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Innovative Work Behavior—A Key Factor in Business Performance? The Role of Team Cognitive Diversity and Teamwork Climate in This Relationship

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Abstract: The aim of our paper is to examine whether the support of innovative work behavior by management is positively related to business performance and at the same time, whether this relationship is mediated by the teamwork climate and cognitive diversity of teams. Cognitive diversity is defined as differences in knowledge and perspective, which arise from professional diversity and account for its positive effects. A teamwork climate represents staff perceptions of collaboration between personnel. Business performance is defined by the level of sales. Our sample consisted of 211 managers of companies operating in Slovakia, and data collection took place in the form of a questionnaire. The main tool for examining the mechanism of operation of the investigated relationships is mediation using regression analysis and the Sobel test to determine the significance of the indirect effect of mediation variables. The findings point to a significant direct relationship between the innovative work behavior of company employees and business performance. The intensity of this relationship can be partly influenced by promoting cognitive diversity, especially in the area of knowledge and ways of thinking. The significant role of a teamwork climate was not demonstrated in the examined model.

Keywords: management; innovative work behavior; business performance; cognitive diversity; teamwork climate



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1. Introduction and Theoretical Background

The context of the study stems from the fact that innovation is currently considered one of the basic preconditions for business competitiveness. Several studies have shown a positive relationship between the performance of companies and their innovation potential. Organizational performance is multidimensional, connected to the goals and objectives of organizations, and can be defined as an organization's ability to use its resources efficiently and create outputs that are consistent with its objectives and relevant for its users (Peterson et al. 2003). Organizations that continually innovate have been found to achieve a higher level of organizational performance (Ogbonnaya and Valizade 2016). According to Cainelli et al. (2004), innovating firms tend to have higher levels of productivity and economic growth compared to zero-innovating companies. Thanks to innovative performance, companies are able to gain and maintain a competitive advantage (Martins and Terblanche 2003; Lin et al. 2018). Therefore, much of the current research focuses on the study of the innovative activity of companies and factors that could support it. Therefore, we consider it equally important to examine the issue of innovative behavior in the context of the diversity of knowledge and working conditions that companies create for their employees in more depth.

Innovative business behavior is directly related to the ability of employees to create and implement new ideas and solutions (Janssen 2000), simplify processes, and improve collaboration (Messmann and Mulder 2012). As it is obvious that employees are an essential

part of the innovation process of companies, supporting their innovative behavior plays a key role in this regard. According to [Thurlings et al. \(2015\)](#), innovative work behavior (IWB) is crucial for business sustainability.

Studies on innovation management show the positive effect of cognitive diversity (CD) in the context of the teams' abilities to create new innovative solutions ([Mitchell et al. 2017](#)). The positive impact of CD on innovative behavior lies in the breadth of expertise found in inter-functional groups, enabling problems to be identified and more innovative solutions leading to process improvements to be implemented ([Mitchell et al. 2017](#)). According to [Chow \(2018\)](#), diverse groups have a broader base of experience that can be used to generate innovative problem-solving ideas. Thus, if companies purposefully support CD, they can positively influence their innovation potential.

Several studies present findings that a teamwork climate (TWC) also contributes to increasing employee performance ([Bogan and Dedeoglu 2017](#)) as well as the company as a whole ([Ali et al. 2018](#)). This positively affects the perceived sense of security of employees ([Weng et al. 2017](#); [Lee et al. 2015](#)) and reduces the risk of their burnout ([Bowers et al. 2011](#)). The relationship between TWC and the rate of innovation in enterprises is still under investigation ([Fay et al. 2014](#)). The role of knowledge sharing and learning is emphasized as a contribution to innovation processes ([Basadur and Gelade 2006](#); [Maccurtain et al. 2009](#)), which make it easier for team members to share knowledge and insights. Autonomy within teams leads to responsibility and increases internal motivation, which, in turn, is associated with the generation and implementation of new ideas ([Urbach et al. 2010](#)). Based on these findings, we assume that TWC can create a suitable environment to support the innovative behavior of employees.

In view of the findings described above, pointing to the importance of individual partial factors in the context of IWB and its impact on business performance (BP), we consider it important to examine their interrelationships. To the best of our knowledge, the interaction of these factors has not yet been investigated.

As teamwork, properly supported by CD, currently plays an important role in business management, we see a research gap here to answer the extent to which these factors can support the impact of innovative employee behavior on BP. Therefore, the purpose of the study is to test the research proposition of a positive link between management's support for IWB and BP, which is mediated by team CD and TWC.

The aim of the study is to further investigate how CD in conjunction with TWC enters into the relationship between IWB and BP. We assume that the diversity of knowledge and experience available to employees involved in business innovation processes, if applied in a teamwork environment, can affect the overall result and increase the innovative activity of the company.

2. Literature Review and Development of Research Propositions

2.1. Innovative Work Behavior

[Janssen \(2000\)](#) defines IWB as: "the intentional creation, introduction and application of new ideas within a work role, group or organization, in order to benefit role performance, the group, or the organization (p. 288)". [Yuan and Woodman \(2010\)](#) define it as: "employee's intentional introduction or application of new ideas, products, processes, and procedures" (p. 324). IWB is basically thinking out of the box with alternative methods ([Ma Prieto and Pérez-Santana 2014](#)). In the case of services, [Stock \(2014\)](#) defines IWB as the extent to which front line employees create new ways and techniques to address encountered and potential problems and turn these into activities when employees interact with customers.

IWB consists of (a) individual behaviors, such as exploring, generating, championing and implementing creative ideas ([De Jong and Den Hartog 2007](#)); and (b) three interrelated tasks, namely the creation, promotion and implementation of ideas ([Janssen 2000](#)). It can take various forms, such as simplifying processes, using new tools and materials, introducing new routines, improving cooperation, or creating new offerings ([Messmann and](#)

Mulder 2012). Three distinct components or stages of IWB are the generation, promotion and realization of ideas (Kanter 1988; Scott and Bruce 1994). Employees do not have to be part of the whole process, but can be involved in a combination of stages, because innovation is characterized by discounting activities (Schroeder et al. 1989). Especially in the implementation stage, IWB may involve a fair amount of risk taking, as it is necessary to form coalitions of supporters of ideas (Chen and Aryee 2007).

Unfortunately, knowledge about IWB still lacks consistency and is fragmented (Bos-Nehles et al. 2017), even though it helps to gain (Martins and Terblanche 2003) and maintain (Lin et al. 2018) a competitive advantage, which even applies to knowledge-intensive industries (Anderson et al. 2014; Foss and Laursen 2014; Montani et al. 2014; Scott and Bruce 1994). IWB is pivotal to organizational sustainability (Thurlings et al. 2015). Luu (2019) also draws attention to the problem that the innovative behavior of employees has not received sufficient attention compared to team or organizational innovation. On the other hand, interest in IWB and innovation research is growing as the world globalizes, the economic environment changes, and the demands on competing increase (Chen 2011; Kim and Lee 2013; Akram et al. 2016; Bani-Melhem et al. 2018).

According to the study of Javed et al. (2017), antecedents of IWB at organization, work group, and individual levels are leadership, work group, work climate, individual differences, job characteristics and demands, personality, and values, which are significantly associated with IWB. However, the authors emphasize that leadership plays a prominent role. The positive effects of IWB are mutual for both the organization and the employees themselves in the form of, for example, better working conditions, higher job satisfaction or increased well-being (Lukes and Stephan 2017). Among the organizational benefits and psychological benefits for employees, Usmanova et al. (2020) include the harmonization of needs for jobs and resources of employees, increased job satisfaction and communication efficiency.

2.2. Business Performance

BP is a reflection of organizational success, which means that the better the BP, the more successful the business can be considered (Sumiati 2020). According to Klopota et al. (2018), the BP of a company is affected by good communication and a good personnel policy. As BP is a broad and common concept and a complex construct, we will deal with it in the following text only in connection with innovations and small and medium-sized enterprises, although Guzman et al. (2018) argue that relatively few analyses and discussions are currently published on innovation and BP at this business size. On the other hand, Expósito and Sanchis-Llopis (2019) state that extensive literature has addressed this in recent decades. However, the authors point out that, due to the resource intensity of innovation, and thus a significant limitation of the innovative capacity of small and medium-sized enterprises (Sok et al. 2016), the findings of some studies are mixed and inconclusive. Although empirical studies do not provide conclusive results on the interrelationships between different dimensions of innovation and BP (Camisón and Villar-López 2014), there is a consensus on the fact that both innovation (Prajogo 2016) and BP (Mensah et al. 2012) are of a multi-dimensional nature (Kafetzopoulos et al. 2019). The basic types of performance measures are those that relate to results and those that focus on the determinants of results (Neely et al. 2000; Kafetzopoulos et al. 2019). Profit, sales growth and employment growth (Zahra 1991) are suitable indicators for studying the relationship between innovation and BP, although Löfsten (2014) argues that the most important indicator for a company's survival is long-term profit.

Expósito and Sanchis-Llopis (2019) found that innovation does not have to be technological to have significant and positive effects not only on the financial (sales increase and reduction of production costs in subsequent years) but also on the operational (productive capacity and product/service quality) dimensions of BP in the context of small and medium-sized enterprises. Kraus et al. (2012) argue that there are significant differences between family and non-family businesses in terms of innovation and BP. Brines et al.

(2013) confirmed this hypothesis in terms of small and medium-sized enterprises. Among others, the moderating factors of the innovation–performance relationships are the national, regional, cultural or sectoral characteristics or governance environmental factors (Saunila 2016; Yang 2017; Exposito and Sanchis-Llopis 2018).

Based on those findings, we declare our first research proposition:

Proposition 1 (RP1). *Innovative work behavior positively influences business performance.*

2.3. Cognitive Diversity of Teams

The theory of CD provides insights into team diversity variables and their effects on performance outcomes (Wang et al. 2016), as it is believed that diverse groups have a broader and richer experience base for stimulating novel and innovative ideas to solve problems (Chow 2018). There are observable and unobservable types of diversity. The former includes, age, gender or race, while the latter include beliefs, knowledge, or ways of thinking (Harrison et al. 1998; Mannix and Neale 2005; Aggarwal et al. 2019). Harrison et al. (1998) call these categories surface-level diversity and deep-level diversity; CD belongs to the second category.

CD is defined as the differences in knowledge and perspective, which arise from professional diversity and account for its positive effects (Kilduff et al. 2000), while cognitive-style diversity is defined as differences in processing and organizing of information by members of teams (Aggarwal and Woolley 2019). Mello and Rentsch (2015) categorize CD variables into four types: trait-like, developmental, acquired, and exposed. CD might be a competitive advantage for organizations due to the stimulation of consideration of non-obvious choices in task groups by minority views (Cox and Blake 1991) and it can improve executive judgment, as it has an asymmetric effect on the level of illusion of control bias among decision makers (Meissner and Wulf 2017). However, it is also important to point out the negative outcomes for the organization (Milliken and Martins 1996), as diversity can lead from a higher level of disagreement to conflict within teams (Van Knippenberg and Schippers 2007; Nowak 2020). CD is directly task-relevant/job-related—especially for knowledge-based or decision-making tasks—is a natural characteristic of any team, and exists in many forms (Martins et al. 2013). According to Van der Vegt et al. (2006), there are two types of task-related CD: expertise diversity and expertness diversity. Interestingly, Lantz and Brav (2007) found that CD does not always have a positive effect on team innovation, because perceived diversity leads to the creation of sub-teams and inter-team biases (van Knippenberg 2017). It may also slow down decision making due to difficulties in reaching consensus and diminish organizational responsiveness to environmental changes (Marcel et al. 2011).

A CD measurement tool was introduced by Van der Vegt and Janssen (2003), which was subsequently used in several empirical studies (e.g., Shin et al. 2012), capturing how group members differ in their ways of thinking, knowledge and skills, world views and beliefs in what is right and wrong. The extensive CD research base suggests that it can increase creativity, especially if transformational leadership and team perspective-taking are high (Kim et al. 2020; Hoever et al. 2012; Shin et al. 2012). Pieterse et al. (2011) emphasize the importance of CD in the context of increasing additional information in uncertain times, such as crises.

Accordingly, we decided to propose the second research proposition:

Proposition 2 (RP2). *Cognitive diversity is positively associated with innovative work behavior.*

2.4. Teamwork Climate

TWC is perceived as an important predictor of safety outcomes (Zaheer et al. 2018). It reflects staff perceptions of collaboration between personnel (Sexton et al. 2006; Weng et al. 2017). Salas et al. (2005) found that TWC is facilitated by communication and mutual trust. It is a perceptual measure that is helpful in measuring the teamwork culture

that is otherwise not easily measurable (Zohar and Hofmann 2012; Ginsburg and Bain 2017). In addition to the safety climate, working conditions, perception of management, stress recognition and job satisfaction, TWC is one of the six domains of the Safety Attitudes Questionnaire; it has seven questions with five possible answers on the Likert scale (Bleakley et al. 2012).

As a tool, it contributes to increasing employee performance (Bogan and Dedeoglu 2017) and to increasing BP (Ali et al. 2018). Knowledge and studies on the impact of TWC on innovation rates are still evolving (Fay et al. 2014) and are often associated with the innovation of the company as a whole (Jiang et al. 2012).

If staff members perceive TWC positively, the result may be a reduction in staff burnout (Bowers et al. 2011) and other positive effects may occur (Zaheer et al. 2018). If managers want to improve the safety climate, they need to start with TWC, as it is a mediator in this relationship and deserves due attention (Weng et al. 2017; Lee et al. 2015).

Based on the arguments presented above, we propose the third and fourth research propositions:

Proposition 3 (RP3). *Cognitive diversity is positively associated with teamwork climate.*

Proposition 4 (RP4). *Teamwork climate is positively associated with business performance.*

3. Materials and Methods

3.1. Sample and Data Collection Methods

For data collection, we used a questionnaire survey conducted in the period of August and September 2020. The questionnaires were sent electronically to managers of companies operating in the Slovak Republic. The questionnaire contained an introductory text explaining the meaning and purpose of the study and a note on the voluntary participation in the research based on anonymity. By sending the completed questionnaire, the respondent agreed to its processing. In the next part of the questionnaire, managers evaluated the individual variables on the selected scale. We selected individual companies in the sample by random selection from the database of verified INFOMA companies operating in the Slovak Republic. We sent 1650 questionnaires; the rate of return was 245 (which means 14.8%). After checking the completeness of the data, 211 questionnaires were included for further processing. The research sample, thus, consisted of 211 managers; the structure of the sample is shown in Table 1.

Table 1. Structure of the sample.

	Business Focus	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	other	9	4.3	4.3	4.3
	sale	38	18.0	18.0	22.3
	services	132	62.6	62.6	84.8
	production	32	15.2	15.2	100.0
	Total	211	100.0	100.0	
Business Performance					
Valid *	SMEs with revenue level of 100% or revenue increase	113	53.6	53.6	53.6
	SMEs with revenue level of 51–99%	49	23.2	23.2	76.8
	SMEs that closed business, or their revenues fell by more than 50%	49	23.2	23.2	100.0
	Total	211	100.0	100.0	
	Length of Respondent's Practice as a Manager (in years)	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 year	2	0.9	0.9	0.9
	from 1 to 5 years	89	42.2	42.2	43.1
	from 6 to 10 years	54	25.6	25.6	68.7
	more than 10 years	66	31.3	31.3	100.0
	Total	211	100.0	100.0	

Table 1. *cont.*

Business Size (Number of Employees)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	small	46	21.8	21.8	21.8
	medium-sized	123	58.3	58.3	80.1
	large	42	19.9	19.9	100.0
	Total	211	100.0	100.0	
Gender of the Respondent		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	55	26.1	26.1	26.1
	male	156	73.9	73.9	100.0
	Total	211	100.0	100.0	
Highest Achieved Education of the Respondent		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary education	71	33.6	33.6	33.6
	Higher education	135	64.0	64.0	97.6
	MBA, PhD.	5	2.4	2.4	100.0
	Total	211	100.0	100.0	
Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
Age of respondents	211	35	65	45.91	8.234
Valid N (list wise)	211				

Note: * reference period January—July 2020 compared to January—July 2019.

3.2. Variable Measures

Mediation was used to test the relationships between the variables IWB, CD, TWC, and BP, which takes into account the mediating role of CD and TWC in the relationship between IWB and BP. Through mediation, we can examine the interrelationships and the mechanisms by which the relationships between individual variables operate.

IWB is the independent, explanatory variable. This variable was created based on managers' responses to ten statements using a 5-point Likert-type scale ranging from 1 (almost never) to 5 (almost always). The ten-item scale for IWB was adopted from the study of [De Jong and Den Hartog \(2010\)](#). The statements are shown in Table 2. After the reliability analysis, the Cronbach's alpha of the IWB was 0.977 (10 items). Ten IWB items represent opportunity exploration (2 items), idea generation (3 items), idea championing (2 items) and idea implementation (3 items).

The second variable, understood to be a consequence, is the dependent variable BP, which was measured through a year-on-year comparison of the performance of companies in terms of their revenues. Managers determined the average level of their sales for the months of January to July of 2020 compared to the same period of the previous year on the following scale: 0 = decrease in sales in this period by more than 50%; 1 = decrease in sales in this period in the range of 51 to 99%; and 2 = the average level of sales remained the same or increased during this period. In accordance with [Zahra \(1991\)](#), we assume that sales growth is a suitable indicator for examining the relationship between innovation and BP.

Based on the literature review, CD and TWC were identified as mediation variables. The CD variable is operationalized as a score given by managers to selected items based on the tool for measuring CD presented by [Van der Vegt and Janssen \(2003\)](#), which was subsequently used in several empirical studies (e.g., [Shin et al. 2012](#)). It captures how the members of the group differ in their ways of thinking, knowledge and abilities, how they see the world and their beliefs in what is right. After the reliability analysis, the Cronbach's alpha of the CD was 0.942 (4 items).

The TWC variable is operationalized as a score created based on managers' statements to items listed in Table 2. Our TWC data were abstracted from the Safety Attitudes Questionnaire, a validated tool that assesses the safety culture across six organizational domains—TWC, job satisfaction, perceptions of management, safety climate, working conditions, and stress recognition ([Sexton et al. 2006](#)). In total, the TWC intermediate

variable contains six items that are scaled using 5-point Likert-type scales (1 = completely disagree, 5 = strongly agree). After the reliability analysis, the Cronbach's alpha of TWC was 0.950 (six items).

We confirmed the defined structure of factors by confirmatory factor analysis. We used a robust method of maximum likelihood: CFI 0.800, TLI 0.792, RMSEA 0.075 and SRMR 0.065. The first two are slightly lower (ideally greater than 0.9). However, the other two are satisfactory because they are less than 0.08.

Table 2. Variable items.

Innovative Work Behavior (1—Never, 5—Always)	Teamwork Climate: Perceived Quality of Cooperation between Staff (1—Completely Disagree, 5—Totally Agree)
<ol style="list-style-type: none"> 1. How often do your subordinates pay attention to activities that are not part of their daily work? 2. How often do your subordinates care about how things can be improved? 3. How often do your subordinates look for new working methods, techniques or tools? 4. How often do your subordinates generate original solutions to problems? 5. How often do your subordinates discover new approaches to performing tasks? 6. How often do your subordinates inspire innovation in your team? 7. How often do your subordinates try to persuade colleagues to support an innovative idea? 8. How often do your subordinates introduce innovative ideas into their work processes? 9. How often do your subordinates contribute to the implementation of new things? 10. How often do your subordinates make efforts to develop new things? 	<ol style="list-style-type: none"> 1. All team members can ask questions if there is something they do not understand. 2. Staff members do receive the support they require from other staff in the performance of their duties. 3. The contribution of employees is positively perceived in our company. 4. Disagreements in the team are resolved adequately, it is not important who is right, but what is best for the task. 5. Team members work together as a well-coordinated team regardless of their functional positions. 6. In our company, it is not difficult to express myself critically if I perceive problems in performing performance. <hr/> <p style="text-align: center;">Cognitive Diversity (1—Strongly Disagree, 5—Strongly Agree)</p> <p>Teams in our company are created so that the members are different in:</p> <ol style="list-style-type: none"> (a) Way of thinking. (b) Their knowledge and skills. (c) The way they see the world. (d) The belief in what is right or what is wrong.

Given their theoretical relevance, as control variables, the manager's practice, gender, age, and education and the size of the company were selected. For example, [Shin et al. \(2012\)](#) or [Kim et al. \(2020\)](#) state that age and gender can influence individual creativity. Similarly, [Exposito and Sanchis-Llopis \(2018\)](#) consider, inter alia, age and gender to be an important control variable when examining the links between innovation and business performance, and [Shanker et al. \(2017\)](#), when examining the links between climate for innovation and organizational performance. [Choi and Chang \(2009\)](#) state that innovative behavior is influenced not only by the job category but also by age and gender.

Figure 1 shows the model used to test the relationships between IWB, BP, CD and TWC. The model is based on the mediating role of CD and TWC in the relationship between IWB and BP.

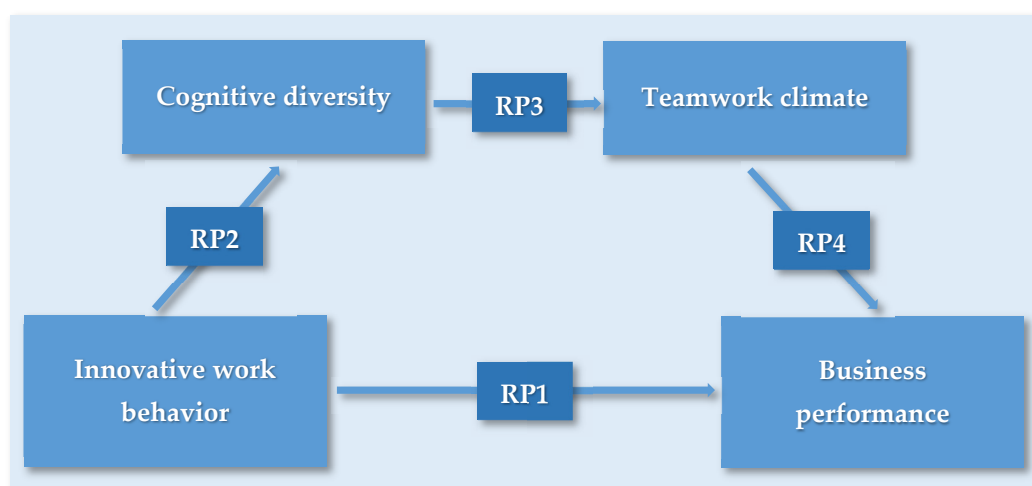


Figure 1. The mediation model and the four tested research propositions.

3.3. Data Analysis

All data were analyzed using the SPSS 24.0 software package. We used Cronbach's Alpha coefficient to assess the internal consistency of the scale's reliability. We conducted a hierarchical regression analysis to test the mediating effect. Additionally, we followed [Baron and Kenny's \(1986\)](#) procedure to test the stated mediating effect. The mediation model can be described as a mechanism or process that seeks to explain, name, or describe the identified relationship between an independent and a dependent variable through the inclusion of a third explanatory variable. The mediator variable is used to explain the relationship between independent and dependent variables, where the independent variable is the cause of the mediator and the latter then acts on the dependent variable. For this reason, mediating an effect is also referred to as an indirect effect. The Sobel test was used to test the mediator effect. A series of regression analyses were used to identify the proposed research propositions, and the ANOVA variance analysis to analyze multiple dependencies. We worked with a 5% significance level. A confirmatory factor analysis was used to verify the suitability of the selected factor structure.

4. Results

4.1. Descriptive Analysis and Identification of Connections

Relationships between individual variables were determined using a correlation matrix, which also includes control variables (Table 3). The table also provides brief descriptive statistics.

Based on the correlation matrix, we can state that there are significant positive correlations between all examined variables, which indicates the use of a mediation model. However, we also see a significant relationship between BP and the size of the company, which is positive (larger companies performed better); between CD and age where the dependence is negative (lower age means a stronger diversity orientation of the manager and his inclination to form diversity teams); and between TWC and the size of the company where the dependence is positive (a smaller company means higher TWC values). At the same time, descriptive statistics point to individual descriptive values of the file. The highest average rating was given to IWB (mean = 3.58). IWB consists of opportunity exploration, idea generation, idea championing and idea implementation. The lowest rating was given to items within idea championing, and the highest rating to items within opportunity exploration. TWC was rated 3.49 with the highest rating of "The contribution of employees is positively perceived in our company" and with the lowest rating of "Staff members do receive the support they require from other staff in the performance of their duties". The CD variable was rated lowest (mean = 3.20). Low average CD scores were

influenced by “Teams in our company are created so that the members are different in the belief in what is right or what is wrong”.

Table 3. Descriptive statistics of variables and correlation matrix.

Variable	N	Mean	SD	BP	IWB	CD	TWC	Practice	Gender	Size	Education
BP	211	1.30	0.82	-							
IWB	211	3.58	1.17	0.908 **	-						
CD	211	3.20	1.13	0.761 **	0.737 **	-					
TWC	211	3.49	1.25	0.886 **	0.954 **	0.753 **	-				
practice	211	2.87	0.87	−0.058	−0.043	−0.083	−0.023	-			
gender	211	1.74	0.44	0.004	−0.012	0.001	−0.020	−0.025	-		
size	211	1.98	0.65	0.136 *	0.113	0.122	−0.146 *	0.114	0.167 *	-	
education	211	1.68	0.51	0.045	0.059	−0.025	0.060	0.442 **	−0.173 *	0.312 **	-
age	211	45.9	8.234	−0.115	−0.116	−0.148 *	−0.075	0.663 **	−0.261 **	0.116	0.508 **

Note: Experience as a manager (1 = less than a year, 2 = 1 to 5 years, 3 = 6 to 10 years, 4 = over 10 years), gender (1 = female, 2 = male), company size (1 = small enterprise, 2 = medium-sized enterprise, 3 = large enterprise), education of the manager (1 = secondary, 2 = university, 3 = PhD. or MBA). ** Correlation is significant at the 0.05 level (2-tailed). * Correlation is significant at the 0.01 level (2-tailed).

4.2. Innovative Work Behavior as Predictor of Business Performance

Using mediation, we wanted to test whether a third variable (CD and TWC) explains the relationship between the predictor and outcome in the form of an indirect effect. In mediation, we proceeded from the established main research proposition, which applies when the indirect effect is significant using the Sobel test. We added control variables of practice, gender, education, age and size of the company to the modeling of the overall effect. As an intermediate step, the analysis of variance ANOVA was used in the analysis of multiple dependence, where we found that of the mentioned control variables, only the variable is significant.

Subsequently, we proceeded in three steps (A, B, C), in which we verified partial research propositions by calculating three regressions. The steps examine the following relationships, expressed in Models 1 through 4, shown in summary in Table 2:

- (C) There is a relationship between BP (variable Y) and IWB (variable X).
- (A) There is a relationship between the mediation variables CD (variable M1) and TWC (variable M2) and IWB (variable X).
- (B) There is a relationship between BP (variable Y) and the mediation variables CD (variable M1), TWC (variable M2), in which the IWB (variable X) does not participate.

The value of C represents the total effect. The product $A \times B$ is a mediated (indirect) effect of X on Y through M (due to the existence of two mediation variables, the mediated effect is expressed in the form $A1 \times B1 + A2 \times B2 + A1 \times B2 \times D21$, where member D21 is the path from M1 to M2). The difference $C' = C - A \times B$ indirect effect is the pure (direct) effect of X on Y without the participation of M. The research proposition applies when the indirect effect is significant. Using the Sobel test ($A \times B = 0.099$, $z = 2.862$, Sig. = 0.004), we found that the overall indirect effect is significant in the positive direction.

The results in Table 4 clearly indicate that the overall effect (C) is significant, and the dependence is positive (model 1, coef. = 0.640, Sig. = 0.000), which indicates the existence of a relationship between BP and IWB. Step A is significant, so there is a relationship between the mediation variable CD and IWB (model 2, coef. = 0.793, Sig. = 0.000); at the same time, due to the implementation of serial mediation, there is a relationship between both mediation variables (D21)—model 3, coef. = 0.100, Sig. = 0.000. Furthermore, there is a relationship between the IWB and the mediation variable TWC (model 3, coef. = 0.848, Sig. = 0.000). The direct effect (C'), i.e., the effect without the participation of mediating variables, is significant (model 4, coef. = 0.462, Sig. = 0.000). Step B, expressing the relationship between BP (dependent variable Y) and mediation variables (M1 and M2) in the form of CD and TWC, in which the independent variable X (IWB) does not participate, is significant in part only for the variable CD (model 4, coef. = 0.125, Sig. = 0.000). For the

TWC variable, coef. = 0.085, Sig. > 0.005 and means an insignificant dependence. The total indirect effect of $A \times B$ is very low at 0.099, but it is significant.

Table 4. Regression results for main effects and mediation analysis.

Variable	Model 0		Model 1		Model 2		Model 3		Model 4	
Dependent	BP		BP		CD		TWC		BP	
	C	SE	C	SE	C	SE	C	SE	C	SE
Constant	−0.979		−0.963	0.107	0.808	0.261	−0.023	0.106	−1.068	0.104
Main effects										
IWB	0.682 **	0.023	0.640 **	0.021	0.793 **	0.050	0.848 **	0.029	0.462 **	0.065
CD							0.100 **	0.027	0.125 **	0.028
TWC									0.085	0.068
Controls										
Education	0.049 **	0.059	0.039 **	0.051	0.029 **	0.049	0.039 **	0.051	0.007	0.045
Age	−0.002	0.004								
Practice	−0.020	0.039								
Gender	0.019	0.061								
Size	0.003	0.041								
R2adj.	0.813		0.812		0.952		0.538		0.896	

Note: Experience as a manager (1 = less than a year, 2 = 1 to 5 years, 3 = 6 to 10 years, 4 = over 10 years), gender (1 = female, 2 = male), company size (1 = small enterprise, 2 = medium-sized enterprise, 3 = large enterprise), education of the manager (1 = secondary, 2 = university, 3 = PhD. or MBA). R2.adj—adjusted coefficient of determination, C = unstandardized coefficient B, SE—standard error of the estimate, (**) statistically significant result at the level of significance 5%, i.e., $p < 0.05$.

The obtained results show that the BP of the examined companies is influenced mainly by the independent variable IWB in the form of a direct effect, acting in a positive direction. Its operation is only, to a very small extent, influenced by mediators in the form of CD and TWC. When expressing the sizes of the individual effects as a percentage, based on the determined coefficients, we state that the size of the direct effect is 72% and the size of the indirect effect is 28%. The relationship between IWB and BP is largely mediated by the direct action of these two variables. The variables CD and TWC are also involved in the relationship to some extent. Of their 28% share, 55% falls on CD, 40% on TWC (but this effect is not significant) and 5% on the path between them.

As the indirect effect is higher than 20% and the direct effect is lower than 80%, this is mediation, specifically, incomplete serial mediation.

5. Discussion

The results of the presented research study, motivated by the need for a deeper examination of the determinants of innovative activity in companies, can be considered beneficial for academics and professionals. Our analyses and data suggest positive CD-mediated associations between IWB and BP.

This study builds on previous research and addresses this shortcoming in the literature. We agree with [Luu's \(2019\)](#) statement that the innovative behavior of employees themselves was not given sufficient attention compared to team or organizational innovations. No previous research in the conditions of Slovak companies has been conducted exploring relations and the mechanism of cooperation of IWB, CD and TWC in the context of their performance.

As organizational innovation is currently one of the most important sources of competitive advantage for companies ([Honyenuga et al. 2019](#); [Camisón and Villar-López 2014](#); [Meyer and Subramanian 2014](#); [Saunila 2016](#); [Hamel 2009](#)), IWB is crucial for organizational sustainability ([Lin et al. 2018](#); [Thurlings et al. 2015](#); [Foss and Laursen 2014](#)).

The research propositions of the mediation effect of CD and TWC in the relationship between IWB and BP have been confirmed. The main finding of our study is the significant impact of IWB on BP. This finding is consistent with the research of [Honyenuga et al. \(2019\)](#) and [Shanker et al. \(2017\)](#), which identified IWB as a significant variable in support of organizational performance.

However, mainly a strong direct relationship between IWB and BP was identified. This suggests that the very innovative behavior of employees, supported by the company's management, has a positive impact on the company's result. IWB includes employee activity at all stages, from the generation of ideas, through their promotion to implementation. Businesses are most successful in supporting employees in finding and creating new ideas, but support for their promotion is lower. This opens up space to increase the effect of the IWB. The results of the study also point to the fact that the link between IWB and BP companies, mediated by CD, was more significant among managers with higher education. We therefore assume that the training and expansion of managerial competencies may be the factor that allows managers to be more qualified to support the IWB of their employees. [Leitão et al. \(2019\)](#) indicate that for workers, feeling their supervisors' support through listening to their concerns and by sensing that they take them on board, being integrated in a good work environment, and feeling respected both as professionals and as people positively influence their feeling of contributing to organizational performance.

The indirect effect in the relationship between IWB and BP was significant only for CD but was lower than the direct effect. The CD transfers a partially positive effect between IWB and BP. Thus, the indirect effect also proved to be significant, but its impact on the BP is lower (only 28%). This means that the intensity of the direct effect can be enhanced by involving CD. These findings are consistent with the findings of [Wang et al. \(2016\)](#) and [Chow \(2018\)](#), who point to a broader and richer base of experiences in diverse groups that are useful in generating innovative ideas and their positive impact on performance outcomes. Of the individual attributes of the CD, the most significant influence is the orientation of the diversity of teams in terms of the way of thinking and knowledge and skills, which supports the findings of [Martins et al. \(2013\)](#). On the contrary, the diversity of teams, in terms of their worldviews and beliefs in what is right and what is wrong, has proven to be less important. Efforts to increase CD in the corporate environment, therefore, seem to be an appropriate solution, especially in times of crisis when the need for additional information and new solutions is growing ([Pieterse et al. 2011](#)). In addition, [Sauer et al. \(2006\)](#) point to the fact that an important factor determining the effects of CD is the complexity of the solved tasks. Complex tasks benefit from cognitive diversity, while simpler tasks remain unaffected. The results of our study also show that younger managers are able to reap the benefits of CD to a greater extent.

This means that if management unequivocally declares and implements the policy of opportunity exploration, idea generation, idea championing and idea implementation, less influence from CD and TWC mediators is sufficient to transmit the effect of the IWB variable on BP. While the positive effect of CD on team performance has been confirmed by several studies ([Liao and Long 2016](#); [Kilduff et al. 2000](#)), the results of our study show that TWC, as a serial mediator, does not transmit a significant effect. This is an interesting and partly surprising finding, as TWC is highlighted by many authors as an important support tool within various innovative management tools. [Fay et al. \(2014\)](#) state that the wider use of teamwork leads to a higher level of innovation. [Jiang et al. \(2012\)](#) also highlight the role of teamwork in organizational innovation. Factors that have been cited as supportive in this regard are knowledge sharing, mutual learning ([Basadur and Gelade 2006](#); [Maccurtain et al. 2009](#)) and autonomy, leading to responsibility and motivation ([Urbach et al. 2010](#)). In our study, a simple correlation revealed significant positive partial relationships between TWC and BP and also between TWC and IWB. Thus, their direct effect on the variables examined is clear, which is consistent with the above statements, but has not been shown to be significant in mediation. From a theoretical point of view, [Martins et al. \(2013\)](#) also point out the complexity of the effects of diversity in interaction with team dynamics. The

authors found that the impact of TWC and CD on the outcome is influenced by the sense of psychological security of team members. If the perception of psychological safety is low over time, the effect of CD will not be fully manifested, and the diversity of knowledge will not positively affect the overall performance of the team. [Olson et al. \(2007\)](#) also point to the risk of CD being associated with conflicting roles in teams.

The results of this study build on previous research works and expand our understanding of how IWB can positively affect BP by engaging CD. Based on the above, we can conclude that there is a strong direct relationship between IWB of employees and the performance of a company. The indirect effect was significant only for CD but was lower than the direct effect. Thus, CD transfers a partially positive effect between IWB and BP. The importance of TWC has not been shown to be significant in this context. This result indicates the strong position of an effectively functioning IWB management setup and is a signal for business management to focus attention in this direction.

As already mentioned, the support of IWB of employees by the management brings results for the company in the form of BP, competitiveness and sustainability, but the positive effects of IWB are two-way. In addition to the company, the employees themselves also benefit from them; for example, in the form of better working conditions ([Lukes and Stephan 2017](#)), higher job satisfaction and increased well-being ([Usmanova et al. 2020](#)). Therefore, focusing on its support appears to be well-invested energy.

6. Practical and Theoretical Implications and Limitations

The results of our study complement the hitherto fragmented and inconsistent findings on IWB ([Bos-Nehles et al. 2017](#)) and confirm the findings of previously conducted studies on the importance of the IWB as a key variable influencing BP ([Honyenuga et al. 2019](#); [Saunila 2016](#)). Our results complement the findings on the impact of CD on innovation processes, confirmed by studies by [Thurlings et al. \(2015\)](#) and [Luu \(2019\)](#), especially in terms of the diversity of knowledge and experience of employees, from which companies can significantly benefit in this area. Valuing diversity is less important in terms of IWB. At the same time, the results draw attention to the fact that TWC may complicate the process in the case of the innovation activity of employees and, thus, not have the expected effects, which contradicts several findings confirming the contribution of teamwork to supporting innovation ([Jiang et al. 2012](#); [Urbach et al. 2010](#)).

The results also strongly point to some benefits for managers and practitioners. Our findings show that it is important for companies to support their own employees in the creation and implementation of new solutions, because it has a proven direct positive effect on BP. Attention needs to be focused not only on supporting the generation of new ideas and solutions, but especially on their implementation, as significant shortcomings have emerged in this area. The effect of IWB can be intensified by involving CD, especially in terms of knowledge and way of thinking. At the same time, both parties benefit from the support of the IWB: companies, in the form of better results and competitiveness, and employees, through greater job satisfaction.

Despite the usefulness of the findings, this study has some theoretical and practical limitations. We carried out our research in Slovak companies. Although the Slovak Republic is a relatively small state in Central and Eastern Europe, it is very similar in development and mentality to the surrounding states, such as the Czech Republic, Hungary, Poland and other states of the former Warsaw bloc. Due to this fact, we do not consider the results to be limited to our territory, but applicable to a wider area. Given the nature of the relationships examined and their solutions in many studies, we can assume that our findings may have universal validity. In addition, a limitation of this study was the use of a cross-sectional survey design. As a result, cause and effect cannot be established. Finally, all data were collected using self-administered surveys. Response biases may have skewed the answers. In consideration, generalizability may be limited.

The limitations of our research could indicate the direction of further research. While our exploratory model proved very useful and conclusive, future research could consider

including other variables in the framework that would help to better understand the relationships examined. This could be, for example, examining the impact of corporate culture and/or leadership style. By conducting research in companies operating in one of the surrounding countries, we would be able to confirm our assumption that the results are applicable to the Central European area of the countries of the former Eastern bloc.

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