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## **Corporate culture matters – what kinds of workplaces appeal to highly skilled engineers?**

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### **ABSTRACT**

In Europe, and in Germany in particular, many organisations face increasing skills shortages. By deliberately managing their cultures, organisations can attract and retain highly skilled employees more effectively. Seeking to explore the workplace preferences of highly skilled engineers, we conducted 19 semi-structured interviews and one standardised online survey with 170 graduates of the UNITECH International program. The purpose was to identify their (1) approaches to job search and career development, (2) teamwork and communication strategies, (3) personal traits, (4) motivators and sources of frustration, and (5) attitudes toward an academic career and self-employment. Our findings confirmed that the culture and climate in the workplace largely influenced respondents' career decisions. In addition, we found a number of statistically significant differences between responses of men and women.

### **KEYWORDS**

Organisational culture, workplace preferences, gender, STEM, UNITECH alumni



## **Corporate culture matters – what kinds of workplaces appeal to highly skilled engineers?**

### **INTRODUCTON**

In an increasingly globalised world, ongoing demographic changes force organisations to compete for talent. This competition is particularly fierce in STEM fields, in which skills shortages continue to increase while the workforce continues to age. While the proportion of engineers between 35 and 39 years of age in Germany, for example, continues to decrease, the proportion of engineers of 50 years of age and older continues to increase and reached 34 percent in 2010 (Association of German Engineers (VDI), 2013). These developments match graduation statistics from the early 2000s.

At the same time, women's potential remains largely untapped in these fields. In the USA between 2005 and 2011, both the proportion of women among engineering graduates consistently constituted over 20% and the proportion of women among professionally active engineers increased from 14.7% to almost 17% (Singh, Fouad, Fitzpatrick, Liu, Cappaert, & Figueredo, 2013). In Germany during approximately the same period of time, 22% of engineering graduates were women (VDI, 2013). Singh et al. (2013) surveyed female engineers who had chosen to leave the field of engineering and found that almost one third of them had done so because of the organisational climate. This reason was mentioned fourth in frequency, preceded by *lost interest*, *no advancement*, and *wanted more time with family*. Many different studies indicate that inflexible work schedules and predominantly male working environments make it difficult for women to fit in and contribute to high career drop-out rates among them (e.g., Blickenstaff, 2005; Jaksztat, Schindler, & Briedis, 2010).

During recent years, organisational culture has received a great deal of attention, both within the scientific community and in practice. Seeking not only to attract but also to retain highly skilled individuals, organisations have begun to re-evaluate their own cultures. In order to identify the impact of organisational culture on individual career decisions, particularly those of women, we conducted one qualitative and one quantitative study on the alumni of the UNITECH International Society. This society is based in Zurich, Switzerland and helps outstanding students in STEM fields gain business know-how and enhance both their academic and managerial skills.

This paper presents the findings of prior studies on organisational culture and climate that serve as the foundation for our research, our method and findings, and implications for further research and application.

### **Organisational cultures and their functions**

Many different studies indicate that organisational culture provides a key opportunity to secure competitive advantage (Hall, 1993; Mintzberg, Ahlstrand, & Lampel, 2004). Scholars have developed such a broad array of conceptual models and assessment methods (Kaiser, Hochfeld, Gertje, & Schraudner, 2012; Schönborn, 2014), that even the term "*organisational culture*" has varying definitions. Sackmann (2002), for example, defines such culture as core assumptions and beliefs, typical for a group, which significantly influence this

group's perceptions, way of thinking, and actions. Hofstede refers to organisational culture as "the collective programming of the mind which distinguishes the members of one organisation from [those of] another" (as cited in Shuler, 2006, p. 37). Many scholars, and particularly Schein (1985), who has developed a well-known definition, regard organisational culture as a pattern of shared norms, values, and beliefs.

Organisational culture performs the *identification* function by helping employees identify with their work and workplace (Sackmann, 2002). According to Baetge (2006), it performs the *integration* and *coordination* functions by helping new employees settle in the workplace and the *motivation* function by fostering employees' commitment, their proactive position, and feelings of responsibility. Habib, Aslam, Hussain, Yasmeen, and Ibrahim (2014) found a significant positive correlation between certain types of organisational culture and both employee commitment and job satisfaction. Sokro (2012) and Habib et al. (2014) demonstrated how cultures perform the *attachment* function by encouraging employees to stay with their current company longer.

Motivation and job satisfaction provide two major, closely related factors that foster employee attachment (Sokro, 2012). Herzberg, Mausner, and Snyderman (1959) surveyed engineers and accountants in different organisations about their particularly positive and particularly negative work experiences and were the first to identify intrinsic factors that lead to job satisfaction. Even though their methodology has been regarded as controversial (Nerdinger, Blickle, & Schaper, 2014), their theory is well-recognised in the scientific community. Known as the dual-factor theory, it distinguishes between two different groups of factors. *Context* factors, also referred to as *hygiene factors*, are extrinsic to the job (Nerdinger et al., 2014) and can include aspects such as status, salary, and organisational policies. "Analogous to the concept of mental hygiene in psychiatry, [these factors are regarded] as necessary, but not sufficient for healthy adjustment" (Pinder, 2008, p. 34). While their absence leads to dissatisfaction, they do not typically result in a positive feeling. Factors of the second type, referred to as *motivators* or *content factors*, arise from intrinsic conditions of the job (Nerdinger et al., 2014) and can include responsibility, recognition for one's performance, and sense of importance to an organisation. These factors lead to a positive feeling, while their absence does not result in dissatisfaction.

### **Models of organisational culture**

There are currently three different approaches to organisational culture. The first, referred to as objectivistic or functionalistic, regards organisational culture as an objectively comprehensible entity, which can be actively shaped (Gontard, 2002) and, when properly designed, substantially contribute to the organisation's success (Krüger, 1988). The second approach, referred to as subjectivistic, regards organisations as social constructions of reality (Holleis, 1987), which cannot be grasped or shaped but merely approached through interpretation (Ochsenbauer & Klofat, 1987). The third approach, referred to as integrative or dynamic, combines both perspectives and regards organisational cultures as changeable entities that can be actively shaped (Schein, 1985). In our research, we take this third approach.

All these approaches and findings described above have given rise to a range of conceptual models that are used both in theory and practice. While these models are many in number and vary in their design, all of them distinguish between exposed and concealed elements and regard shared values as a major component (Landau, 2007).

The model of organisational culture that has received the most attention was developed by Schein (1985) and has three levels. The top level contains visible artefacts such as organisational practices, the middle level comprises norms and values, and the bottom level consists of underlying basic ideologies and assumptions, operating as a form of organisational subconscious. These levels are interwoven, and the higher a level is, the higher its visibility. While culture manifests itself through artefacts and values, its essence can only be comprehended by interpreting the underlying assumptions (Schein, 1985). The *Corporate culture and performance* model of Kotter and Heskett (1992) distinguishes between the bottom, which contains concealed and stable fundamental values, and the top, which contains exposed and changeable norms and behaviour patterns. Similarly, the *Cultural iceberg* model, described by Sackmann (2004), distinguishes between the top and the bottom of an iceberg, which contain visible manifestations and hidden fundamental attitudes respectively. The *Onion model*, developed by Hofstede, Neuijen, Ohayv, and Sanders (1990) recognises four parts of organisational culture such as symbols, heroes, rituals, and values. While all above-described models exhibit some similarities with certain anthropological concepts, they neither accommodate for potential changeability of organisational culture nor provide methods for its assessment (Hofstede et al., 1990).

### **Organisational culture and climate**

Many scholars have devoted their attention to the question of whether the constructs of organisational culture and climate are different, the same, or interrelated (e. g., Payne, 2000; Schein, 2000). We share the view of Ostroff, Kinicki and Tamkins (2013) who regard culture and climate as "two complementary constructs that reveal overlapping yet distinguishable nuances in the psychological life of organisations" (Ostroff et al., 2013, p. 643) and climate as "a perception of practices, policies, procedures, and routines in the organisation" (Ostroff et al., 2013, p. 652). Climate is often associated with employees' perceptions and therefore regarded as something subjective and changeable. According to Schein (2000), climate is *what* happens in an organisation, while culture helps determine *why* it happens. Similarly, Zohar and Hofmann describe organisational climate "as the lens through which the deep layers of culture can be understood" (Zohar & Hofmann, 2012, p. 645). Analogously to culture, some scholars (e. g., McGregor, 1960, Argyris, 1964) assign the *integration* and *motivation* functions to climate. As early as in the 1960s, for example, Schneider and Bartlett (1968) explored the influence climate had on employee commitment, motivation, and performance.

### **Organisational culture and gender**

Existing findings on the relationship between organisation and gender, both theoretical and empirical, are diverse and indicate that this relationship can be highly complex and controversial. Particularly in the sociology of work and industrial sociology, organisations and their practices are often regarded as *gendered* and

biased against women (Acker, 1991, 2006; Wetterer, 1995). According to Acker (1991), "to say that an organisation, or any other analytical unit, is gendered means that advantage and disadvantage, exploitation and control, action and emotion, meaning and identity, are patterned through and in terms of a distinction between male and female, masculine and feminine" (Acker 1991, p. 167). From an organisational point of view, diversity management aims at strategically managing the workforce's differences and similarities to activate the available talent, skills, and capabilities. Organisational cultures and structures are systematically influenced and aligned by (still mostly male) decision-makers (Kanter, 1975; Acker, 1991, 2006). In practice, this leads to gendered networks and subcultures and biases in HR decisions, daily interaction, and expectations toward individual skills and behaviours (e.g., Wetterer, 1995; Wilz, 2002). Britton (2000), however, argues that we need to distinguish between gendered organisations and gendered occupations, always regard related contexts, and, in view of the diversity of social reality, consider that organisations can also be *not-gendered* or *less oppressively gendered*.

Many scholars have studied differences between workplace preferences of men and women. Konrad, Ritchie, Lieb, and Corrigan (2000) conducted meta-studies of differences in job attribute preferences and their findings matched conventional gender roles and stereotypes. Within their group, a greater proportion of men than women placed a high value on earnings, promotion, freedom, challenge, leadership, and power. Simultaneously, a greater proportion of women placed a high value on good hours, an easy commute, interpersonal relationships, helping others, and a variety of intrinsic job aspects. Among MBA students in a longitudinal study of Konrad (2003), a greater proportion of women found the relationship between workloads at the office and at home important. At the same time, approximately equal proportions of men and women found high salary, good benefits, and intrinsically rewarding work important. Within the group studied by Bigoness (1988) in the US, a greater proportion of women placed a higher value on professional growth and a greater proportion of men placed a higher value on salary considerations. Both men and women, however, rated job attributes related to job content as more important than those related to job context. The findings of Schramm and Kerst (2009) and Singh et al. (2013) indicate that the culture and atmosphere in a workplace can substantially influence women's career decisions. Kaiser et al. (2012) examined the impact of culture on career decisions, particularly those of women, within nine large organisations in Germany. Their goal was to identify how organisations could more effectively retain female managers. Within their sample, women assigned a greater importance to autonomy in organising one's own work and recognition for one's performance. Within the sample of Catanzaro, Moore, and Marshall (2011), a greater proportion of men than women were inclined to pursue a job with a more competitive organisation. Given the choice between a supportive workplace and a higher salary, however, most of either men or women were inclined to choose the former.

Studies on workplace preferences and differences in such preferences between men and women within the German scientific community draw similar conclusions. Within the samples of Jaksztat et al. (2010) and Schone, Kellermann, and Busolt (2012), for example, women placed a substantially higher value on work-life

balance than men. At the same time, Trübswetter, Sinell, Schütz, and Schraudner (2015) found that open and supportive work atmosphere and autonomy in organising one's own work were equally important to both men and women in a number of research institutes.

### **Research questions**

Seeking to address existing skills shortages in STEM fields and to explore the workplace preferences of highly skilled engineers, we drew from the findings presented above and formulated the following three research questions.

- (1) What attributes of organisational culture and climate appeal to UNITECH alumni? How do their priorities change with time and experience?
- (2) Could workplace preferences, motivators, and sources of frustration differ between UNITECH alumni and UNITECH alumnae and how?
- (3) What motivates UNITECH alumni to change jobs? Do UNITECH alumni view academia as an appealing work environment?

## **THE QUALITATIVE STUDY AND ITS METHOD**

### **Sample and procedure**

Due to their outstanding qualifications, international experiences, and broad educational backgrounds, UNITECH alumni constitute a unique and scientifically relevant group. At present, there are approximately 700 alumni and 30% women among them. The alumni association has approximately 400 registered members.

Between June and October 2013, we conducted qualitative interviews with  $N = 19$  alumni – eleven men and eight women between 22 and 38 years. In accordance with the principles of theoretical sampling and with the help of specific categories, developed by the authors, the group was also diversified based on age, nationality, marital status, and the degree of international experience. Each interview lasted approximately 90 minutes. Interview records were transcribed and evaluated.

### **Measures**

The purpose was to assess interviewees' implicit knowledge. Because we sought to develop a comprehensive picture of those practices within male-gendered organisations (Acker, 1991) that needed to be changed and could not possibly have done it by looking at one gender alone, we included both men and women in roughly equally proportions. In light of the fact that qualitative research methods for uncovering unknown facts and relationships between them are indeterminate, we deductively derived (Mayring, 2010) the above-mentioned categories by building upon existing studies on organisational culture and career development. Based on these categories, we developed a semi-structured questionnaire. With its help, interviewees were encouraged to speak freely about organisational culture and their own aspirations, expectations, career decisions, motivators, and sources of frustration. We evaluated the transcribed interview records and refined the developed categories by utilising the methods of comprehensive content analysis (Mayring, 2010).

## THE QUALITATIVE STUDY AND ITS FINDINGS

### Motivators and sources of frustration

Kleemann, Matuschek, and Voß (1999) found that the importance of post-materialist values such as self-actualisation, autonomy, and education, is increasing, particularly within younger cohorts. Most interviewees found opportunities for autonomous work, learning, and professional development to be most motivating:

*"Motivating for me is to have the power to decide or organise my work. That might be one of my key motivating factors. Having this kind of freedom and trust, that I do the things and I have [...] certain independence." (UNITECH alumna, female)*

On the other hand, most interviewees found slow decision-making processes and excessive bureaucracy to be most frustrating:

*"Frustrating, [to] me? Sometimes, [it is] the slow pace of development. [...] It takes many, many years if you want to move. [...] But with the culture of the company, there is sometimes the process that's also annoying. You have "frustrating" when you have to follow a process for everything." (UNITECH alumnus, male)*

### Appealing organisational culture

Most interviewees would describe an appealing organisational culture as flexible, prioritising work-life balance, employee-centred, empowering, and multi-cultural. Interviewees understood a "flexible" culture to be one that rewards performance and accommodates employees by giving them autonomy to determine when, where, and how they will work, including how they will distribute work among themselves:

*"If the company needs you to work extra hours because of a project you [are expected to] stay and finish your job without hesitation even though that means staying until 10 pm. Yet, [you are not rewarded for that and I think,] you should be rewarded for that. Not necessarily with money, but maybe with some time off, like, okay, on Friday, I'm not coming because I've been working a lot on Thursday." (UNITECH alumna, female)*

Work-life balance is closely related to flexible schedules (Hunt, 2012). Many interviewees were glad to be of service to their organisations and to work extra hours during stressful times. At the same time, they valued their personal lives and recognised that taking *mental breaks* and *disconnecting* was necessary for them to stay healthy and to keep inner balance. Many interviewees had a great need for autonomous, challenging, and intellectually stimulating work, which matched the findings of Thom and Friedli (2002):

*"But what has changed is that I started very motivated and with the time, you lose a little bit of motivation. So that's why it's good to keep changing jobs. You do not necessarily have to change companies but maybe just responsibilities or the department because this motivates you, gives new strength and new opportunities and challenges." (UNITECH alumnus, male)*

Many interviewees placed a high value on employee-centred culture, trust in their abilities, recognition for their performance, and good relationships and possibly even friendships with their co-workers. Most interviewees were open to new cultures and ways of working and found travelling for work, working abroad, and/or working in a multi-cultural environment appealing. Simultaneously, they were aware that international mobility might be difficult to reconcile with family responsibilities:

*"Right now, I only see the experience expected for their priorities to change positive aspects [of travelling and business trips] because I'm young and happy to move around and stuff. I don't know how it's going to be like later in life. If you want to have a family, you would probably not enjoy it that much. But for now, it definitely works as I'm a young graduate. It would be very attractive."* (UNITECH alumna, female)

## THE QUANTITATIVE STUDY AND ITS METHOD

### Sample and procedure

An online survey was tested in April 2014 and conducted between April and May 2014. Originally, all members of the alumni association were invited to participate.  $N = 172$  alumni, or 43% of those invited, eventually participated. Fifty three respondents chose not to reveal their sex. Among remaining respondents, 74 and 31 were men and women respectively. Respondents were between 23 and 38 years of age ( $M = 30.5$ ,  $SD = 3.62$ ), had 12 different nationalities, resided and worked in 14 different countries, and each had, on average, four years of professional experience. Thirteen percent of respondents had children.

### Measures

With the help of both the above-mentioned categories and findings of Hofstede et al. (1990) on the assessment of organisational cultures, the authors developed a questionnaire for the online survey. Its (1) *Career decisions* category addressed values, both *as the desired* and *as the desirable*, and choices (Hofstede et al. 1990). Some questions addressed the present moment and the others addressed the time when respondents first took their current position. The seventeen-item Likert-type response scale ranged from 1 (*not at all important*) to 5 (*very important*) and had Cronbach's alpha of .75. The (2) *Motivation and frustration* category contained two free-response fields, in which respondents were asked to name their motivators and sources of frustration in the order of importance. The (3) *Job change and self-employment* category contained questions about career intentions and their reasons. The (4) *Academic career* category comprised one six-item Likert-type scale with positive aspects of academia and one five-item scale with its negative aspects, which had Cronbach's alphas of .61 and .51 respectively. The (5) *Life stages* category contained both multiple-choice questions and one Likert-type scale. The final (6) *Biographical information* category contained both standard demographic questions including citizenship and a number of particular questions concerning educational path and professional experience.



### Statistical analysis

Initially, the authors conducted a descriptive analysis of all items. In order to identify significant differences in responses between different groups, we conducted a number of two-tailed independent samples and paired samples t-tests. Finally, we conducted a Principal Component Analysis, PCA, of the responses in the Career decisions section. Both qualitative and quantitative analyses were conducted with the help of IBM SPSS Statistics version 20.0.

## THE QUANTITATIVE STUDY AND ITS FINDINGS

### Attracting highly skilled employees

When they took their current position, respondents, on average, placed the highest value on *challenging work* ( $M = 4.46, SD = 0.94$ ), *career development opportunities* ( $M = 4.29, SD = 1.03$ ), and *variety of assignments* ( $M = 4.18, SD = 0.96$ ). At the time the survey was conducted, they assigned the greatest importance to a *good team atmosphere* ( $M = 4.47, SD = 0.78$ ), *challenging work* ( $M = 4.45, SD = 0.89$ ), and *career development opportunities* ( $M = 4.42, SD = 0.94$ ).

Table 1

*Career decisions – descriptive statistics and significant differences, in the past, by gender*

	<b>Men</b> <i>M (SD)</i> n = 79	<b>Women</b> <i>M (SD)</i> n = 27
<i>Career decisions</i>		
Challenging work	4.38 (1.04)	4.56 (0.89)
Career development opportunities	4.23 (1.15)	4.41 (0.69)
Variety of assignments	4.16 (0.98)	3.96 (1.12)
Innovative work environment	4.01 (1.01)	3.85 (0.94)
Diversity in team	3.82 (1.16)	3.56 (1.34)
Autonomy in organising one's own work	3.66 (1.01)	3.63 (1.04)
Company's image	3.62 (1.04)	4.00 (1.00)
Industrial sector	3.32 (1.26)	3.37 (1.30)
Leadership responsibilities	3.32 (1.18)	2.81 (1.36)
Company's values	3.30 (1.05)	3.48 (1.22)
International travel	3.30 (1.18)	3.15 (1.06)
High salary	3.25 (1.08)	3.33 (0.96)
Workplace location	3.10 (1.16)	3.70 (0.99)
Terms of contract	3.10 (1.16)	3.52 (1.08)
Working abroad > 6 months	2.94 (1.29)	2.67 (1.17)
Work-life balance	2.92 (1.17)	3.85 (1.23) **
Job security	2.70 (1.18)	3.67 (0.92) ***

*Note.* Results of an independent samples t-test, \* statistically significant differences between responses of men and women: \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

The Table 1 shows the average ranking, by both men and women, of all factors at the time that respondents took their current position. When they took their current position, female respondents, on average, placed a significantly higher value on *job security* ( $t(104) = 3.88, p < .001$ ) and *work-life balance* ( $t(104) = 3.50, p < .001$ ) than male respondents. At the time of the survey, female respondents found *job security* ( $t(103) = 2.27, p < .05$ ) and *workplace location* ( $t = 2.38, p < .01$ ) significantly more important.

Respondents were asked to rank eleven factors by importance at the time they took their current position and at the time they took the survey. Using a paired samples t-test, we identified three factors that had grown significantly more important to all respondents over time and two other factors that had grown significantly more important only to male respondents. To reduce the alpha error accumulation for pairwise comparisons between group means with t-tests, the Bonferroni correction was used. The observed level of significance was adjusted to multiple comparisons by dividing the original significance level by the number of tests. The following table shows the compared factors.

*Table 2*  
*Career decisions – descriptive statistics and significant differences, by time and gender*

	<b>Women past</b> <i>M (SD)</i> n = 27	<b>Women present</b> <i>M (SD)</i> n = 27
<i>Career decisions</i>		
Work-life balance	3.85 (1.23)	4.19 (1.11)*
Autonomy in organising one's own work	3.63 (1.04)	4.07 (0.87)**
Leadership responsibilities	2.81 (1.36)	3.63 (1.18)*
	<b>Men past</b> <i>M (SD)</i> n = 79	<b>Men present</b> <i>M (SD)</i> n = 79
<i>Career decisions</i>		
Work-life balance	2.92 (1.17)	3.72 (1.04)***
Autonomy in organising one's own work	3.66 (1.01)	3.85 (0.92)*
Leadership responsibilities	3.32 (1.18)	3.95 (1.16)***
Job security	2.70 (1.18)	3.24 (1.16)***
High salary	3.24 (1.08)	3.58 (0.94)***

*Note.* Results of a paired samples t-test, \* statistically significant differences between importance in the past and at present, by gender: \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

As can be seen from this table, *work-life balance*, *autonomy in organising one's own work*, and *leadership responsibilities* were the three job aspects that had grown significantly more important to both male and female respondents over time. Even though women assigned a noticeably greater importance to *autonomy in organising one's own work* at the time of the survey and men placed a noticeably higher value on *leadership responsibilities* both at the past and at present, these differences were not found to be statistically significant. Female respondents, however, placed a significantly higher value on work-life balance, both in the past and at present. Furthermore, even when it was less important to them in the past ( $M = 3.85$ ), it was still noticeably more important to them than to men after having grown in importance ( $M = 3.72$ ).

Table 3  
The four principal components

Item and classification	Factor			
	1	2	3	4
<b>Empowering</b>				
Challenging work	<b>0.772</b>			
Autonomy in organising one's own work	<b>0.732</b>			
Leadership responsibilities	<b>0.681</b>			
Innovative and creative work environment	<b>0.676</b>			
Career development opportunities	<b>0.631</b>		0.474	
<b>Multi-cultural</b>				
International travel		<b>0.865</b>		
Working abroad >6 month		<b>0.856</b>		
Diversity in team		<b>0.689</b>		
<b>Employee-centred</b>				
High pay			<b>0.820</b>	
Job security			<b>0.783</b>	
A good relationship with my superior	0.505		<b>0.565</b>	
<b>Wellbeing-centred</b>				
The feeling of benefiting society				<b>0.837</b>
Good team atmosphere	0.528			<b>0.588</b>
Work-life balance				<b>0.445</b>

Note.  $N = 125$ ; Loadings less than 0.40 are suppressed.

The two factors that had grown significantly more important only to male respondents were *job security* ( $t(77) = 4.08$ ,  $p < .001$ ) and *high salary* ( $t(77) =$

3.60,  $p < .001$ ). As compared to female respondents, however, *job security* was significantly less important to male respondents both in the past and at present.

By conducting a Principal Component Analysis, PCA, including a Varimax rotation, of the responses in the *Career Decisions* sections, we established four principal components. The KMO value of .78 and the results of a Bartlett's test fulfilled the requirements for such analysis. Items that did not sufficiently load onto the extracted factors were removed, and the four components were given the following names: (1) *Empowering*, (2) *Multi-cultural*, (3) *Employee-centred*, and (4) *Wellbeing-centred*. As revealed by the rotated sums of squares loadings, factors 1, 2, 3, and 4 accounted for 23.2%, 17.0%, 15.2%, and 11.4% of the variances respectively.

These four components closely resembled the major groups of workplace preferences that we identified during the evaluation of the interview records. The first component, *Empowering*, contains elements that relate to immaterial values such as professional development and opportunities to take responsibility and that are regarded by Herzberg et al. (1959) as motivators. These findings replicated those of many studies (e.g., Gabor, 2012) on retention management, job satisfaction, and drivers of high potentials. The second component contains factors, for example, *the opportunity to work in a foreign country* that can be regarded as context factors. The third component contains classical context factors such as *high salary*. Within the fourth component, *the feeling of benefiting society* can be regarded as a motivator, while *good work atmosphere* and *work-life balance* are context factors. What these three last factors have in common is that each of them promotes a feeling of wellbeing. The number of organisations that care about the wellbeing of their employees appears to be increasing because greater numbers of them promote work-life balance, deliberately try to create a positive work atmosphere, and even employ special "feel-good" managers.

### **Retaining highly skilled employees**

Respondents who chose to answer the free-response question about motivators in their current job ( $N = 110$ ) mentioned, in the order of frequency, *challenges* and *challenging work* ( $N = 17$ ), *opportunities for learning* and *professional development* ( $N = 13$ ), *atmosphere in the workplace* and *work relationships* ( $N = 9$ ), *opportunities to take responsibility and be a leader* ( $N = 7$ ), and *being able to have an impact* ( $N = 7$ ). While most male respondents mentioned *challenges*, most female respondents mentioned *opportunities for learning* and *professional development*.

Respondents who chose to answer the free-response question about sources of frustration in their current job ( $N = 103$ ), mentioned *poor management* ( $N = 9$ ) and *bureaucracy and administrative barriers* ( $N = 9$ ). We found no statistically significant differences between responses of men and women.

Slightly more than a half of respondents who had more than five years of professional experience ( $N = 41$ ) agreed that they were now less mobile than when they first started their professional lives. While 55% of women among these respondents agreed that they now placed a higher value on job security, 77% of men agreed that they placed the same value on job security. This difference was

found to be statistically significant ( $t(39) = 2,52, p < .05$ ). Among respondents who had less than five years of professional experience, 40% and 31% agreed that in the future, they expected to place a higher value on job security and to be less mobile respectively.

Sixty-one percent of respondents agreed that they considered changing jobs in the next three years. As reasons, 54%, 47%, and 44% of these respondents selected, respectively, "*I would like to have more opportunities to develop*", "*I would like to have more managerial responsibilities*," and "*I would like a higher salary*." While 49% of male respondents selected "*I would like to have more managerial responsibilities*," 75% of female respondents selected "*I would like to have more opportunities to develop*." Simultaneously, 45% of the men and 44% of the women would have preferred a *higher salary*. Thirty-nine percent of respondents agreed that they intended to stay in their current organisation for at least three more years. The reasons that these respondents selected most often could be identified as *motivators* described in the dual-factor theory of Herzberg et al. (1959). For example, 80% selected "*My tasks challenge me*" and 72% of men and 73% of women selected "*They offer me good development opportunities*."

### **Workplace choice**

Universities and other research organisations can provide appealing employment options to highly skilled engineers. Among respondents, 7% had a PhD degree and 50% never considered pursuing a PhD degree. Among the 122 respondents who chose to rank negative aspects of an academic career, 60% agreed that "*academia does not offer enough practical experience*" ( $M = 3.46$ ;  $SD = 1.17$ ). Approximately 45%, 33%, and 25% further agreed, respectively, that "*the salary in academia is low*" ( $M = 3.26$ ,  $SD = 1.05$ ), that it "*offers [few] prospects*" ( $M = 2.96$ ,  $SD = 1.17$ ), and "*an academic career is linked to job insecurity*" ( $M = 2.69$ ,  $SD = 1.17$ ). We found no statistically significant differences between responses of men and women in this category.

Even though most respondents neither pursued nor ever considered pursuing a PhD degree, many found an academic career appealing and agreed that academia "*allows you to pursue your own scientific curiosity*" ( $M = 3.85$ ,  $SD = 0.78$ ), "*gives you the chance to give lessons and to pass over knowledge to students*" ( $M = 3.77$ ,  $SD = 0.96$ ), and "*gives you the chance to work autonomy*" ( $M = 3.54$ ,  $SD = 0.93$ ). According to a conducted independent samples t-test, the average female respondent found that "*academia gives you the chance to work autonomy*" ( $t(115) = 2.47$ ,  $p < .05$ ) and associated a job in science with prestige ( $t(115) = 2.52$ ,  $p < .05$ ) significantly more often than the average male respondent.

Many interviewees regarded self-employment as a valid career option. Among survey respondents, 31% could imagine self-employment or starting their own business at some point in the future. This group of respondents consisted of 35% of male respondents and 22% of female respondents. When asked about reasons for potentially becoming self-employed, most respondents seemed to be driven by intrinsic motivations – 95% and 60% selected, respectively, "*be[ing] able to implement [one's] own ideas*" and "*[being given the opportunity] to take responsibility*." Simultaneously, only 19% and 11% of respondents selected, respectively, "*dissatisfaction with the current job*" and "*seeking a higher salary*."

## **DISCUSSION**

With regard to our first research question, we found that most interviewed and surveyed UNITECH alumni placed a high value on an atmosphere of trust, personal and professional recognition, diverse and intellectually stimulating work, and opportunities for learning. These findings matched those of Bigoness (1988), Konrad et al. (2000), and Singh et al. (2013) and the results of the conducted Principal Component Analysis. Furthermore, these attitudes were expressed by both men and women in roughly equal proportions, with only one exception. Among interviewees, more women than men found an atmosphere of trust to be important.

The concept of life stages addresses how people's priorities change with time and how organisations can take such changes into account (e.g. Graf, 2007; Rump & Eilers, 2014). We found that autonomy in organising one's own work, work-life balance, and leadership responsibilities had significantly grown in importance over time, which matched existing findings on employee expectations (Grobe, 2003; Becker, Brandt, Ulrich, & Voigt, 2012). Respondents with longer professional experience agreed that they were now less mobile than in the past, while those with shorter experience expected their priorities to change in a similar way in the future. Particularly among interviewees, women more often expressed that they expected to stay closer to home once they start a family. These results replicated the findings on the drivers and preferences of Generation Y (Cennamo & Gardner, 2008; German Association for People Management [DGFP], 2011).

With regard to our second research question, we found a number of statistically significant differences between responses of men and women. A significantly greater proportion of female than male respondents placed a high value on job security and work-life balance, which matched the findings of Wippermann (2012), and Schreurs and Leis (2014). Among respondents with longer professional experience, women had come to assign a greater importance to job security over time and men had come to place a higher value on a high income, which matched the findings of the Federal Ministry of Family Affairs, Senior Citizens, Women and Youth (BMFSFJ) (2009). Interviewees expressed very similar preferences. While men often talked about the importance of a high income, women, particularly those who had children, often spoke about their need for job security. Men, on the other hand, were not only less concerned about job security but also expressed a great deal of confidence about their own career prospects and job-hunting skills. Similarly to women, however, those who had children more often regarded job security as important.

With regard to our third research question, opportunities to organise one's own work, to realise one's own ideas, and to take responsibility were the reasons why respondents either were already self-employed or found self-employment appealing. Lack of autonomy, leadership responsibilities, and opportunities for professional development were the most often selected reasons for considering a job change. Opportunities to satisfy one's scientific curiosity and to organise one's own work were regarded as the most positive aspects of academia, while lack of practical experience was the most often selected negative aspect. All these findings described above matched those of Baetge (2006).

### **Limitations and implications for future research**

Because the construct of organisational culture has multiple dimensions, its assessment might pose a particular challenge. While certain elements such as *artefacts* and *espoused* beliefs and values are easily accessible and can be quantitatively measured, more concealed *underlying basic assumptions* might be much more difficult to gauge. These assumptions are "[...] so taken for granted that you find little variation within a social unit; this degree of consensus results from repeated success in implementing certain beliefs and values (...)" (Schein, 2010, p. 28). Ethnographic studies, group interviews, or in-depth interviews (Schein, 2010) can help more effectively assess the intrinsically shared phenomenon of organisational culture, which manifests itself exclusively through interaction.

In our online survey, some questions addressed respondents' preferences at the time when they took their current position. For some respondents, that time was more than a few years ago. Past recollections are not always entirely accurate, due in part to the influence of current perceptions. In this regard, longitudinal studies can provide more accurate assessments.

Surveyed engineers, internationally experienced and educated in business management, presented a very specific and exclusive group. In light of the increasing skills shortages in STEM fields, it might be interesting to compare their preferences with those of other engineers, for example, less internationally oriented. Furthermore, it might be interesting to compare preferences of various other groups, such as students, graduates, and experienced professionals, both within and across particular fields.

### **CONCLUSION**

Our goal was to identify what kinds of workplaces appeal to UNITECH alumni. Our findings indicate that the culture and atmosphere in a workplace can substantially contribute to this workplace's appeal. Most interviewed and surveyed UNITECH alumni placed a high value on a supportive work environment, interesting work, and learning opportunities. Work-life balance, leadership responsibilities, and autonomy in organising one's own work not only appealed to most respondents but had significantly grown in importance over time. Female respondents placed a significantly higher value on job security and work-life balance.

These findings indicate that career priorities and workplace preferences not only differ between men and women but change with time. During certain stages of their lives, women typically carry a much larger load of family responsibilities and cannot possibly be as available, flexible, and mobile as gendered organisations (Acker, 1991) might expect them to be. Furthermore, the same cultural norms and social expectations that lead to a gendered distribution of responsibilities in the home continue to reinforce existing gender biases in the workplace.

Drawing from our findings, we argue that organisations can more effectively attract and retain highly skilled employees by deliberately managing their cultures and sensitising their HR policies to individual needs, preferences, and perspectives, both gender-specific and otherwise. In particular, such policies can aim at fostering employee autonomy and responsibility, creating an atmosphere of trust and recognition, and providing sufficient opportunities for professional development.

The development and, particularly, implementation of such policies will, however, require a fundamental change in organisational practices. Diversity management, for example, has the potential to change corporate regimes of inequality and introduce greater (gender) equality. We strongly believe that for these goals to be achieved, organisations will need to address each of their three structural levels (Schein, 1985). A fundamental change will require re-envisioning not only official and thus clearly visible policies but also inherent norms and values, particularly those of senior managers. The spirit of equality, however, can only ever truly be promoted by challenging underlying basic assumptions including stereotypes and social expectations.

Culture management, naturally, entails certain challenges. After having settled in their working environment, many employees begin to take for granted and reinforce its existing ways. Furthermore, in order to successfully re-shape their cultures, organisations will need to deliberately manage each of the many different elements of these cultures and accommodate the complex dynamics between them. Intentionally or otherwise, senior managers always set the standard for other employees. By consistently re-evaluating and, if necessary, re-adjusting both the culture and their own conduct, they can successfully navigate their organisation and help it achieve its goals.

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