



# ADHD Symptoms of CEOs and Business Model Innovation in the SME Context

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# Research Motivation

**Business model innovations** (BMIs) in modern literature are considered a **“lifeline” for small and medium-sized enterprises** (SMEs) “drowning” during the adverse conditions (Clauss et al., 2021; Codini et al., 2022; Ritter & Pedersen, 2020).

1. The **CEO** is often assigned the role of **an “engine” and an internal accelerator of innovations**, since the decisions regarding the company strategy depend on the CEO’s abilities, values, and personal character (Runst & Thomä, 2022).
  - Among different **personality characteristics of CEOs, the Attention Deficit Hyperactivity Disorder (ADHD)** symptoms and their relationship with firm-level entrepreneurship receive an increased scholarly attention (Gunia et al., 2021; Hatak et al., 2021; Lerner et al., 2018; Wiklund et al., 2017; Yu et al., 2021)
2. **CEO gender** can significantly influence the perception of the general environment, decisions made, prioritization schemes for tasks and goals, and biased assessment of the surrounding reality (Hambrick et al., 2009)
3. Patel et al. (2021) suggest that the **impact of ADHD symptoms is contingent upon** ethnicity, education, age, and **life experience of a person**.

# Research Questions

- How do the **ADHD symptoms** of CEOs **influence BMI** in the SMEs' context?
- How does the **CEO gender** shape the relationship **between the ADHD symptoms of CEOs and BMI** in the SMEs' context?
- How does the **CEO tenure** shape the relationship **between the CEOs' ADHD symptoms and BMI** in the SMEs' context?

# Key Constructs

- **Business model innovation (BMI)**: the change of elements proposed in (Spieth & Schneider, 2016): value offering, value architecture and revenue model.
  - **Value offering** consists of customers, positioning on the market, service, or product offering
  - **Value architecture** implies methods of reaching the customers, core competencies and resources of a firm, external and internal activities that are used for creating value
  - **Revenue model** consists of the ways a firm makes money and what are the sources of it, along with the structure of costs and prime drivers of it.
- **Attention Deficit Hyperactivity Disorder (ADHD)**: a developmental disorder that is characterized by chronic hyperactivity, impulsivity, and inattentiveness (American Psychiatric Association, 2013)
- **CEO tenure**: total number of years spent in a top management position in a given company

# Theoretical Framework

## Strategic Leadership Theory

the **relationship between individual-level and firm-level characteristics** (Hambrick et al., 2009).

- This perspective clarifies how the executive traits can influence firm actions and strategic development based on the “executive orientation” and the three-staged information filtering process (Hambrick et al., 2009; Shepherd et al., 2019; Yu et al., 2021).

## Trait Activation Theory

expands our understanding of personal traits positing that **a particular trait is activated in a certain trait-relevant condition** (Judge & Zapata, 2015; Tett & Burnett, 2003).

- individuals prone to **ADHD symptoms are more inclined to entrepreneurship** in its various manifestations because it “**resonates**” with their abilities and character (Stappers & Andries, 2022; Wiklund et al., 2017; Yu et al., 2021a).
- That is, their strengths or bright sides ‘fit’ and are ‘activated’ in conditions of uncertainty, dynamism, and high risk, which are directly associated with entrepreneurship as a phenomenon.

# Hypotheses (1)

- **Risk taking, opportunity recognition, innovativeness, uncertainty tolerance, and creativity** are proved to be features of a person with ADHD symptoms (Hatak et al., 2021; Verheul et al., 2015; Wiklund et al., 2017).
- The distinctive features of ADHD symptoms are **risk taking, proactiveness and boredom**, which are associated with **innovation and sensations' seeking** (Wiklund et al., 2017; Yu et al., 2021).
- **Openness to new experiences** and **desire to be rewarded** conditioned by an overstated view of potential benefits from risky projects (Verheul et al., 2015; Yu et al., 2021) that are elicited by individuals with ADHD symptoms **may result in attempts to experiment and innovate**.

**H1.** *The ADHD symptoms of CEOs are positively related to BMI in the context of SMEs*

# Hypotheses (2)

- CEOs of **different genders** behave differently (Berger et al., 2014), including making decisions about the introduction of innovations.
- Being commonly portrayed in the literature **as risk averse, female managers are more likely to postpone innovative** activities in a high-risk environment (Hsieh, 2018).
- Conversely, men **CEOs are less likely to doubt and are more optimistic** about uncertain opportunities as a way to achieve personal success (Hmieleski et al., 2013).
- ADHD symptoms are most often **based on a tendency to achieve quick results in the context of risky and adventurous projects** that are difficult to implement in conditions of limited resources (Wiklund et al., 2017; Yu et al., 2021) – a tendency which **is more inherent in male than female CEOs**.

**H2.** *CEO gender negatively moderates the relationship between the ADHD symptoms of CEOs and BMI in the context of SMEs, so that the relationship is weaker in SMEs run by women CEOs*

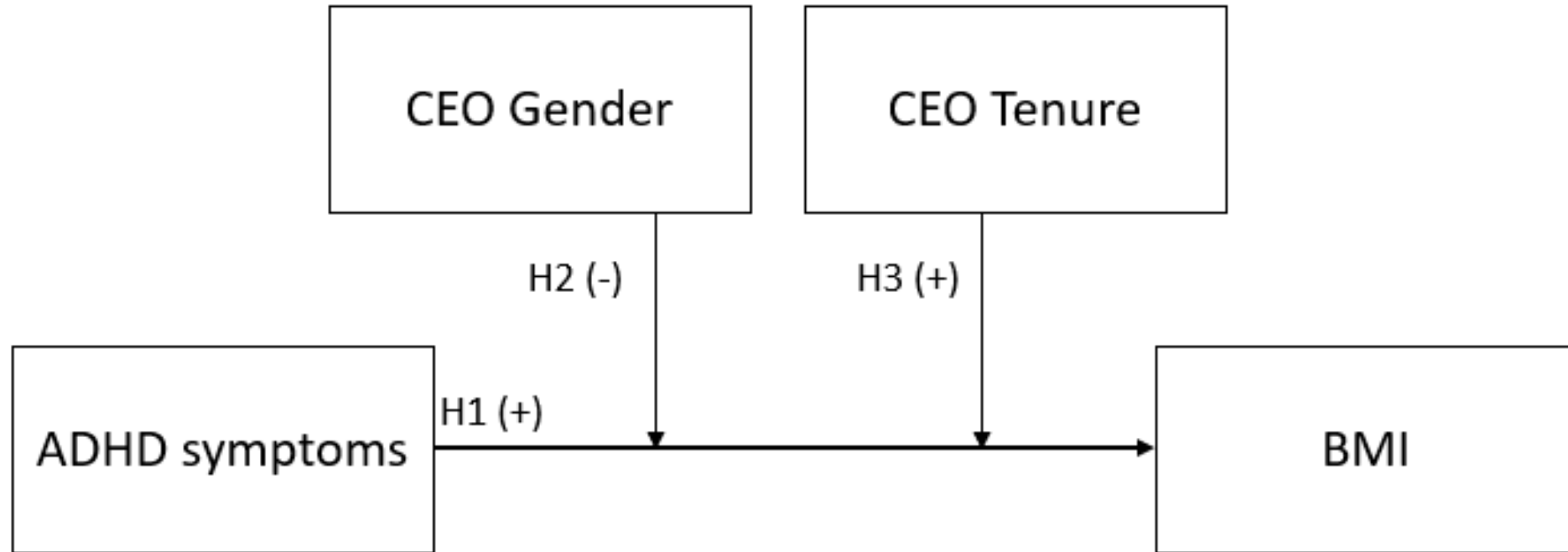
# Hypotheses (3)

- According to Hambrick and Fukutomi (1991), **tenure affects CEO's behavior and attitudes** regarding various aspects of organizational activities, including innovations.
- As the **CEO explores and understands the firm better**, the prioritization and use of information flows change, the willingness to experiment decreases, and the desire to preserve the status quo becomes stronger (Hambrick & Fukutomi, 1991; Hambrick et al., 2009)
- Longer tenured CEOs may **better understand their own essence in the form of habits, values and motives** that allow them **to act more purposefully**, considering not only their own interests or willingness to avoid boredom (Wiklund et al., 2017), but also **the strategic interests of their firm regarding innovation**

**H<sub>3</sub>.** *CEO tenure positively moderates the relationship between the ADHD symptoms of CEOs and BMI in the context of SMEs, so that the relationship is stronger in SMEs run by CEOs with longer tenure*



# Theoretical Framework



# Method

- **Data:** Survey questionnaires (dependent variable, predictors, and moderator) and financial data of **367 Russian SMEs** collected in July – August 2019
  - collected during the project “From start-up to global innovative company: Development of sources of competitive advantage in Russian entrepreneurial firms” Grant ID 19-18-00081, total number of companies = 610
- **Tool for analysis:** hierarchical regression models (Stata).
- **DV: BMI** 9-item seven-point Likert scale proposed by Spieth and Schneider (2016).
- **IV: ADHD** 18-item five-point Likert scale of Kessler et al. (2005)
- **Moderators:**
  - **CEO gender** - dummy variable, where women were coded 1 and men – 0
  - **CEO tenure** - total number of years spent in a top management position in a given company, which was reported by our survey respondents
- **CV:**
  - **Individual-level** - age, education, ownership and perceived level of general uncertainty (4-item seven-point Likert scale from Rafferty and Griffin (2006)),
  - **Firm-level** - age, size, financial performance (ROS, revenue), number of employees
  - **Industry-level** - heterogeneity (Miller and Friesen, 1982), hostility (Mitchell et al., 2011)

# Results

	Model 1 Controls	Model 2 ADHD symptoms	Model 3 Gender and ADHD symptoms	Model 4 Tenure and ADHD symptoms	Model 5 Gender, ADHD symptoms and Tenure
ADHD symptoms (H1+)		0.054 (0.093)	0.152 (0.109)	0.016 (0.096)	0.128 (0.109)
ADHD symptoms X Tenure (H3 +)				0.024+ (0.014)	0.030* (0.015)
ADHD symptoms X Gender (H2 -)			-0.368+ (0.211)		-0.451* (0.214)
Gender	-0.073 (0.066)	-0.014 (0.085)	0.994+ (0.584)	-0.001 (0.085)	1.236* (0.593)
Tenure	0.001 (0.007)	-0.004 (0.009)	-0.004 (0.009)	-0.067+ (0.039)	-0.084* (0.040)
Constant	4.041*** (0.731)	3.920*** (0.992)	3.725*** (0.995)	4.006*** (0.991)	4.727*** (0.976)
R <sup>2</sup>	0.163	0.192	0.199	0.198	0.209
F(df)	3.83(29,572)	2.66(30,336)	2.69(31,335)	2.67(31,335)	2.76(32,334)
N	602	367	367	367	367

H1 not supported

H3 supported

H2 supported

# Discussion

- Our findings suggest that ADHD symptoms can be related to innovations in business models of firms under certain conditions:
  - While we show that ADHD symptoms of CEOs **do not have a direct effect** on the development and implementation of BMI, this relationship becomes significant once the individual characteristics of CEO are taken into account.
  - Research in the field of ADHD symptoms shows that often the influence of this **trait is manifested not directly**, but through entrepreneurial orientation (Yu et al., 2021) or intentions (Gunia et al., 2021; Lerner et al., 2018), and alertness or attention to resource management (Moore et al., 2021)
- We uncover a **significantly negative** impact of **CEO gender** and **positive of CEO tenure** on the relationship between the ADHD symptoms of CEOs and BMI :
  - **Men CEOs high on ADHD symptoms are “activated” by entrepreneurial context that can be characterized as highly uncertain and autonomous**
  - **Tenure for CEOs with ADHD symptoms becomes an instrument for partial control and redirection of their reactions into constructive channels**
    - entrepreneurial context has been proven to be a suitable setting for executives with ADHD symptoms (Moore et al., 2021; Wiklund et al., 2016; Wiklund et al., 2017; Wismans et al., 2020)

# Contribution

- First, our study contributes to an improved understanding of **individual-level antecedents of BMI** (Foss & Saebi, 2017) presented by ADHD symptoms of CEOs in the context of SMEs:
  - We show that CEOs prone to ADHD symptoms tend to positively impact innovations in business models of SMEs under certain conditions and demographic characteristics such as CEO gender and CEO tenure.
- Second, we add to the **expanding debate about the applicability of ADHD symptoms** in the context of innovation and entrepreneurship and the ensuing effects on company innovation (Hatak et al., 2021; Lerner et al., 2018; Moore et al., 2021; Verheul et al., 2015; Yu et al., 2021; Wiklund et al., 2017)
- Third, we **address the call made by Yu et al. (2021) by applying SLT** to entrepreneurial firms and examining the CEO–firm relationship in SME settings.

# Practical Implications

- Our research underscores the significance of **developing the cognitive abilities of CEOs**, as well as taking into account the **human aspect, in the form of personality traits**, when making managerial decisions and evaluating the general environment.
- Our study helps practitioners understand **the specific circumstances and human capital features** under which the activation of ADHD symptoms could **be channeled toward the achievement** of productive work outcomes
- Results of our inquiry may have valuable **implications for informing the career choices** of individuals with ADHD:
  - ADHD is not necessarily dysfunctional and there are many jobs, industries, and settings where ADHD symptoms can result in superior levels of performance and innovation
  - For employers, our results may help in finding a way to leverage the specific talents of individuals with ADHD by hiring them for specific (entrepreneurial) jobs

# Limitations and Future Research

## Limitations

## Future research directions

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Cross-sectional data



Could be tested with a longitudinal design to generate more stable results

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Self-reported data (possible a common method bias)



An experimental design to draw more objective findings

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The potential existence of endogeneity, which typically occurs in studies with non-experimental designs



A confirmation in experimental, quasi-experimental, or simulation conditions would be advisable and necessary

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Consideration of only two human capital aspects (gender, tenure)



Examine various environmental conditions and additional personality features to better understand the contingencies under which individuals with ADHD perform better or worse

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**Thank you for your attention!**