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Positive work environment in public administration[2]

INTRODUCTION

Today's government work requires a new kind of public servant that is more adaptable and mobile. Now, staff needs to be able to innovate, persuade, lead and engage. The public service is competing for valuable human capital and it has to take into account that the new generation of employees has very different expectations about job experience than their predecessors. Flexible work arrangements, quality of experience and relationships with their supervisors and team are seen as key elements of a positive work environment.

The aim of this study is to identify the motivators that are key to creating a positive work environment in which public administration employees feel satisfied with their work and feel connected to their organisation. The main concept of the study is to search for such main elements of a positive work environment among general motivators of agile teams. This idea was inspired by a report prepared by the experts engaged in Canada's Public Policy Forum (2015). They emphasise in their report that the application of agility in public administration allows organisations to depart from the paradigm that they must seek mass production efficiencies through bureaucratic structures, hierarchical organisation, and centralised control over production.

Agility, which is generally defined as having the flexibility and courage to reinvent yourself (Canada's Public Policy Forum, 2015), seems to be what governments need to adopt. Agility will allow governments to expand their ability to recruit people who prefer flexible and learning organisations that constantly adapt and resolve emerging problems through the coordinated work of self-

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managed teams. Agile management in public service organisations may be a way to reduce unevenness in creating development opportunities between the public and private sector.

In this study, the search for agile motivators, important in managing public servants, is based on the approach used in research on the motivation of programmers since agile development has become mainstream in software development and knowledge about motivators has improved the management of agile teams. Sharp *et al.* (2009) found 21 motivators in the literature, of which only seven were identified as inherent in software engineering. Similarly, Melo *et al.* (2012), in their cross-case analysis of motivators in agile teams, recognised eleven general motivators and nine specific agile development motivators. This research focuses on general motivators in agile teams that can be adapted to the public administration environment.

The results indicate the importance of three general motivators: development opportunities, respect and teamwork. Younger public servants appreciate development opportunities, while older employees require respect from their superiors. The third motivator, teamwork, works well for young employees focused on achieving professional goals and for older employees who are innovative. The results indicate that, regardless of the age of public servants, teamwork is important for employees with two personality traits: openness and agreeableness.

This study broadens the understanding of how to motivate public servants. There is a deficit of research in this field. The public administration literature contends that this issue should be high on the future agenda (Perry et al., 2010). This research focuses on individual motivation rather than on organisational motivation, which is the focus of current motivation literature. In this study, the motivators are based on Person-Environment fit and fairness in the workplace. Job outcomes include job satisfaction, commitment, and identification with an organisation and exclude performance, turnover, and absenteeism.

The remainder of this article is structured as follows. Section 2 presents the theoretical background consisting of the MOCC model description. Section 3 covers the research framework with hypotheses and data as well as the method. The results are described and their importance is discussed in section 4. The paper is closed with conclusions.

Theoretical background

The MOCC model (Motivators, Outcomes, Characteristics and Context) developed by Sharp and her colleagues (Sharp et al., 2009) was the inspiration for this study. Sharp *et al.* (2009) present the MOCC model to explain motivation in software engineering (SE). In the MOCC model, general motivators include: identifying with the task, career path, variety of work, recognition for work done, development needs addressed, technically challenging work, autonomy, making a contribution,

equity, empowerment/responsibility, trust/respect, employee participation, good management, sense of belonging, rewards and incentives, feedback, job security, good work-life balance, appropriate working conditions, successful company, and sufficient resources (Sharp et al., 2009, Figure 5). Regarding teamwork, Melo *et al.* (2012) classify it as a general motivator in agile teams. This research follows Melo's findings and considers teamwork a general motivator, especially since Kalenda *et al.* (2018) emphasise the key role of teamwork.

A software engineer's characteristics orientate the individual towards certain motivation factors. Sharp *et al.* (2009) divide the software engineer's characteristics into two different categories: characteristics of the individual and expressed needs. Finally, motivators can stimulate some outcomes, such as high performance, low turnover, and absenteeism. The MOCC model does not encompass satisfaction as an outcome, but the enhanced Job Characteristics Model (Couger, Zawacki, 1980) includes general satisfaction.

The characteristics of agile-team members are influenced by their personalities. The MOCC model includes personality as one of the motivation components. Acuña, Gómez and Juristo (2008) found that the human factor is of fundamental importance for the success or failure of agile software development. Research in this area is based on the five-factor model (FFM) of personality developed by Costa and McCrae (1995). Caliendo *et al.* (2011), focusing on the Big Five taxonomy, present an overview of each personality trait. Extraversion is described as including variables indicating the extent to which individuals are assertive, dominant, ambitious and energetic; agreeableness as relating to being cooperative, forgiving and trusting; conscientiousness as encompassing two distinct aspects, being achievement-oriented and being hard-working; emotional stability (opposite of neuroticism) as relating to self-confidence, optimism and the ability to deal with stressful situations; and, finally openness to experience as relating to an individual's creativity, innovativeness and curiosity. Baumgart *et al.* (2015) applied 30 facets suggested by Costa and McCrae (1995) and found that all five factors of the FFM were to some extent relevant for developers. Agreeableness was the primary factor.

The last part of the theoretical background addresses the theoretical foundation for formulating the motivators considered in this research. This study formulates motivators based on job perception. Employees can evaluate their jobs in terms of their perceived person-environment fit and fairness in the workplace. In general, the person-environment fit is defined as the degree to which individual and environmental characteristics match (Kristof-Brown, Zimmerman, Johnson, 2005). The job can be perceived from an equity theory perspective (Thomson, 2009) by assessing fairness in terms of the opportunity to perform. Fairness in the workplace includes procedural justice and interpersonal justice. Procedural justice refers to the fairness of the process that leads to promotion or layoff. Interpersonal justice means that decision-makers treat employees with respect and sensitivity.

The theoretical background, which covers the MOCC model, the Big Five, the Person-Job fit theory and the equity theory, serves as the basis for the hypotheses and research questions.

Research framework

The implementation of the main research objective – identifying the motivators that are key to creating a positive work environment in which public administration employees feel satisfied with their work and feel connected to their organisation – is based on verification of three hypotheses and answers to two questions. The hypotheses are as follows:

Hypothesis 1. The relationships between public servant motivators and job outcomes are indirect and agile motivators mediate these relationships.

Hypothesis 2. The mediators in relationships between motivators and job outcomes are not the same for younger and older public servants.

Hypothesis 3. Agile motivators mediate the effects of pay satisfaction on job outcomes.

Because particular characteristics orientate the individual towards certain motivators, as demonstrated in the MOCC model (Sharp et al., 2009), the first question refers to the effects of two characteristics, innovativeness and achievement-orientation:

Question 1. Which motivators are fostered by innovativeness and achievement-orientation in the case of younger versus older public servants?

Finally, the MOCC model suggests that personality traits influence the effectiveness of motivators, which brings up the second question:

Question 2. Which personality traits influence job outcomes and through which motivators in the case of younger versus older public servants?

The MOCC model also takes into consideration environmental factors and context. This study includes one such factor, namely career stage. Therefore, in testing hypotheses and seeking answers to the research questions, both younger and older public servants are considered.

The source of the data for this study is a questionnaire survey carried out in Poland in November 2016. The participants were employed in public administration. They had attained a tertiary educational level. Including participants with the same, at least formally, level of education allows us to avoid considering the influence of education on agile motivators, which seems self-explanatory.

The participants were 25–45 years of age, of mobile working age (in Poland, students typically graduate from universities when they are 24). Employees over 45 years of age were excluded from the research to avoid two issues that may influence their motivation to participate in agile projects. Firstly, the decline in fluid

abilities exhibited by older employees (e.g. beyond middle age) can result in decreased participation in educational activities because of learning difficulties and lower self-confidence (self-efficacy). Secondly, older employees are less likely to be offered opportunities for development later in their career, which can dissuade them from agile methods.

In November 2016, interviews were carried out with the participants using the CAPI (computer-assisted personal interviewing) method from a nationwide, random-quota sample with a conscious choice of participants. The overall sample of participants is divided into two subgroups of employees: 1) younger public servants employed in public administration and aged between 25 and 35 years; this sub-sample includes 55 participants, and 2) older public servants employed in public administration, aged between 36 and 45 years; this sub-sample includes 64 participants.

For all measures (except personality traits), the participants rated items using a five-point Likert scale (or a seven-point Likert scale in the case of personality traits) where 1 = strongly disagree and 5 (or 7) = strongly agree. When using Likert data, we must consider the controversy regarding the possibility to calculate the mean, the standard deviation and the correlation, to perform t-tests, and to use variables based on this type of the data as predictors in a regression. Summarising the empirical literature survey, Norman (2010) concluded that parametric statistics can be used with Likert data, with small sample sizes, with unequal variances, and with non-normal distributions with no fear of coming to the wrong conclusion. This paper accepts Norman's findings that parametric statistics can be used with Likert data with no fear of coming to the wrong conclusion.

The motivators considered in this study are based on aspects of job perceptions: Person-Environment fit, earnings, embedment, equity, development, work/life balance, training – Table 1. The measures of the motivators are based on items used in the person-environment fit index (e.g. see Chuang et al., 2016) as well as on items from equity theory (Thomson, 2009)

Tables 1. Measures of Motivators

Aspect of job perception	Motivator	Item
1	*2*	*3*
Person-Job fit*	Improving skills	Your present job satisfies your goals and needs for skills enhancement
	Autonomy/Responsibility	Your present job satisfies your goals and needs for autonomy and responsibility
	Promotion and career path	Your present job satisfies your goals and needs for promotion opportunities and career development

1	2	3
Person-Job fit*	Job enjoyment	In your present job, you do what you like to do
	Teamwork	Your co-workers and you are satisfied with the workload
	Satisfaction with the supervisor	Your supervisor's leadership style and the leadership style you desire match
Earnings	Pay satisfaction	You are satisfied with the earnings in your present job
Embedment	Sense of belonging	You feel a connection with your co-workers
Equity**	Qualification/performance ratio	Your co-workers have better possibilities to demonstrate their skills than you do
	Procedural justice	There is a direct relationship between qualifications and promotions in your present organisation
	Respect (interpersonal justice)	Supervisors treat you with the same respect as others
Development	Development opportunities	In the present workplace, you have many opportunities for professional development
Work/life balance	Job flexibility	You can take a day-off when you need
Training	Training quality	Your present organisation provides you with high-quality training

*Measures based on items used in the person-environment fit index (e.g. see Chuang et al., 2016).
** Measures based on equity theory (Thomson, 2009).

Source: adapted from (Chuang et al., 2016; Thomson, 2009).

Motivators can influence several outcomes of public servants. This study investigates three of them: job satisfaction, organisational commitment, and organisational identification (see Table 2).

Tables 2. Measures of outcomes of Motivated Public Servants

Outcome	Item
Job satisfaction	All things considered, I am satisfied with my job
Organisational commitment	I would be very happy to spend the rest of my career with this organisation
Organisational identification	When someone praises this organisation, it feels like a personal compliment

Source: adapted from (Young et al., 2004; Allen, Meyer, 1990).

The items describing the characteristics of innovativeness and achievement-orientation are adapted from the entrepreneurial attitude orientation scale suggested by Robinson *et al.* (1991) – see Table 3.

Table 3. Measures of Innovativeness and Achievement-Orientation

Characteristics	Items
Innovation-affect	Working with people that have many new ideas makes me tired (reverse--scored)
Innovation-behaviour	I prefer to join a team that is already working on a project than to propose an entirely new project (reverse-scored)
Innovation-cognition	To be successful, I believe one should act in an unconventional way
Achievement-affect	I feel depressed when I don't accomplish any meaningful work
Achievement--behaviour	I often sacrifice personal comfort in order to take advantage of business opportunities
Achievement--cognition	I believe that concrete results are necessary in order to judge business success

Source: adapted from (Robinson et al., 1991).

The personality traits that can influence the effectiveness of motivators are measured by the Ten Item Personality Inventory developed by Gosling *et al.* (2003) – see Table 4.

Table 4. Ten Item Personality Inventory

Personality trait	Item I see myself as
Extraversion	Gregarious, enthusiastic, optimistic
Antagonism	Critical, quarrelsome
Conscientiousness	Conscientious, self-disciplined
Neuroticism	Anxious, easily upset
Openness	Open to new experiences, complex
Introversion	Reserved, quiet
Agreeableness	Sympathetic, warm
Undirectedness	Disorganised, careless
Emotional stability	Calm, emotionally stable
Not open to experience	Conventional, uncreative

Source: adapted from (Gosling et al., 2003).

Gender is included as a control in models that estimate the effects of motivators on the outcomes.

The research uses the conditional process analysis developed by Hayes (2013) to find the indirect relationships between 1) the motivators and the outcomes; 2) the characteristics and the outcomes; and finally, 3) the personality traits and the outcomes. Hayes (2013) defines the conditional process analysis as a modelling strategy undertaken to describe the conditional or contingent nature of the mechanism(s) by which a variable transmits its effect onto another variable, and to test hypotheses about such contingent effects. This method incorporates mediation analysis, which is used to quantify and examine the direct and indirect pathways through which an antecedent variable X transmits its effect onto a consequent variable Y through an intermediary M: $X{\rightarrow}M{\rightarrow}Y$ is a causal chain of events. In this research, such causal chains look as follows:

Motivator → Mediator → Job satisfaction;
Characteristic → Mediator → Job satisfaction;
Personal trait → Mediator → Job satisfaction.

Results and discussion

Before presenting the findings, it might be useful to offer a short explanation of the importance of gender as a control. The correlations between gender and outcomes (e.g. job satisfaction, organisational commitment, and organisational identification) are statistically insignificant for both groups of public servants (for the younger 0.252 (p = 0.063); 0.270 (p = 0.046); 0.040 (p = 0.773) and for the older 0.218 (p = 0.084); 0.036 (p = 0.776); -0.029 (p = 0.817), respectively). Similarly, gender was found to be an insignificant variable in all regressions used in the relative weight analysis. Therefore, the findings are presented without the gender variable.

The results of the conditional process analysis (Hayes, 2013) confirm the first two hypotheses that the relationships between motivators and job outcomes are indirect and the mediators are agile motivators (H1). The results also reveal differences in mediators for junior and senior public servants (H2).

The findings show that *Development opportunity* is a key motivator for younger public servants. It is a mediator in the relationships between almost all motivators and two outcomes: *Job satisfaction* and *Organisational Commitment*. It also mediates the effects of *Promotion* and *Pay satisfaction* on *Job identification*. The mediation models uncovered another important motivator – *Teamwork* – which mediates the effect of satisfaction with the supervisor on each of the three outcomes (see Tables 5 and 6).

Development opportunities was found to be an insignificant mediator in the group of older public servants. The motivators influenced their *Job satisfaction* and *Organisational commitment* through *Respect* from their supervisors. All motivators increased the *Organisational identification* of older public servants when they were satisfied with *Teamwork* (see Tables 7 and 8).

Table 5. Direct and Indirect Effects of Motivators on Outcomes, "Development opportunities" as Mediator, Younger Public Servants (25–35 years old), Poland 2016 – Results of Hayes's Conditional Process Analysis

Motivator	Effects of motivator on:								
	job satisfaction			organisational commitment			organisational identification		
	Direct effect	Indirect effect mediated by "Development opportunities"	R^2	Direct effect	Indirect effect mediated by "Development opportunities"	R^2	Direct effect	Indirect effect mediated by "Development opportunities"	R^2
Improving skills	0.066	0.157**	0.267***	0.057	0.237**	0.228***	0.334**	0.154	0.194**
Autonomy/ Responsibility	0.133	0.121**	0.271***	0.179	0.178**	0.240***	-0.044	0.135	0.112**
Promotion and career path	0.161	0.1186**	0.341***	0.221	0.175**	0.260***	-0.228	0.148**	0.121**
Job enjoyment	0.382**	0.058	0.701***	0.457**	0.079	0.361***	0.281	0.055	0.178*
Teamwork	0.387**	0.073	0.742***	0.445**	0.119	0.382***	0.553**	0.054	0.391***
Satisfaction with the supervisor	0.275**	0.055	0.396***	0.382**	0.075	0.559***	0.528**	0.050	0.339***
Procedural justice	-0.003	0.102**	0.267***	0.074	0.143**	0.231***	0.020	0.104	0.121**
Respect	0.148	0.167**	0.545***	0.036	0.260**	0.214***	0.273	0.148	0.168**
Pay satisfaction	0.099	0.134**	0.281***	0.051	0.224**	0.228***	-0.083	0.189**	0.127**
Training quality	0.148	0.223**	0.560***	-0.047	0.258**	0.215***	-0.028	0.189	0.131**

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

Table 6. Direct and Indirect Effects of Supervisory Satisfaction/Autonomy/Job Enjoyment on Outcomes Mediated by Teamwork, Younger Public Servants (25–35 years old), Poland 2016 – Results of Hayes's Conditional Process Analysis

Motivator	Effects of motivator on:								
	job satisfaction			organisational commitment			organisational identification		
	Direct effect	Indirect effect mediated by "Teamwork"	R^2	Direct effect	Indirect effect mediated by "Teamwork"	R^2	Direct effect	Indirect effect mediated by "Teamwork"	R^2
Supervisory satisfaction	0.045	0.285**	0.465***	0.128	0.329**	0.302***	0.272	0.306**	0.407***
Autonomy/ Responsibility	-------	-------	-------	-------	-------	-------	-0.135	0.226**	0.378***
Job enjoyment	-------	-------	-------	-------	-------	-------	-0.041	0.383**	0.370***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.
------- means that both effects are statistically insignificant.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

Table 8. Direct and Indirect Effects of Motivators on Organisational Identification, "Pay Satisfaction" as the mediator, Older Public Servants (36–45 years old), Poland 2016 – Results of Hayes's Conditional Process Analysis

Motivator	Effects of motivator on organisational identification		
	Direct effect	Indirect effect mediated by "Pay satisfaction"	R^2
Improving skills	0.274**	0.106**	0.338***
Autonomy/Responsibility	0.184	0.176**	0.276***
Promotion and career path	0.231**	0.144**	0.303***
Job enjoyment	0.148	0.219**	0.264***
Teamwork	0.328**	0.120**	0.361***
Satisfaction with the supervisor	0.208**	0.131**	0.297***
Procedural justice	0.307**	0.128**	0.341
Respect	0.281**	0.143**	0.303***
Training quality	0.099	0.137**	0.261***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

Table 7. Direct and Indirect Effects of Motivators on Outcomes, "Respect" and "Teamwork" as mediators, Older Public Servants (36–45 years old), Poland 2016 – Results of Hayes's Conditional Process Analysis

| Motivator | Effects of motivator on: | | | | | | | | |
| | job satisfaction | | | organisational commitment | | | organisational identification | | |
	Direct effect	Indirect effect mediated by "Respect"	R^2	Direct effect	Indirect effect mediated by "Respect"	R^2	Direct effect	Indirect effect mediated by "Teamwork"	R^2
Improving skills	0.141	0.270**	0.409***	0.076	0.191**	0.143***	0.229**	0.151**	0.296***
Autonomy/ Responsibility	0.011	0.329	0.393***	0.233	0.174**	0.166***	0.179	0.181**	0.269***
Promotion and career path	0.071	0.216**	0.398***	0.183	0.131**	0.162***	0.272**	0.103**	0.328***
Job enjoyment	0.417**	0.231**	0.507***	0.275	0.162**	0.177***	0.181	0.186**	0.269***
Teamwork	0.253**	0.296**	0.426***	0.416**	0.111	0.214***	------	------	------
Supervisory satisfaction	0.210**	0.185**	0.435***	0.205	0.120**	0.169***	0.164	0.176**	0.268***
Procedural justice	0.067	0.266**	0.397***	0.246	0.147**	0.174***	0.268**	0.167**	0.302***
Respect	------	------	------	------	------	------	0.125	0.300**	0.249***
Pay satisfaction	0.079	0.146**	0.402***	0.170	0.090**	0.169***	0.273**	0.095**	0.361***
Training quality	0.024	0.184**	0.394***	0.019	0.127**	0.140**	0.216	0.120**	0.261***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.
------ means that both effects are statistically insignificant.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

The mediators *Development opportunity* (in the younger group), *Teamwork* (in both groups of public servants) and *Respect* (in the older group) are important motivators in agile methods and they conditioned the effects of Person-Environment fit and Fairness on job outcomes.

The results in Tables 5–8 allow the author to positively verify the first two hypotheses. They also provide a basis for not rejecting the third hypothesis, which states that agile motivators mediate the effects of pay satisfaction on job outcomes (H3). The findings in Tables 5–8 show that the direct effects of *Pay satisfaction* on job outcomes are statistically insignificant in both groups of public servants (except for *Organisation identification* in the older group, where both the direct and indirect effects are significant). *Pay satisfaction* results in higher job outcomes among younger public servants only when they see development opportunities in their organisations. The older public servants are satisfied with their job and they commit to their organisations when *Pay satisfaction* is mediated by *Respect* and *Teamwork*.

As demonstrated by the MOCC model (Sharp et al., 2009), particular characteristics orientate the individual towards certain motivators. In this study, attention was focused on two characteristics – innovativeness and achievement-orientation – that are important for agility. The findings provide an answer to the first research question: Which motivators are fostered by innovativeness and achievement-orientation in the case of younger versus older public servants? The results of Hayes's Conditional Process Analysis show that all three dimensions of achievement (cognition, behaviour and affect) influence the job outcomes of younger public servants via *Teamwork* (see Table 9), with negative indirect effects of *Achievement-affect (I feel depressed when I don't accomplish any meaningful work)*.

The influence of the characteristics in the group of older public servants is more differentiated (see Table 10). *Achievement-cognition* orientates the older employees towards *Respect*, while *Achievement-behaviour* towards *Satisfaction with the supervisor* and *Pay satisfaction. Innovation-cognition* fosters *Teamwork* and *Satisfaction with the supervisor*.

Table 9. Direct and Indirect Effects of Characteristics on Outcomes via Teamwork, Younger Public Servants, Poland, 2016 – Results of Hayes's Conditional Process Analysis

Characteristic	Effects of characteristic on:								
	job satisfaction			organisational commitment			organisational identification		
	Direct effect	Indirect effect mediated by "Teamwork"	R^2	Direct effect	Indirect effect mediated by "Teamwork"	R^2	Direct effect	Indirect effect mediated by "Teamwork"	R^2
Achievement-cognition (I believe that concrete results are necessary in order to judge business success)	0.075	0.235**	0.467***	0.035	0.302**	0.283***	0.238	0.275**	0.404***
Achievement-behaviour (I often sacrifice personal comfort in order to take advantage of business opportunities)	0.038	0.191**	0.462***	-0.004	0.246**	0.283***	0.300**	0.195**	0.453***
Achievement-affect (I feel depressed when I don't accomplish any meaningful work)	0.057	-0.110**	0.192***	0.057	-0.134**	0.287***	0.019	-0.140**	0.369***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

Table 10. Direct and Indirect Effects of Characteristics on Outcomes, Older Public Servants, Poland, 2016 – Results of Hayes's Conditional Process Analysis

Characteristic	Effects of characteristic on:								
	job satisfaction			organisational commitment			organisational identification		
	Direct effect	Indirect effect mediated by	R^2	Direct effect	Indirect effect mediated by	R^2	Direct effect	Indirect effect mediated by	R^2
Achievement-cognition (I believe that concrete results are necessary in order to judge business success)	0.068	0.278** mediated by "Respect"	0.396***	-0.413**	0.244** mediated by "Respect"	0.227****	0.129	0.124** mediated by "Respect"	0.153***
Achievement-behaviour (I often sacrifice personal comfort in order to take advantage of business opportunities)	0.062	0.149** mediated by "Supervisory satisfaction"	0.171***	------	------	------	0.206; 0.169	0.104**; 0.140** mediated by "Supervisory satisfaction" and "Pay satisfaction"	0.199***; 0.279***
Innovation-cognition (I believe that concrete results are necessary in order to judge business success)	0.158; 0.224	0.216**; 0.148** mediated by "Teamwork" and "Pay satisfaction"	0.315***; 0.206***	0.191	0.198** mediated by "Teamwork"	0.225***	0.171; 0.217	0.167**; 0.121 mediated by "Teamwork" and "Pay satisfaction"	0.271***; 0.197***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.
------ means that both effects are statistically insignificant

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

Finally, the MOCC model suggests that personality traits influence the effectiveness of motivators. The results of the estimation of mediation models used in this study provide an answer to the second research question concerning the role of personality traits. According to younger public servants, two personality traits – *Openness* and *Agreeableness* – enhance the effectiveness of *Teamwork*, one of the two key mediators through which motivators influence the job outcomes (see Table 11).

Table 11. Causal Chain of Events Resulting from Personality Traits, Younger Public Servants, Poland, 2016 – Findings of Hayes's Conditional Process Analysis

Causal chain of events	Direct effect	Indirect effect	R^2
Openness → Teamwork → Job satisfaction	0.084	0.128**	0.379***
Openness → Teamwork → Organisational commitment	-0.027	0.175**	0.144***
Openness → Teamwork → Organisational identification	0.205**	0.155**	0.143***
Agreeableness → Teamwork → Job satisfaction	0.000	0.207**	0.460***
Agreeableness → Teamwork → Organisational commitment	-0.237	0.311**	0.328***
Agreeableness → Teamwork → Organisational identification	0.027	0.267**	0.309***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

Four facets of the Big Five were found to be important factors in the MOCC model for older public servants (see Table 12). *Pay satisfaction* enhances *Job satisfaction* in the case of an *extravert* individual while a *neurotic* individual is less satisfied with pay and, consequently, less satisfied with his/her job. *Openness* increases the importance of *Improving skills* as a mediator that stimulates *Job satisfaction* and *Organisational Identification*. A disorganised and careless person (*Undirectedness*) is treated with less *Respect* by his/her supervisors, which contributes to a reduction in all three of his/her job outcomes.

Table 12. Causal Chain of Events Resulting from Personality Traits, Older Public Servants, Poland, 2016 – Findings of Hayes's Conditional Process Analysis

Causal chain of events	Direct effect	Indirect effect	R^2
1	*2*	*3*	*4*
Extraversion → Pay satisfaction → Job satisfaction	0.089	0.169**	0.259***
Neuroticism → Pay satisfaction → Job satisfaction	-0.061	-0.086**	0.261***
Openness → Improving skills → Job satisfaction	0.011	0.146	0.181***

1	2	3	4
Openness → Improving skills → Organisational identification	0.032	0.129**	0.193***
Undirectedness → Respect → Job satisfaction	-0.067	-0.147**	0.409***
Undirectedness → Respect → Organisational commitment	-0.021	-0.088**	0.141***
Undirectedness → Respect → Organisational identification	-0.021	-0.068**	0.141***

** Significance of the direct effect, indirect effect or R^2 at the level of 0.95.
*** Significance of the direct effect, indirect effect or R^2 at the level of 0.99.

Source: own calculations. The results come from Hayes PROCESS for SPSS and SAS.

The key finding from the empirical analysis is that motivation is heavily dependent on the career stage of public servants. Younger public servants are motivated by Person-Job fit and fairness in their workplace as well as pay satisfaction if they see opportunities for development in their organisations. In their literature survey, Sharp *et al.* (2009) cited eleven studies in which development needs addressed is a motivator of software developers. The older group of public servants, who are still of mobile working-age, requires respect from their supervisors in order to respond to motivators. Sharp *et al*. (2009) identified respect as a motivator of software developers in four studies.

Teamwork is the most often cited motivator in agile development (Melo et al., 2012). Teamwork is also an important motivator for both groups of public servants, but it affects them differently. The importance of teamwork is considerably stronger in the group of younger public servants. Satisfaction with the supervisor in this group contributes to job outcomes (job satisfaction, organisational commitment and organisational identification) if members of a team accept their workloads. In terms of characteristics, younger public servants, who are achievement-oriented (i.e. *they believe that concrete results are necessary in order to judge business success* and *they often sacrifice personal comfort in order to take advantage of business opportunities*), attain higher job outcomes when they are satisfied with the teamwork. It should be stressed that employees who *feel depressed when they do not accomplish any meaningful work* do not accept their workloads and their job outcomes are lower. Two personality traits – *Openness* and *Agreeableness* – both of which are important in agile development, influence the effectiveness of *Teamwork* among the group of younger public servants. As for the group of older public servants, *Teamwork* is important for higher organisational identification, with all three job outcomes being attainable by innovative employees in particular. The innovative people in this group also require good management to feel job satisfaction and to identify with their organisation. This result, in general, is con-

sistent with the conclusion of Miao *et al.* (2018) that entrepreneurial leadership is effective at promoting public servants' innovative behaviour.

The findings of the present study suggest that the introduction of agile methods to public administration is likely to decrease the degree of dependence on monetary rewards within organisations for stimulating individual job outcomes. The direct effects of *Pay satisfaction* on job outcomes were found to be insignificant for both groups of public servants. Only indirect effects mediated by the agile motivators of *Development opportunity* and *Respect* were significant. The two personality traits of extraversion and neuroticism had a positive and negative influence on the importance of *Pay satisfaction* in job outcomes, respectively, but only in the group of older public servants.

CONCLUSIONS

This study uses the MOCC model, which was developed to understand motivation in software engineering, to identify the motivators that are key to creating a positive work environment in which public administration employees feel satisfied with their work and feel connected to their organisation. The research identifies the composite of motivators, characteristics and personality traits that affect the behaviour of public servants. The findings help in the management of teams, which can be assembled from existing public servants. Such management should focus on three general motivators: development opportunities, teamwork, and respect. Younger employees must see perspectives for development in their organisations to respond to motivators, while older public servants want respect from their supervisors. Leadership must be focused on guaranteeing high-quality teamwork. Achievement-orientation in younger public servants and innovativeness in older employees, combined with openness and agreeableness, which are two personality traits required in an agile environment, translate into better job outcomes provided that the employees are satisfied with the teamwork.

Managers who work in public administration and are looking to gain insight into their team's behaviour may find the results of this study useful in understanding how to motivate public servants and how to avoid human capital barriers to introducing people-oriented agile methods.

The main limitation of this study concerns the fact that the participants were chosen randomly from different public administration organisations. As a consequence, factors associated with the participants' work environments were not included in the MOCC model. Future research should overcome this limitation by focusing on the local or municipal level of public administration.

Bɪʙʟɪᴏɢʀᴀᴘʜʏ

Acuña, S., Gómez, M., Juristo, N. (2008). Towards understanding the relationship between team climate and software quality – a quasi-experimental study. *Empirical Software Engineering, 13(4)*, 401–434. DOI: 10.1007/s10664-008-9074-8.

Allen, N. J., Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology, 63(1),* 1–18. DOI: 10.1111/j.2044-8325.1990.tb00506.x.

Baumgart, R., Holten, R., Hummel, M. (2015). Personality traits of scrum roles in agile software development teams – a qualitative analysis. *ECIS 2015 Completed Research Papers. Paper, 16*, 1–15. DOI: aisel.aisnet.org/ecis2015_cr/16.

Caliendo, M., Fossen, F., Kritikos, A. S. (2014). Personality characteristics and the decisions to become and stay self-employed. *Small Business Economics, 42*, 787–814. DOI: 10.1007/s11187-013-9514-8.

Canada's Public Policy Forum. (2015). Agile government. Responding to citizens' changing needs. Retrieved from: https://www.pwc.com/si/en/assets/document/agile-government-2015-03 (2015.03.30).

Chuang, A., Shen, Ch-T., Judge, T. A. (2016). Development of a multidimensional instrument of Person-Environment Fit. *Applied Psychology, 65*(1), 66–98. DOI: 10.1111/apps.12036.

Costa, Jr, P. T., McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. *Journal of Personality Assessment, 64*(1), 21–50. DOI: 10.1207/s15327752jpa6401_2.

Couger, D. J., Zawacki, R. A. (1980). *Motivating and managing computer personnel*. New Jersey: John Wiley & Sons.

de O. Melo, C., Santana, C., Kon, F. (2012). Developers motivation in agile teams. 38th Euromicro Conference on Software Engineering and Advanced Applications. DOI: 10.1109/SEAA.2012.45.

Gosling, S. D., Rentfrow, P. J., Swann, W. B. Jr. (2003). A very brief measure of the big five personality domains. *Journal of Research in Personality, 37*, 504–528. DOI: 10.1016/S0092-6566(03)00046-1.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* New York: Guilford Press. DOI: 10.1111/jedm.12050.

Kalenda, M., Hyna, P., Rossi, B. (2018). Scaling agile in large organizations: Practices, challenges, and success factors. *Journal of Software: Evolution and Process, 30*, 1–24. DOI: 10.1002/smr.1954.

Kristof-Brown, A., Ryan, L., Zimmerman, D., Johnson, E. C. (2005). Consequences of individuals' fit at work: a meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology, 58*, 281–342. DOI: 10.1111/j.1744-6570.2005.00672.x.

Miao, Q., Newman, A., Schwarz, G., Cooper, B. (2018). How leadership and public service motivation enhance innovative behavior. *Public Administration Review, 1*(2), 71–80. DOI: 10.1111/puar.12839.

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15,* 625–632. DOI: 10.1007/s10459-010-9222-y.

Perry, J. L., Hondeghem, A., Wise, L. R. (2010). Revising the motivational bases of public service: twenty years of research and an agenda for the future. *Public Administration Review*, *9*(10), 681–690. DOI: 10.1111/j.1540-6210.2010.02196.x.

Robinson, P. B., Stimpson, D. V., Jonathan, C., Huefner, J. C., Hunt, H. K. (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship Theory and Practice*, *15*(4), 13–31. DOI: 10.1177/104225879101500405.

Sharp, H., Baddoo, N., Beecham, S., Hall, T., Robinson, H. (2009). Models of motivation in software engineering. *Information and Software Technology*, *51*(1), 219–233. DOI: 10.1016/j.infsof.2008.05.009.

Thomson, K. W. (2009). Underemployment perceptions, job attitudes, and outcomes: An equity theory perspective. *Academy of Management Proceedings, 1,* 1–6. DOI: 10.5465/AMBPP.2009.44244108.

Young, G. J., Charns, M. P., Heeren, T. C. (2004). Product-line management in professional organizations: An empirical test of competing theoretical perspectives. *Academy of Management Journal, 47*, 723–734. DOI: 10.5465/20159614.

Summary

Based on the knowledge on motivation in software development teams, who have used agile methods for several years, this research determines the relationships between motivators, individuals' characteristics, personality traits and job outcomes in two age groups of public servants in Poland. This study aims to identify motivators that significantly contribute to creating a positive work environment in which public servants feel satisfied with their work and feel connected to their organisation.

The Motivators, Outcomes, Characteristics and Context (MOCC) model, developed by Sharp *et al.* (2009) to investigate motivation in software engineering, is used to understand the complex topic of motivation in public administration. The analysis of the relationships between the motivators and job outcomes, taking into account achievement-orientation and innovativeness, as well as personality traits, is based on mediation models. The source of the data for the model estimations is a questionnaire survey carried out among public administration employees aged 25–45 with higher education.

The findings show that public servants respond best to three motivators, namely development opportunities, respect and teamwork. Younger public servants need a clear development path, while older public servants want respect from their superiors. Achievement-orientation in younger public servants and innovativeness in older employees, combined with openness and agreeableness, translate into better job outcomes provided that the employees are satisfied with the teamwork.

Keywords: motivators, achievement-orientation, innovativeness, personal traits.

Pozytywne środowisko pracy w administracji publicznej

Streszczenie

W oparciu o wiedzę na temat motywacji w zespołach programistów, którzy od kilku lat stosują metody zwinne, niniejsze badanie określa zależności między motywatorami, charakterystykami osób, cechami osobowości i wynikami pracy w odniesieniu do dwóch grup wiekowych urzędników

administracji publicznej w Polsce. Celem badania jest identyfikacja czynników motywujących, które znacząco przyczyniają się do tworzenia pozytywnego środowiska pracy, w którym pracownicy administracji publicznej czują się usatysfakcjonowani swoją pracą i mają poczucie przynależności do swojej organizacji.

Model *Motivators, Outcomes, Characteristics and Context* (MOCC), opracowany przez Sharp i in. (2009) do zbadania motywacji informatyków, służy w niniejszym opracowaniu do zrozumienia złożonego zagadnienia motywacji w administracji publicznej. Analiza związków między motywatorami a efektami pracy, z uwzględnieniem orientacji na osiągnięcia i innowacyjność pracowników, a także cech osobowości, opiera się na modelach mediacyjnych. Źródłem danych do oszacowania modeli jest badanie ankietowe przeprowadzone wśród pracowników administracji publicznej w wieku 25–45 lat mających wykształcenie wyższe.

Wyniki pokazują, że urzędnicy najlepiej reagują na trzy czynniki motywujące, a mianowicie możliwości rozwoju, szacunek i pracę zespołową. Młodsi urzędnicy potrzebują jasnej ścieżki rozwoju, starsi zaś – szacunku ze strony przełożonych. Nastawienie na osiągnięcia u młodszych urzędników i innowacyjność u starszych pracowników w połączeniu z otwartością i ugodowością przekładają się na lepsze wyniki w pracy pod warunkiem, że pracownicy są zadowoleni z pracy zespołowej.

Słowa kluczowe: motywatory, orientacja na osiągnięcia, innowacyjność, cechy osobowe.

JEL: O15, M54.