Work engagement	Strain
Satisfaction with HRM	.03	
Job crafting	.72***	.00
Role overload	-.08*	.45***
Role clarity	.03	.12*
Leader-member exchange	.07	-.13**
Team cohesion	.06*	-.08
Autonomy	-.16**	.01
Self-efficacy	.17***	-.17***
Commitment	.16***	-.03
R^2	.78	.26

Standardize regression coefficients are shown
N = 985 individual employees
*** p < .001, ** p < .01, * p < .05

Variable	Role overload	Role clarity
Satisfaction with HRM	-.49***	.30***
Job crafting	.33***	.03
Autonomy		.19***
Self-efficacy	-.08*	.47***
Commitment		
R^2	.17	.52

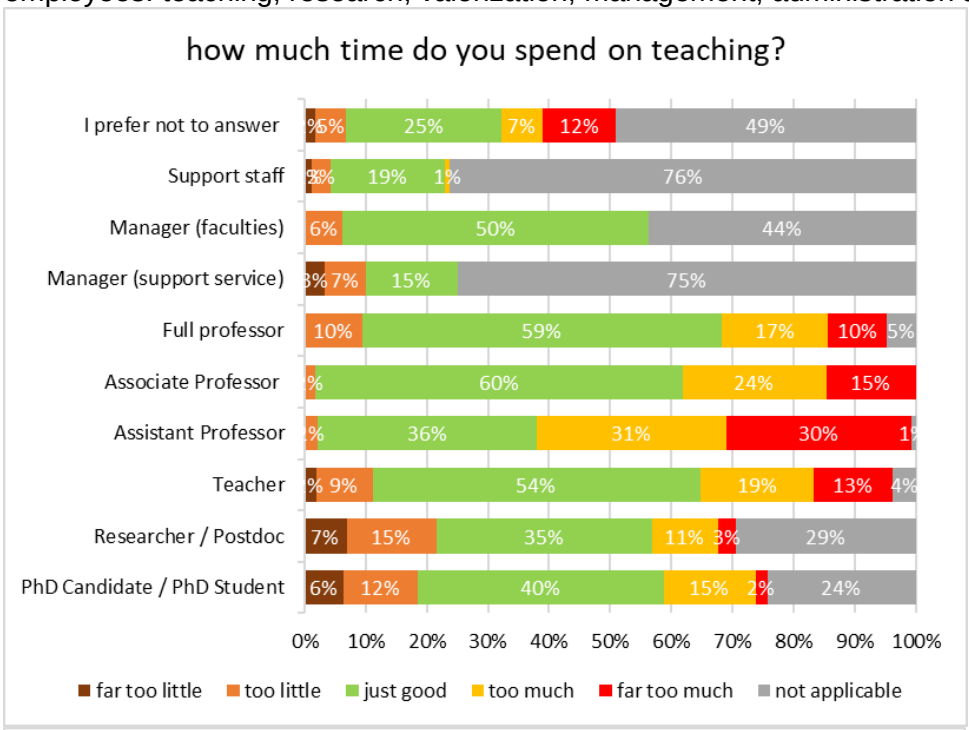
Standardize regression coefficients are shown
N = 985 individual employees
*** p < .001, ** p < .01, * p < .05

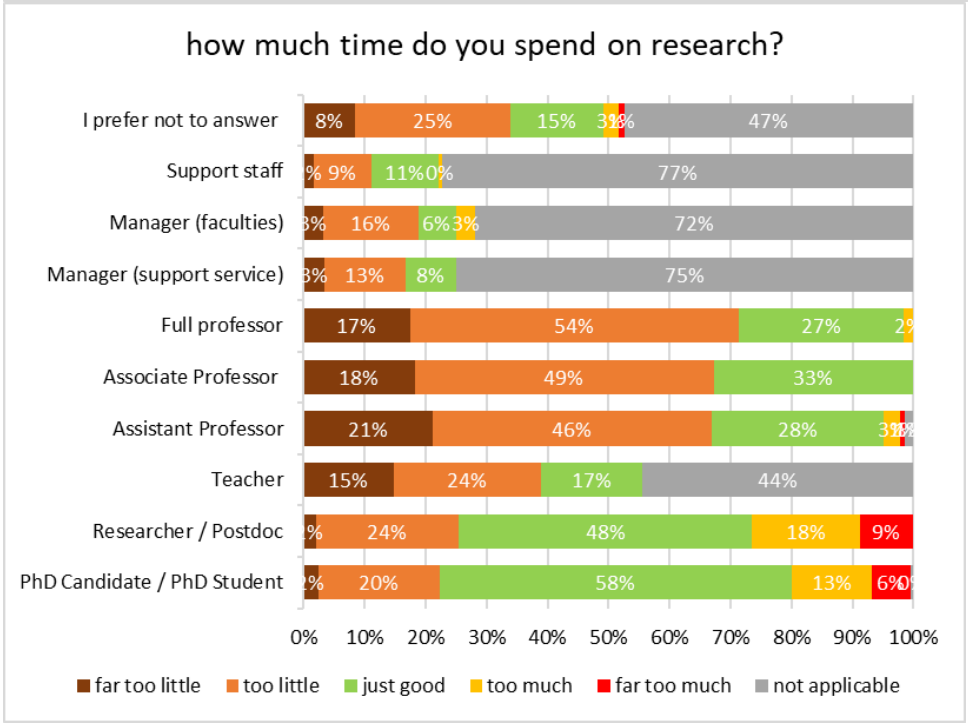
Variable	LMX	Team cohesion	Autonomy	Self-efficacy	Commitment
Satisfaction with HRM	.52***	.24***	-.02	-.19**	.21***
Job crafting	.20***	.21***	.42***	.26***	.20***
Leader-member exchange (LMX)			.30***	.11*	
Team cohesion					.27***
Autonomy				.19***	
R^2	.42	.16	.37	.15	.28

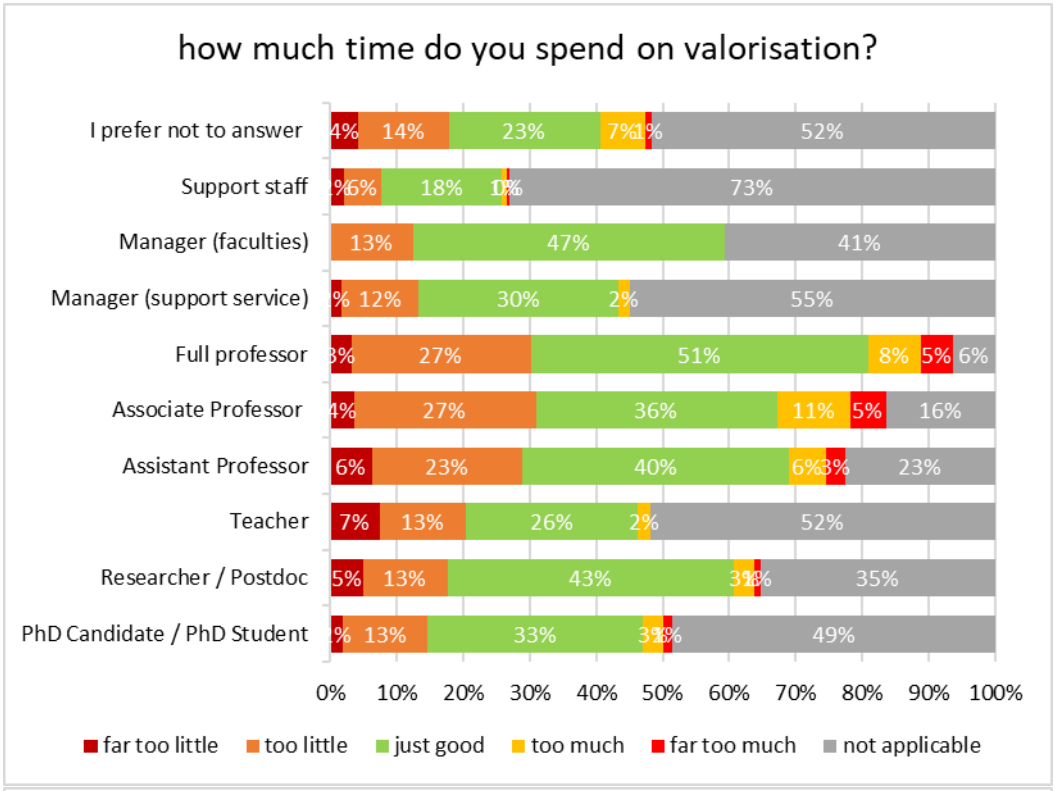
Standardize regression coefficients are shown
N = 985 individual employees
*** p < .001, ** p < .01, * p < .05

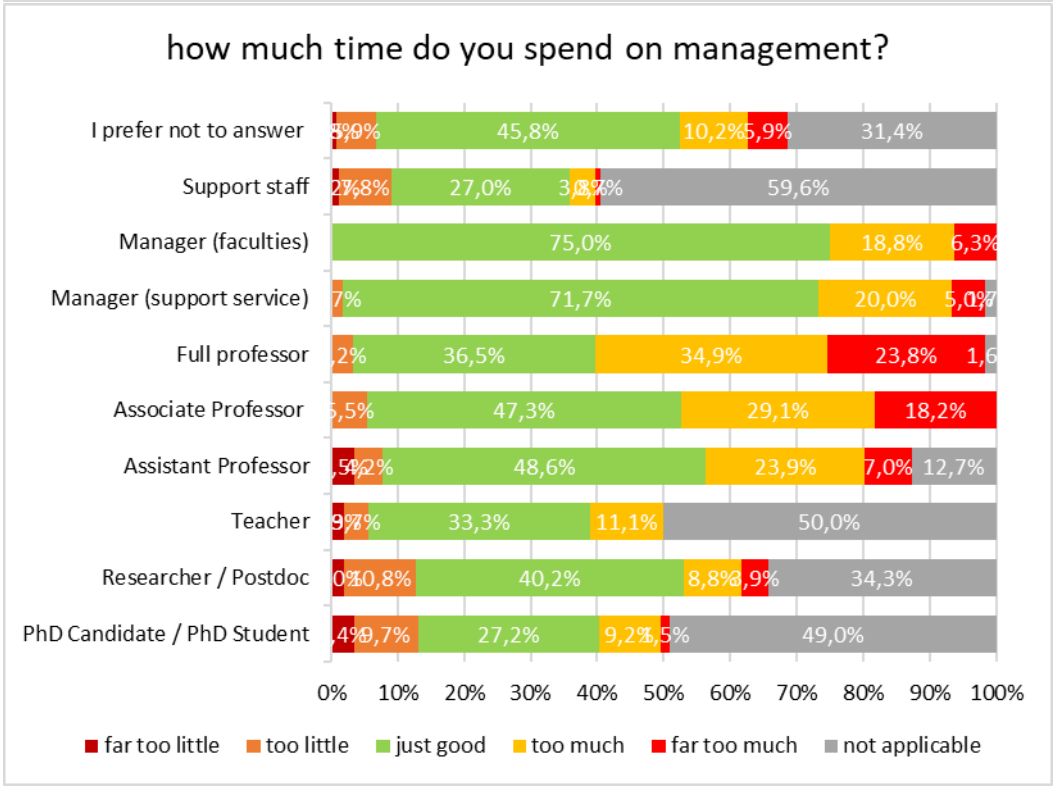
14. APPENDIX 6 TIME SPENT ON SPECIFIC TASKS

Here 6 tables are presented that report on the time spent on the different activities of UT employees: teaching, research, valorization, management, administration and meetings.






how much time do you spend on valorisation?
I prefer not to answer
Support staff
Manager (faculties)
Manager (support service)
Full professor
Associate Professor
Assistant Professor
Teacher
Researcher / Postdoc
PhD Candidate / PhD Student
14%
23%
7%
52%
73%
47%
41%
12%
30%
2%
55%
27%
51%
8%
5%
6%
27%
36%
11%
5%
16%
6%
23%
40%
6%
23%
7%
13%
26%
2%
52%
13%
43%
35%
13%
33%
49%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
far too little
too little
just good
too much
far too much
not applicable


how much time do you spend on management?
I prefer not to answer
Support staff
Manager (faculties)
Manager (support service)
Full professor
Associate Professor
Assistant Professor
Teacher
Researcher / Postdoc
PhD Candidate / PhD Student
45,8%
10,2%
5,9%
31,4%
27,0%
59,6%
75,0%
18,8%
6,3%
71,7%
20,0%
36,5%
34,9%
23,8%
47,3%
29,1%
18,2%
48,6%
23,9%
7,0%
12,7%
33,3%
11,1%
50,0%
40,2%
34,3%
27,2%
49,0%
0%
10%
20%
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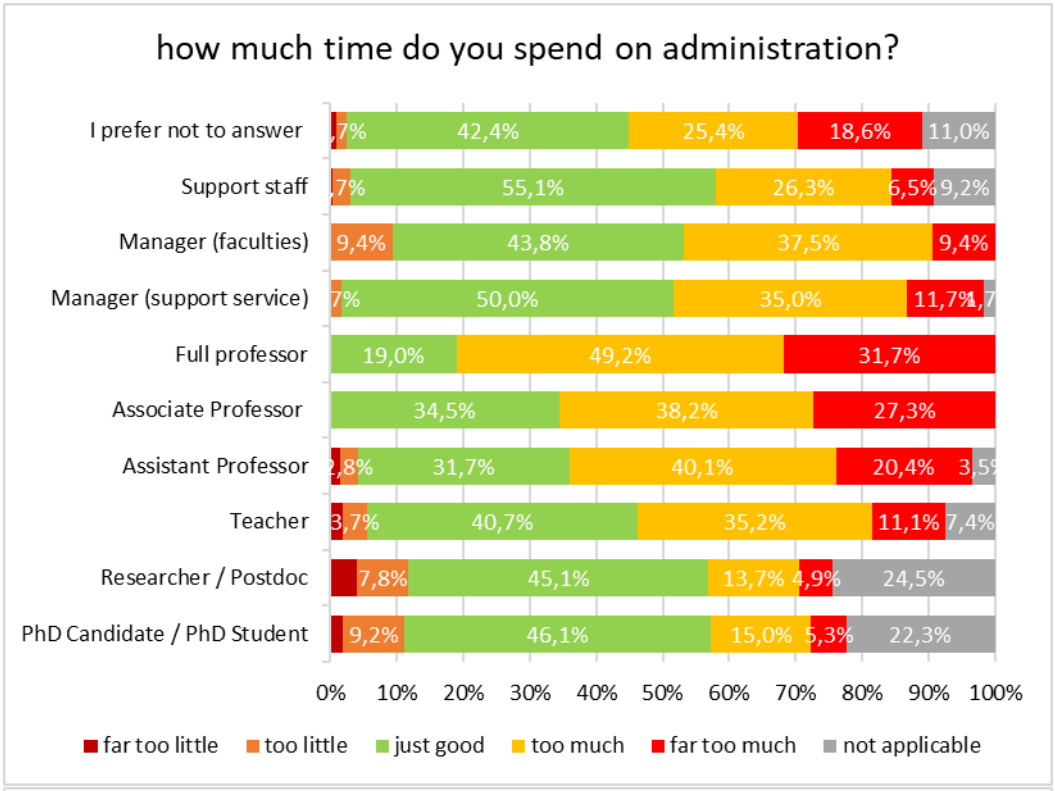
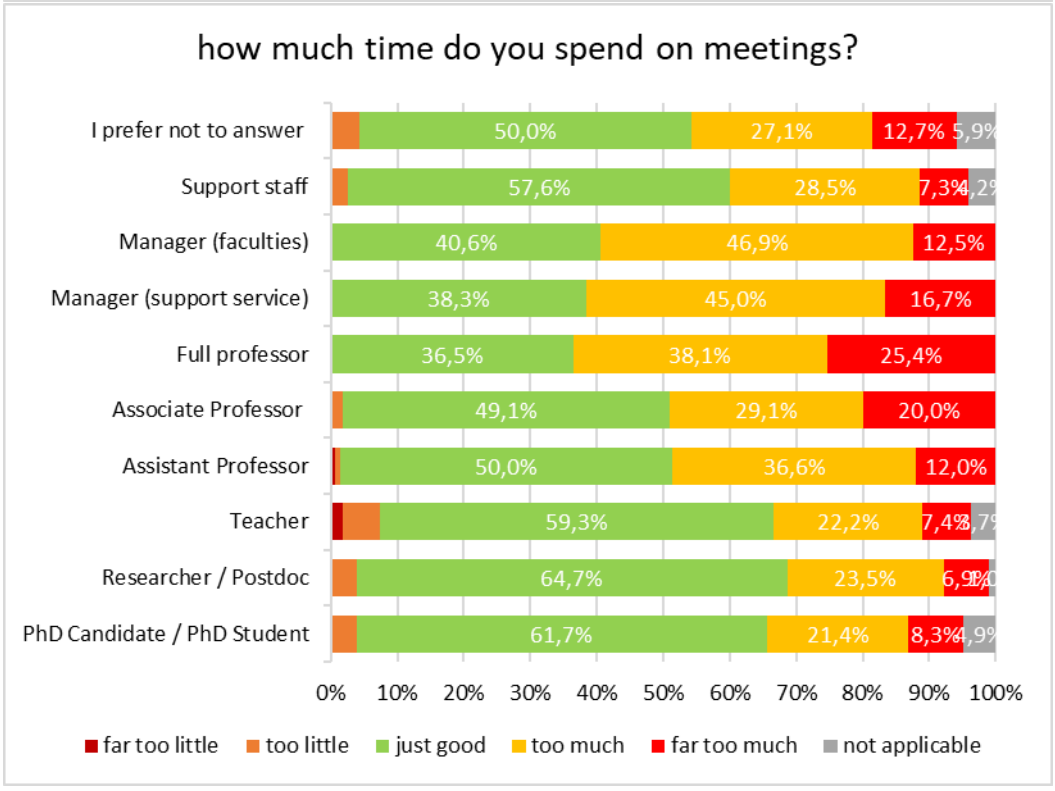
40%
50%
60%
70%
80%
90%
100%
far too little
too little
just good
too much
far too much
not applicable


how much time do you spend on administration?
I prefer not to answer
Support staff
Manager (faculties)
Manager (support service)
Full professor
Associate Professor
Assistant Professor
Teacher
Researcher / Postdoc
PhD Candidate / PhD Student
,7% 42,4% 25,4% 18,6% 11,0%
,7% 55,1% 26,3% 6,5% 9,2%
9,4% 43,8% 37,5% 9,4%
,7% 50,0% 35,0% 11,7% 1,7
19,0% 49,2% 31,7%
34,5% 38,2% 27,3%
2,8% 31,7% 40,1% 20,4% 3,5%
3,7% 40,7% 35,2% 11,1% 7,4%
7,8% 45,1% 13,7% 4,9% 24,5%
9,2% 46,1% 15,0% 5,3% 22,3%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
far too little
too little
just good
too much
far too much
not applicable


how much time do you spend on meetings?
I prefer not to answer
Support staff
Manager (faculties)
Manager (support service)
Full professor
Associate Professor
Assistant Professor
Teacher
Researcher / Postdoc
PhD Candidate / PhD Student
50,0% 27,1% 12,7% 5,9%
57,6% 28,5% 7,3% 4,2%
40,6% 46,9% 12,5%
38,3% 45,0% 16,7%
36,5% 38,1% 25,4%
49,1% 29,1% 20,0%
50,0% 36,6% 12,0%
59,3% 22,2% 7,4% 3,7%
64,7% 23,5% 6,9% 1,0%
61,7% 21,4% 8,3% 4,9%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
far too little
too little
just good
too much
far too much
not applicable