Entrepreneurial gendered ambidexterity in Belarusian SMEs

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Abstract

Certain principles and prevailing decision-making logics strongly influence entrepreneurial, innovative, and managerial actions. Effectual and causal reasonings (entrepreneurial ambidexterity) provided essential insights into entrepreneurial strategies and innovation outcomes. However, little is known about the reasonings that dominate entrepreneurial behaviors and innovative decision-making processes (innovative ambidexterity) inside organizations characterized by a diversified workforce (managerial ambidexterity). This study investigates the intersections between causal-effectual reasoning (entrepreneurial tensions) adopted during exploration-exploitation innovation processes (innovation tensions), gendered decision-making style (managerial tensions), and the achievement of radical/incremental innovation outcomes within an organization. A proposed conceptual model was tested using the data from 407 Belarusian small-medium-sized companies (SMEs). Our results highlight the positive impact of effectual entrepreneurial reasonings on innovation outcomes. Our study especially contributes to the academic debate about why women are more prone to hybrid causal-effectual decision-making strategies than men. A provocative discussion and implications have emerged from the results of this study regarding the crucial role of gendered managerial tensions within organizations that are looking to become more ambidextrous (entrepreneurial and innovative) to achieve the highest indicators of performance.

Keywords Effectual-causal reasoning · Innovation · Gendered managerial view · SMEs · Post-Sovietic Economies

JEL Classification J16 · L25 · O31

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1 Introduction

Over the last decade, post-soviet countries have tried to become sustainable development economies (Kaplan and Waren, 2007; Liao et al., 2009; Gilbert & Eyring, 2010; Ramadani & Gerguri, 2011). In this vein, ongoing academic debates have shown the relevant contribution of dynamic, innovative, and ambitious behaviors within young SMEs (Chalmers, 1989; Li & Rama, 2015). Prior studies have highlighted that, to become sustain33 able development economies, organizations must manage uncertainty (Burns et al., 2016; Read et al., 2009; Wiltbank et al., 2006), identify opportunities, diminish risks (Gilbert & Eyring, 2010), and be innovative (Kaplan and Waren, 2007; Liao et al., 2009; Ramadani & Gerguri, 2011). However, little is known about the reasonings for dominant entrepreneurial behaviors related to innovative decision-making processes inside organizations characterized by a diversified workforce and gendered managerial styles (Ruiz et al., 2022; Guerrero, 2022; Parrotta et al., 2014).

If we paid attention to dominant entrepreneurial reasoning tensions (causal vs. effectual) to manage innovative process tensions (exploration vs. exploitation) inside organizations, academic literature is scarce (Brinckmann et al., 2010; Nummela et al., 2014; Yeganegi et al., 2019). According to Brettel et al. (2012), causal and effectual reasoning would explain the influence of (unpredictable) macroeconomic conditions on organizational behaviors. In this assumption, we argue that ambidextrous organizations apply entrepreneurial (effectual-causal) reasonings to manage exploitation-exploration tensions within innovation processes that depend on the expected innovation outcomes. In this regard, causal reasoning could be favorable for achieving predictable/planned innovation outcomes under stable conditions, while effectual reasoning could help achieve outcomes from unexplored/unexploited innovative opportunities within uncertain conditions (Sarasvathy, 2001, 2008; Sarasvathy & Dew, 2005). Regarding the macroeconomic conditions, although strengths/weaknesses (Werhann et al., 2015; Dew et al., 2009; Guo et al., 2016), causal and effectual reasonings could help us to understand similarities/differences/tensions in the achievement of innovation outcomes within organizations based on post-soviet contexts characterized by higher levels of uncertainty than within organizations based on developed economies (Lingelbach et al., 2015). Organizations based on post-soviet con57 texts operate under the highest levels of constraints related to the underdevelopment of institutions and reform processes that are unfavorable for innovation strategies (Lei et al., 2016; Yu et al., 2017) and access to the required resources (Lingelbach et al., 2015). Therefore, it implies a simultaneous adoption of both causal and effectual reasonings during the innovation decision-making process has been lower studied in the literature of emerging 62 economies (Greve, 2003; Radas & Božić, 2009; Yu et al., 2017).

If we paid attention to a gendered managerial view (male style vs. female style) of dominant entrepreneurial reasonings (causal vs. effectual) to manage innovation processes tensions (exploration vs. exploitation) inside organizations, the academic research on gender differences/similitudes is also limited (Alsos et al., 2013; de Bruin et al., 2006, 2007). A 67 few studies have shown that women value relations/communication components within their entrepreneurial and innovation decision-making processes, that are strongly related to effectual reasonings (Burke & Collins, 2001; Gatewood et al., 2009; Stelter, 2002). Extant studies have also recognized higher risk-averseness among women strongly associated with causal reasonings (Wagner, 2001; He et al., 2007; Eckel et al., 2008; Croson & Gneezy, 2009; Castillo & Freer, 2018). Likewise, prior studies found relevant insights into how gender diversity contributes to innovation processes (Teruel & Segarra-Blasco, 2017). Although these insights, it is not clear the role of women's entrepreneurial reasoning within innovative organizations and the (un)success achievement of innovation outcomes (Guerrero, 2022). We assume that certain principles and prevailing decision-making logic could be strongly influenced by gendered managerial styles related to ambidextrous organizations (Guerrero, 2021). Likewise, empirical studies have provided insights into the crucial role of country-level conditions in reinforcing/retarding entrepreneurial and innovation activities. Indeed, recent studies have evidenced the critical role of gender inequality 81 across countries on women's managerial, entrepreneurial, and innovative decision-making processes (Ruiz et al., 2022).

Inspired by the mentioned academic debates, this study investigates the intersection between causal-effectual reasoning (entrepreneurial ambidexterity) adopted during exploration-exploitation innovation processes (innovation ambidexterity), gendered decision86 making style (managerial ambidexterity), and the achievement of radical/incremental innovation outcomes within an organization. By adopting the theoretical basis of a gendered effectuation approach, we proposed a conceptual model to test the influence of (gendered) entrepreneurial reasonings on the innovation process tensions to achieve the expected innovation outcomes of 407 small-medium-sized companies (SMEs) based on a post-soviet economy (Belorussia). Our results highlight the positive impact of gendered effectual (entrepreneurial) reasonings on innovation process/outcomes within Belarusian organizations. The study especially contributes to the academic literature in three ways. *First*, the study expands the knowledge about the role of causal and effectual reasoning (tensions related to entrepreneurial

ambidexterity) during exploration and exploitation process (ten96 sions related to innovation ambidexterity) to achieve innovation outcomes in the context of 97 post-soviet economies (Lingelbach et al., 2015; Yu et al., 2017). *Second*, the study extends 98 to understanding why women are more prone to hybrid decision-making strategies than 99 men, as well as the study highlights the relevance of a diversified workforce on innovation
100 and entrepreneurial managing (Guerrero, 2022). *Third*, the study extends the understanding 101 of the intersection of related simultaneous and ambidextrous tensions highlighted by ongo102 ing academic debates in entrepreneurship (causal-effectual tensions), innovation (explora103 tion-exploitation tensions) and management (women-male tensions) research fields (Guer-
104 rero, 2021).
105 After this introduction, the paper is structured as follows. Sect. 2 explains the theoreti106 cal foundations to understand the intersection between the innovation (exploration-exploi107 tation) process, entrepreneurial (causal-effectual) reasoning, and gendered (women-men) 108 managerial views. Then, Sect. 3 describes the quantitative methodological design for test109 ing our proposed conceptual framework. Next, Sect. 4 shows the estimated results obtained 110 from the sample of Belarusian SMEs, as well as discusses them in light of previous studies. 111 Finally, Sect. 5 shows conclusions, limitations, and implications of this study.

112 2 Theoretical framework

113 2.1 Conceptual foundations

114 Effectuation and causation are two decision-making models that impact any entrepreneur115 ial, innovative, and managerial actions. Effectual reasoning implies decision-making under 116 uncertainty by focusing on controlling existing means and potential results that could be 117 achieved given the unpredictability (Sarasvathy, 2008). Causal reasoning assumes a certain 118 defined goal to achieve, and the main focus is to find the right/effective means to achieve it by 119 considering the limits/restrictions (Sarasvathy, 2001). While causal reasoning is more related 120 to managers, effectual reasoning is more applicable to entrepreneurs and innovative organiza121 tions (Sarasvathy, 2001, 2008; Read and Sarasvathy, 2005). In this assumption, ambidextrous 122 organizations are characterized by balanced causal-effectual reasoning (entrepreneurial ambi123 dexterity) adopted by a balanced gendered managerial view (managerial ambidexterity) of 124 exploration-exploitation processes (innovative ambidexterity) to achieve the highest indica125 tors of performance and productivity (Guerrero, 2021, 2022; Yeganegi et al., 2019).
126 Innovative and entrepreneurial organizations are characterized by attempts to change their 127 current business logic to provide certain changes to the external environment (Olofsson et al., 128 2018; Ruiz et al., 2022). These actions result in changes in the existing entrepreneurial-inno129 vation business model, either radical or incremental (Cortimiglia et al., 2016). In this view, 130 an innovation and entrepreneurial strategy implies making a certain choice between various 131 options to get maximum return. The plan varies within existing constraints, simultaneous ten132 sions and can lead to different results. Effectual reasoning constrained by existing means 133 allows looking beyond prevalent logic and helps find and foster present opportunities, iterat134 ing and mitigating barriers for implementing innovative outcomes (Chesbrough & Schwartz, 135 2007) and often results in certain unexpected outcomes (Keskin, 2017). Indeed, causal rea136 soning focuses on adapting efforts to the goal set in the very beginnings, is cautious about the 137 long-term sustainability of predefined value proposition, and these results in a similarity of 138 the obtained outcome to the initial concept (Chandler et al., 2011). Extant studies have found 139 that SMEs are more likely to adopt an effectual reasoning during the stage related to the 140 exploration and exploitation of business opportunities, as well as the management of resource 141 and capabilities deficiency (Andersson, 2011), and switching towards a causal (entrepreneur142 ial) reasoning at the stage of growth (Berends et al., 2014; Ciszewska-Mlinaric et al., 2016).
143 Effectual and causal reasonings are also influenced by a gendered view. It is because 144 of the differences in men's/women's risk- taking behaviors and attitudes towards manag145 ing uncertainty tensions related to entrepreneurial and innovative actions (managerial 146 ambidexterity). Women are considered more risk-averse than men (Guerrero, 2022; Ruiz 147 et al., 2022). At the same time, partly this is due to women's overweigh the losing chances 148 and lower self-confidence level than men (Weber et al., 2002; Caliendo et al., 2019). In this 149 regard, previous studies showed that male innovative entrepreneurs are more frequently 150 rely on effectual principles than female innovative entrepreneurs (Frigotto & Valle, 2018). 151 Simultaneously, female innovative entrepreneurs' reasoning fully depends on their moth152 erhood motives to start a business or to be involved in innovative process (Brush et al., 153 2009). As a result, it could be either combination of both causal and effectual reasoning, 154 or single causal reasoning, or, in some cases, effectual reasoning (Banikema & Tite,

2018). 155 Table 1 summarized the main differences between the effectual and causal reasonings and 156 also foundations of the proposed concepts within an entrepreneurial-innovative process 157 influenced by a gendered decision-making view.

158 2.2 Theory development

159 Despite certain differences in principles effectual and causal logic, there is no exact answer 160 on what model is more efficient for entrepreneurial-innovative organizational performance. 161 Previous studies have shown a positive relationship between effectual-causal reasoning 162 principles and organizationalperformance (Cai et al., 2017; Deligianni et al., 2017; Dew 163 et al., 2009; Fisher, 2012; Read et al., 2009).

Table 1 Effectualvs.causalreasoningwithinanentrepreneurial-innovativeprocessthroughagenderedmanagerialview

Principles	Effectualreasoning	Causalreasoning
Meansversusgoals	Innovativeactivitiesaredrivenbyagivenmeans	Givenprojecttargetsdriveinnovativeactivities
Affordablelossversusexpectedreturns	Advancecommitmentsguideinnovativeactivities	Expectedreturnsguideprojectinnovativeactivities
Partnershipandpre-commitments(alliances) vs.competitiveanalysis	Uncertaintyisreducedthroughpartnershipsandpre-commitmentsof self-selectedstakeholders	Uncertainityisidentifiedandavoidedthroughmar - ketandcompetitoranalyses
Acknowledgethevs.unexpectedovercome theunexpected	Contingencies/surprisesareseenasasourceofopportunities	Contingencies/surprisesareavoidedorquicklyover - cometoreachgivenprojecttargets
Innovationoutcomes	Unexpectedoutcomesasaresultifiterationsandexperimentations	Adaptationtothepredefinedgoal
Genderedview	Menaremorelikelychoosingeffectualreasoning	Womenaremorepronetohybridorcausalreasoning

Source:AuthorsbasedonBretteletal.(2012;Chandleretal. 2011;BanikemaandTite 2018)

Regarding effectual reasoning, according to Read et al. (2009), experimentation, flexibility, and pre-commitments principles are positively related to new venture innovation performance. Similarly, Dew et al. (2009) found a positive effect of the effectual affordable loss principle on organizational risks during the start-up phase. Cai et al. (2017) also demonstrated a significant effect of all effectual principles on risks and effective manage of organizational resources (exploitation tension). In this vein, Evald and Senderovitz (2013) found that SMEs adopt effectual reasoning for searching for new business/innovative opportunities within new/existing target markets (exploration tension). The identification of business opportunities fosters creativity, experimentation, and learning processes within innovative organizations

(Fiol & Lyles, 1985; Slater & Narver, 1995; Montalvo, 2006). Indeed, it promotes efficient exploitation of existing means (Brettel et al., 2012; Dew et al., 2009; Mumford et al., 2002) or sharing means with external partners (Varis & Littunen, 2010) looking for high-innovative outcomes. Consequently, effectual reasoning raises entrepreneurial-innovative orientations strongly related to high-level performance within innovative industries (Mthanti & Urban, 2014). *Regarding causal reasoning*, Brettel et al. (2012) found high-growth performance patterns within organizations that adopted a causal approach in low-level uncertainty environments. Extant studies have demonstrated the positive effect of planning on strengthening organizations' performance compared to competitors in potential markets (Brinkmann et al., 2010; Frese & Gielnik, 2014). Concretely, Zollo and Winter (2002) argue that causal reasoning principles are related to the success of innovative projects implemented by the organizations (exploitation tension). According to Katila and Ahuja (2002), causal reasoning matters not just for improving existing products but also for creating something new and unique in the robotics industry (exploration tension). Consequently, causal reasoning also raises high-level performance on organizations that operate within innovative industries. Based on these assumptions, we propose the following hypotheses:

H1a: Effectual reasoning to manage tensions during entrepreneurial-innovative processes positively impacts innovation outcomes

H1b: Causal reasoning to manage tensions during entrepreneurial-innovative processes positively impacts innovation outcomes

Regarding combined effectual-causal reasoning, although effectual-causal logic is considered two orthogonal models of thinking, that does not mean they cannot be applied together. Prior studies have studied the cumulative effect of both entrepreneurial reasoning at the organizations' outcomes (Berends et al., 2014; Maine et al., 2015; Reymen et al., 2015; Ciszewska-Mlinaric et al., 2016; Smolka et al., 2016). According to Berends et al. (2014), effectual reasoning is more efficient in the start-up phase when the organization operates with a high uncertainty level, while causal reasoning is more appropriate in mature stages. Effectual-causal reasoning's effectiveness depends on the stage of development, background, and contextual conditions (Nummela et al., 2015). Therefore, the organization's peculiarities or obstacles and the level of uncertainty explain the usage of either causal or effectual reasoning or the combination of them (Ciszewska- Mlinaric et al., 2016). Smolka et al. (2016) and Yu et al. (2017) found a positive interaction effect of causal-effectual reasoning (entrepreneurial ambidexterity) within exploitation-exploration processes (innovative ambidexterity) on the achievement of the highest organizations' innovation outcomes. Consequently, the highest entrepreneurial-innovative uncertainty is the most effective context for adopting both effectual and causal logics (entrepreneurial ambidexterity), while causal reasoning is more appropriate in the lowest risky entrepreneurial-innovative conditions. Based on these assumptions, we propose the following hypothesis:

H2: Combined effectual-causal reasoning to manage uncertainty during entrepreneurial-innovative processes positively impacts innovation outcomes

Regarding gendered effectual-causal reasoning, the lack of research on gender and entrepreneurial/innovative behaviors represents a challenge for understanding the relationship between gendered managerial decision-making styles and the achievement of the best indicators related to organizational performance (Alsos, 2013; Guerrero, 2021). Prior studies have recognized how women's decision-making styles have contributed to organizations' performance, creativity, and innovativeness (Akulava, 2016; Baer et al., 2013; Noland et al., 2016). Although female innovators show lower visibility than male innovators within organizations, both female and male innovators could equally contribute to generating new ideas (Kushnirovich & Heilbrunn, 2013) as well as leading/managing corporate venture initiatives within existing/new organizations (Guerrero, 2022; Ruiz et al., 2022). Indeed, the evidence suggests that the lower support for female innovators within organizations and among their male colleagues has explained the lowest participation and implementation of female ideas/initiatives/strategies (Foss et al., 2013). In this regard, Serviere-Munoz et al. (2013) have demonstrated that female innovative entrepreneurs are less prone to the opportunity-driven approach resulting in the lower level of their businesses' innovativeness. Plausible explanation about differences between female-owned and male-owned businesses is related to the motives for starting a business, networking, work family relationships, decision-making processes, and leading/managerial styles (Fairlie & Robb, 2009; Manolova et al., 2008; Robb & Watson, 2012). Specifically, female-owned businesses are often smaller in size and face certain challenges with limited access to financial resources (Brush et al., 2014; Farhat and Migid, 2017; Rosa et al., 1996; Rosa & Sylla, 2018). Therefore, female-owned businesses show under- or constrained performance compared with male-owned businesses (Fairlie & Robb, 2009; McAdam & Marlow, 2013).

Given these antecedents, a few studies have studied the gendered managerial view (managerial ambidexterity) within entrepreneurial-innovative decision-making reasonings and organizations' performance (Amagoh, 2009; Apesteguia et al., 2012; Guerrero, 2021; Rosa and Sylla, 2018). Potential gender differences influence effectual-causal reasoning principles regarding entrepreneurial and innovative attitudes/behaviors (Castillo & Freer, 2018; Croson & Gneezy, 2009). Indeed, Alonso-Almeida and Bremser (2014) found that women's conservative entrepreneurial/ innovative actions include various drastic cost-reduction measures to a lesser extent than men's proactive entrepreneurial/innovative actions under uncertainty periods or contexts. Similarly, Bankema and Tite (2018) showed that initial motives, experience, and uncertainty influence female innovative entrepreneurs' decision reasoning. In this regard, women innovators-entrepreneurs apply either hybrid (both effectual and causal reasoning) ambidexterity approach in their decision making innovative/entrepreneurial strategy, as well as they are more conservative in their managerial-leadership styles. Based on these assumptions, we propose the following hypotheses: **H3a**: Women are more likely to generate a lower impact on innovation outcomes than men.

H3b: Women are more likely to adopt causal or combined effectual-causal reasoning during entrepreneurial-innovative processes than men.

3 Methodology

3.1 Data collection

Data came from a survey conducted in winter 2017–2018 in Belarus. Based on an exhaustive literate review, the survey investigated entrepreneurial motives, external and internal barriers, intentions, decision-making patterns, and personal/family backgrounds. The data was collected from SMEs based on a questionnaire completed by the organization's decision- makers during the personal meetings. The respondents were 407 business representatives and decision-makers (top managers and business owners). Respondents were selected randomly, but the sample was structured according to region, industry, and gender distribution. The research was conducted along the six regions of Belarus. The respondents were chosen and interviewed by the "SATIO" sociologic agency specializing in conducting surveys.

Table 2 shows the sample distribution per respondents' gender (60% male and 40% female), age (50% are 30–50 years old), education (80% bachelor degree), and

Table 2 Sample distribution

Factor	Category	Number	Percentage
Gender of the owner	Male	246	60.4
	Female	161	39.6
Age of the owner	Below 30 years old	41	10.1
	30–39 years old	169	41.5
	40–49 years old	95	23.3
	50 years old or above	102	25.1
Level of education	Secondary	12	2.9
	Secondary specialized	36	8.9
	Bachelor or specialist	326	80.1
	Master or higher	33	8.1
Experience of the owner	Below 10 years	52	12.8
	10–14 years	90	22.1
	15–19 years	82	20.1
	20 years or above	183	45.0
Legal form of the organization	Limited Liability Company (LLC)	266	65.4
	Join-Stock Company (JSC)	19	4.7
	Other legal forms	122	29.9
Size of the organization	Up to 10 employees	203	49.9
	11–20 employees	94	23.1
	21–50 employees	65	16.0
	Above 50 employees	45	11.0
Age of the organization	Below 10 years	222	54.6
	10–12 years	53	13.0
	13–15 years	27	6.6
	16 years or above	105	25.8
Innovation outcomes	Mixed innovations	141	34.6
	Radical innovations	73	17.9
		83	20.4
		186	45.7
		161	39.5
	3 owners	34	8.4
	More than 4 owners	26	6.4
	Incremental innovations		
	Number of the owners		
	1 owner		
	2 owners		

Source: Authors

267 experience (65% more than 15 years). Regarding organizational characteristics, the 268 majority has 1–2 owners (85.2%), with more than 20 employees (73%), and founded 269 less than ten years ago (54.6%) as a limited liability organization (65.4%). On average, 270 34.6% of the interviewed organizations have implemented various innovative outputs dur271 ing the last three years (18% declared radical innovations), and 67.8% have recognized 272 the accumulation of new knowledge, competencies, and ideas while implementing their 273 entrepreneurial-innovative projects.

274 3.2 Variables

275 *The first set of variables are related to the dependent (outcome) variables*. We adopted 276 the Business Environment and Enterprise Performance Survey (BEEPS) implemented by 277 the European Bank for Reconstruction and Development (EBRD) in partnership with the 278 World Bank to measure the organization's innovative outcomes. The respondents were 279 asked many questions about the innovative activity, allowing several indicators that work 280 as a proxy for produced innovations. The overall innovation outcomes was captured by 281 following these questions: 'in the last three years a company introduced any products or 282 services'; 'new methods of manufacturing products or offering services'; 'new organiza283 tional structures of management practices'; and 'new marketing methods'. Therefore, the 284 'overall innovations' variable captures the accumulation of new products, services, new 285 methods and organizational transformations. Then, the respondents evaluate the level of 286 novelty of these overall innovations by answering whether the implemented innovation was 287 'radical innovation (revolutionary new in the market)' or incremental innovation (slight 288 modification, but new within the organization)' or not applicable as radical or incremental 289 innovations.

290 *The second set of variables are related to the independent variables*. Regarding reason291 ing, questions on effectual and causal reasonings follow measures introduced by Chandler 292 et al. (2011). The respondents answered several questions about the decision-making inno293 vation strategy on a 5-point Likert scale (5= strongly agree, 1 = strongly disagree). The 294 causal reasoning is measured as the average of the 6-item scale that analyzes the causal 295 entrepreneurial decision-making approach. The effectual reasoning is measured into five 296 latent dimensions representing the effectual principles:

experimentation (4-item scale), affordable loss (3-item scale), flexibility (4-item scale), and alliances (partnership and pre-commitments) (5-item scale). So, each of the effectual reasoning is, first, measured by the captured individual principles and then is measured as an aggregated indicator. Regarding gendered managerial view, the data covers information on the gender of the only or one of the organization's owners (Smolka et al., 2016; Van Praag, 2003). In this study, gender was measured by a binary variable where a value of 1 indicates female owners and 0 male owners (Guerrero, 2022).

The third set of variables are related to control variables. The data allows controlling for various characteristics that likely impact the organization's innovation outcomes. This information includes various socio-economic characteristics of the owners and organizational characteristics related to innovation outcomes. At the decision-makers' level, the information included in the analysis control by age, education, and professional experience (Smolka et al., 2016; Van Praag, 2003). At the organizational level, we control by the foundational year, size, number of the owners, industry, legal form, and regional location (Aghion et al., 2013; Coad et al., 2016).

3.3 Validity tests

Table 3 shows the validity analysis. We looked at the whole scale's factorability to check the appropriateness of the method's application. The Bartlett test of sphericity (Chi-square = 4442.2, p-value < 0.000) and the Kaiser-Meyer-Olkin Measure of sampling adequacy (KMO) = 0.744 approved usage of the factor analysis. The factor loadings conducted separately for each of the effectual dimensions left the 3-item experimentation construct, 3-item affordable loss principle, 2-item flexibility construct, and 3-item alliances construct. The 4-item causal dimension also confirmed its' uni-dimensionality. Those factors that fell below the threshold of 0.4 were eliminated from the analysis (Götz et al., 2010). The composite reliability estimates were obtained during the analysis to check for the remaining multi-item scales' consistency. The Cronbach's alpha is greater than the threshold equal to 0.7 (Cronbach, 1951) for almost all variables of interest except for the flexibility measure (0.667), while the Composite Reliability measure is above the required threshold (0.7) for

all the constructed variables for all of the constructs making it possible to conclude that measures are reliable (Fornell and Larker, 1981; Hair et al., 2006). Overall, we can say that the reliability of the constructed measures meets the appropriate level. The average extracted variance (AVE) is equal or above the required threshold of 0.5 for all of the measures that allow concluding about the constructs' convergent validity (Fornell and Larker, 1981).

Table 4 provides descriptive statistics and the correlation matrix. The correlation coefficients mostly show a weak/moderate level of correlation. It is meaning that multicollinearity may not be a problem distorting the results. The variance inflation factors (VIF) estimated after the regression model (Appendix 1, Table 7) do not exceed five and are lower than not just the widely used threshold of ten, but also the conservative threshold of 4 indicating the absence of multicollinearity (Netter et al., 1996; O'Brien, 2007). The descriptive statistics show that the respondents follow causal reasoning (mean = 3.75) more frequently than effectual reasoning (mean = 3.57). However, the distinction between different effectual directions reveals that the frequency of usage of the affordable loss (mean = 4.02), flexibility (mean = 3.93) principles are higher compared with the causal logic. Simultaneously, the effectual principles are positively correlated with each other (0.079*–0.54***) except for the correlation between experimentation and affordable loss with alliances. Thus, we can say that there is a connection between the effectual principles.

3.4 Data analysis

The logistic regression analysis was conducted to check for the relationship between entrepreneurial-innovative decision-making logic and the innovation outcomes. The logit regression analysis is estimated coefficients (b columns), and the marginal effects (dy/dx columns) for all models are reported. All the estimated models are significant, with a p-value ≤ of 0.000. Model 1 demonstrates SMEs' overall innovation outcomes, Models 2 and 3 present logit estimations for radical and incremental innovations implemented by the organizations. As the robustness check, the hierarchical ordinary least squares (OLS) regression analysis was also applied (see Appendix 2, Table 8). A logit regression model was also used to examine the relationship between the probability of choosing various decision reasoning models and the gendered view of the innovative entrepreneur (Model 4).

Table 3 Factor'sreliabilityassessment

	Factorloadings	CA	CR	AVE
Experimentation(effectualreasoning)		0.792	0.809	0.597
Thefinalentrepreneurial-innovationprojectissubstantiallydifferentfromtheinitialidea	0.880			
Differentapproachesweretestedbeforetheoptimumwasfound	0.831			
Thefinalentrepreneurial-innovationprojectisalmostthesameastheinitialidea(rev.)	0.740			
Affordableloss(effectualreasoning)		0.811	0.815	0.606
Wetriednottousemoreresourcesthanwehave	0.839			
Wetriednottospendmoremoneythanweplantoinvestintheinitialidea	0.889			
Wetriednottoinvestsomuchmoneythatcanputtheorganizationintoadangeroussituationincaseoffailure	0.838			
Flexibility(effectualreasoning)		0.667	0.751	0.625
Weareflexibleandtrytouseeveryemergedopportunity	0.858			
Wetrytoavoidactionsthatrestrictourflexibilityandadaptability	0.835			
Alliances(effectualreasoning)		0.721	0.784	0.594
Wetriedtousepre-commitmentswithourclientsandsuppliersasoftenaspossible	0.580			
Wehadthepossibilityofusingthefreeservicesofourfriendsandfamily	0.945			
Servicesfromfriendsandfamilyallowustoreduceourcostssignificantly	0.943			
Causalreasoning		0.841	0.850	0.524
Weanalyzelong-termbusiness-innovationopportunitiesandfocusonwhatwillprovidethehighestreturn	0.590			
Ourbusiness-innovationstrategyiscarefullyplannedanddetailed	0.849			
Ourbusiness-innovationdecisionsarebasedonmarketingandcompetitors'analysis	0.857			
Wehaveaclearvisionofwhereweareandwhatshouldbedoneforthesuccessfulimplementationofthe entrepreneurial-innovationproject	0.807			
Planningplaysakeyroleinstrategydevelopment	0.739			

Note:varimaxrotationwithKaisernormalization

Source:Authors

*CA*Cronbach'salpha, *CR*compositereliability, *AVE*averagevarianceextracted

Table 4 Descriptive analysis and correlation matrix

	Mean	SD	1	2	3	4	5	6	7	8	9
1. Overall innovations	0.68	0.48	1.000								
2. Radical innovations	0.18	0.38	0.440*	1.000							
3. Incremental innovations	0.20	0.40	0.695*	−0.237*	1.000						
4. Age of the owner	41.32	8.93	−0.018	−0.101*	0.049	1.000					
5. Experience of the owner	13.51	8.93	0.072	−0.004	0.024	0.664*	1.000				
6. Gender_Female	0.40	0.49	−0.103*	−0.090	−0.035	−0.033	−0.102*	1.000			
7. Level of education_Bachelor degree	0.80	0.62	0.063	0.112*	−0.017	0.016	0.039	−0.062	1.000		
8. Legal form of the organization_LLC	0.65	0.88	0.029	−0.035	0.071	0.006	−0.022	0.051	0.137*	1.000	
9. Age of the organization	2.04	1.28	0.084	−0.004	0.095	0.261*	0.263*	0.040	0.064	0.207*	1.000
10. Size of the organization	1.89	1.04	0.023	0.016	0.028	0.027	0.076	−0.039	0.084	0.270*	0.332*
11. Number of owners	1.75	0.86	0.064	0.067	0.024	−0.007	0.006	−0.008	0.079	0.334*	0.080
12. Region	2.38	2.05	0.117*	0.079	0.049	0.042	−0.020	−0.155*	0.035	0.011	0.019
13. Main industry	4.71	3.30	−0.033	−0.021	−0.043	−0.017	−0.033	0.207*	0.082	−0.070	−0.041
14. Experimentation (effectual reasoning)	2.96	0.98	0.048	0.026	0.063	−0.052	−0.034	−0.015	−0.003	−0.014	−0.025
15. Affordable loss (effectual reasoning)	4.00	0.81	−0.031	0.092	−0.097	0.053	0.127*	−0.034	−0.005	0.064	0.080
16. Flexibility (effectual reasoning)	4.06	0.77	0.048	0.090	0.013	0.061	0.065	−0.005	0.039	0.044	−0.027
17. Alliances (effectual reasoning)	3.48	0.71	−0.020	−0.037	0.010	−0.016	−0.039	0.049	−0.108*	0.002	−0.048
18. Causal reasoning	3.73	0.77	−0.004	−0.035	0.024	0.014	0.001	−0.022	0.029	0.019	−0.035
19. Effectual reasoning[a]	3.57	0.58	0.004	0.022	0.012	0.015	0.030	−0.004	−0.034	0.040	−0.032

	10	11	12	13	14	15	16	17	18	19
10. Size of the organization	1.000									
11. Number of owners	0.190*	1.000								
12. Region	−0.017	0.013	1.000							
13. Main industry	−0.210*	−0.042	0.044	1.000						
14. Experimentation (effectual reasoning)	−0.054	0.039	0.049	0.014	1.000					

)

Table 4 continued

(	10	11	12	13	14	15	16	17	18	19
15 .Affordableloss(effectual reasoning)	0.068	0.035	− 0.020	− 0.008	0.108*	1.000				
16 .Flexibility(effectualreasoning)	- − 0.080	0.086	0.111*	0.010	0.267*	0.54*	1.000			
17 .Alliances(effectualreasoning)	- − 0.129*	0.006	0.005	− 0.022	− 0.002	0.079	0.118*	1.000		
18 .Causalreasoning	− 0.053	− 0.038	0.111*	0.057	0.075	0.181*	0.209*	0.066	1.000	
19 .Effectual reasoning[a]	− 0.094	0.059	0.045	0.004	0.459*	0.647*	0.681*	0.609*	0.266*	1.000

*$p < 0.05$

[a]Effectualreasoningrepresentsanaggregatedaverageincludingallfivedimensions(experimentation,affordableloss,flexibilityandalliances)

Model 4 also considers other individual and company characteristics, which likely affect the decision-making approach (Lee & Lee, 2014).

4 Results and discussion

4.1 The influence of effectual-causal reasonings on Belorussian SMEs' innovation outcomes

Table 5 shows the Models 1, 2 and 3 estimations of the logistic regression analysis.

Regarding causal and effectual (entrepreneurial ambidexterity) decision-making reasoning within the exploration-exploitation innovation process (innovative ambidexterity), the analysis of each effectual reasoning principle shows that experimentation raises the propensity to achieve incremental innovations (β = 2.242, dy/dx = 0.29), as well as overall innovations (β = 2.330, dy/dx = 0.50) without affecting the radical distinction. A plausible explanation is that willingness to experiment with the constrained resources signalizes readiness to adapt the existing innovative strategy that might result in various unexpected outcomes (Read et al., 2009). Likewise, the affordable loss reasoning principle's adoption positively impacts incremental innovations (β=4.094, dy/dx=0.53), as well as increases the number of overall innovations (β = 3.694, dy/dx=0.794). An explanation is that the affordable loss principle facilitates the selection process (exploration tension) of the most realistic and achievable project (exploitation tension) that will bring the maximum return (Benders et al., 2014; Cooper, 1996; Hong and Jao, 2017). Therefore, the effectual reasoning helps to achieve innovative outcomes through these two reasoning principles: experimentation and affordable loss. On contrary, flexibility principle diminishes the chances of generating incremental innovations (β=−1.79, dy/dx = 0.232), as well as overall innovations (β=−2.144, dy/dx=−0.461). A tentative explanation of this negative relationship is that SMEs with limited resources can not exploit all explored innovative-business opportunities like large entrepreneurial/innovative companies (Yamakawa et al., 2008). Indeed, alliances also diminish the chances of introducing incremental innovations (β=−3.937, dy/dx=−0.51) or overall innovations (β=−2.979, dy/dx=−0.64). Two plausible reasons that could explain the diminishing effect of alliances are: first, the agreement to collaborate with others usually does not assume usage of all available resources that might be needed for the innovative actions and can be followed by the reconsideration of commitments (Arino & de la Torre, 1998); and second, collaboration with external partners is accompanied by the agreement on jointly coordinated actions and can be a reason for certain inaction and lower incentives to innovate (Burns et al., 2016; Greeve, 2003). Based on these results, the accumulative effect of effectual reasoning principles is positive and raises successful innovative performance by 19.4 percentage points, supporting H1a. However, the results do no provide strong evidence regarding a significant effect of the causal decision making logic on innovative outcomes. This unexpected result does not provide strong support to H1b. Indeed, a similar result was observed by Laskovaia et al. (2019). Concretely, these authors showed the existence of a non-linear U-shape relation between the causal reasoning and firm's innovation performance under uncertain conditions. It means that it is beneficial to avoid or fully rely on causal reasoning under uncertainty scenarios, while any neutral intermediate position could be negative.

Regarding combined effectual-causal reasoning (entrepreneurial ambidexterity) within the exploration-exploitation innovation process (innovative ambidexterity), the

Table 5 Logistic Regression Analysis

Innovation outcomes	Model 1		Model 2		Model 3		
			Overall innovation		Radical innovations		Incremental innovations
	b	dy/dx	b	dy/dx	b	dy/dx	
Control variables							
Age of the owner	− 0.221	− 0.047	− 2.111***	− 0.258	0.661	0.086	
Experience of the owner	− 0.0315	− 0.007	0.326	0.04	− 0.069	− 0.009	
Level of education_Bachelor degree	0.0330	0.007	0.340	0.042	− 0.240	− 0.031	
Legal form of the organization_LLC	− 0.0603	− 0.013	− 0.346*	− 0.042	0.164	0.021	
Age of the organization	0.218**	0.047	0.0813	0.01	0.211*	0.027	
Size of the organization	− 0.0726	− 0.016	0.0148	0.002	− 0.0737	− 0.01	
Number of owners	0.0519	0.011	0.234	0.029	− 0.0845	− 0.011	
Industry	Yes		Yes		Yes		
Region	Yes		Yes		Yes		
Explanatory variables							
Experimentation-effectual reasoning-(H1a)	2.330***	0.501	1.540	0.188	2.242**	0.29	

Affordable loss-effectual reasoning-(H1a)	3.694***	0.794	1.169	0.143	4.094***	0.53
Flexibility-effectual reasoning-(H1a)	− 2.144**	− 0.461	− 1.018	− 0.124	− 1.790*	− 0.232
Alliances-effectual reasoning-(H1a)	− 2.979***	− 0.64	− 0.701	− 0.086	− 3.937***	− 0.51
Causal reasoning (H1b)	0.577	0.124	− 0.172	− 0.021	0.731	0.095
Experimentation* Causal reasoning (H2)	− 0.603***		− 0.13	− 0.386	− 0.047	− 0.552** − 0.071
Affordable loss* Causal reasoning (H2)	− 1.047***		− 0.225	− 0.242	− 0.03	− 1.213*** − 0.157
Flexibility* Causal reasoning (H2)	0.658**	0.141	0.330	0.04	0.602**	0.078
Alliances* Causal reasoning (H2)	0.780***	0.168	0.166	0.02	1.049***	0.136
Gender_Female (H3a)	− 3.875	− 0.636	− 8.902	− 0.831	3.598	0.579
Gender_Female* Effectual reasoning (H3b)	1.083	0.233	1.610	0.197	0.0139	0.002
Gender_Female* Causal reasoning (H3b)	1.075	0.231	2.591	0.316	− 1.099	− 0.142
Gender_Female* Effectual reasoning* Causal reasoning (H3b)	0.678	− 0.074	− 0.520	− 0.063	0.00570	0.001
Constant	− 2.162	3.270	− 6.314			
Pseudo R-squared	0.151	0.145	0.176			
Wald	60.2***	63.93***	55.7***			
Observations	407	407	407			

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

ambidexterity effect of applying both causal and effectual reasoning is negative in the case of overall innovations outcomes as well as incremental innovations. The combined adoption of causal reasoning and flexibility effectual reasoning raises the overall innovation outcomes by 14.1% (β = 0.658, dy/dx =0.141), as well as incremental innovation outcomes by 7.8% (β = 0.602, dy/dx =0.078). The interaction effect of causal logic and alliances effectual principle shows a positive and significant effect on incremental innovation outcomes (β = 1.049, dy/dx = 0.136) and overall innovations (β = 0.780, dy/dx = 0.168). A plausible explanation is that sticking to the long-term goals provides structure and guidelines, while flexibility and alliances allow taking advantage of occurring opportunities (Zheng & Mai, 2013). However, the adoption of causal and effectual reasoning (based on affordable loss and experimentation principles) negatively impacts incremental innovations (cumulatively by 22.8%), overall innovation outcomes (by 35.5%), as well as without significant effect on radical innovations. Radical innovations are mostly associated with a higher level of uncertainty, riskiness, and public contestation (O'Connor & McDermott, 2004). In this view, the results provide insights to support H2 that states the positive effect of a combined causal and effectual reasoning on innovation outcomes.

4.2 The influence of gendered effectual-causal reasonings on Belorussian SMEs' innovation outcomes

Regarding the owner's gendered view (managerial ambidexterity), our results do no show significant gendered effect of females' decision-making reasonings on innovation outcomes (H3a). Indeed, similar findings were obtained in related studies (Foss et al., 2013; Kushnirovich et al., 2013). In particular, these studies showed a significant impact of culture, organizational structure, and workplace environment on idea's implementation but without any significant effect of gendered decision-making actions in the propensity to innovate. Besides, we do not find strong evidence about the females' single or combined effect of causal or effectual decision-making on innovative outcomes (H3b). A plausible explanation is that the lack of gender differences might be related to innovators' industrial distribution. Indeed, one explanation is related to the gender innovation gap (so-called 'sex segregation') that explains how inventions are mostly occurring in the technological sectors, where women are usually underrepresented (Johansson & Lindberg, 2011). However, if we look at the distribution of female/male-owned innovative SMEs (see Appendix 3, Table 9), we confirm that the the gender innovation gap is not applicable in this study. Male- owned inventive businesses are mostly located in manufacturing (33.7%) and trade (32.6%). Indeed, these two sectors are the most popular among female-owned innovative companies (17.4% and 28.3% correspondingly). Thus, even though the shares are not the same, innovative business's industrial structure is relatively similar across gender, meaning that there is no evidence of substantial segregation of female-owned businesses towards female-controlled sectors (i.e., healthcare and services).
Given previous results, Table 6 shows an extended analysis of the gendered impact on decision-making reasoning by dividing the sample into three groups: hybrid causal effectual reasoning (71%), causal reasoning (21.9%), or effectual reasoning (7.4%). The analysis includes the most relevant factors that might impact the gendered decision at the organizational level (size, age, and legal form) and at the decision-maker level (CEO position, managerial experience,

and business education). First, we can see that the organiza443 tion's size increases the propensity of a hybrid causal-effectual reasoning model. It does 444 not contradict that effectual reasoning is more applicable to small companies with a lower

Table 6 Causal − effectual entrepreneurial reasoning, SMEs' innovative profile and gendered view (Model 4)

Reasoning	Model 4.a		Model 4.b		Model 4.c	
	Causal-effectual reasoning	dy/dx	Causal reasoning	dy/dx	Effectual reasoning	dy/dx
Gender_Female owners (H3)	0.761**	0.133	− 0.400	− 0.061	− 1.841*	− 0.066
Gender_Female CEOs (H3)	− 0.315	− 0.066	0.212	0.037	0.800	0.061
Gender_Female manage-	− 0.0175	− 0.003	− 0.0120	− 0.002	− 0.0428**	− 0.002 rial experience (H3)
Education_Business 0.469* 0.096 − 0.210 − 0.035 − 0.770** − 0.048 Age of the organization 0.0249 0.005 − 0.0247 − 0.004 − 0.0210 − 0.001 Size of the organization 0.241* 0.048 − 0.154 − 0.025 − 0.391 − 0.022 Legal form of the organi- − 0.508* − 0.097 0.356 0.057 0.520 0.027 zation_LLC						
Legal form of the organi-	− 0.398	− 0.085	0.658	0.127 zation_JSC		
Industry	Yes	Yes	Yes		Yes	Yes
Constant	0.480		− 1.232**		− 1.646**	
Wald	27.11***		17.94***		22.81***	
Pseudo R2 0.0591 0.0367 0.0294 Observations 378 378 330						

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

445 formalization (Berends, 2014). The impact of gendered business education varies depend446 ing on the female reasoning model. It has a positive and significant effect on the hybrid 447 causal-effectual reasoning (marginal effect equals 9.6%) but it decreases the effectual rea448 soning (by 4.8%). The gendered managing experience has a negative and significant impact 449 on effectual models, indicating that male experienced managers will be more likely follow450 ing the effectual approach. The limited liability legal form (LLC) is negatively related with 451 a balanced decision-making structure (−9.7%). Likewise, the owner's female gender has a 452 positive and significant impact on the balanced causal-effectual reasoning model (13.3%), 453 as well as it is negatively related to effectual reasoning (−6.6%). An explanation of these 454 results is associated with the idea that male entrepreneurs are more prone to effectual 455 reasoning than women (Frigotto & Valle, 2018). Simultaneously, several studies (Fisher, 456 2012; Reymen et al., 2015) claim that effectual and causal logics' combined adoption could 457 be appropriate for the organization's effective performance under perceived uncertainty. 458 Therefore, likely, a higher level of female risk-aversiveness, especially when the stakes 459 are high (Eckel and Grossman, 2002; Agnew et al., 2008; Borghans et al., 2009), make 460 women behave more rationally and avoid radicality in entrepreneurial-innovation reason461 ing through sticking to both causal-effectual logics and varying the level of their intensity 462 throughout time. Indeed, these results support H3b.

463 5 Conclusions

464 5.1 General conclusions

465 This study investigated the balanced causal-effectual reasoning (entrepreneurial ambidexter466 ity) adopted during a balanced exploration-exploitation process to achieve the highest innova467 tion outcomes (innovation ambidexterity) through a balanced gender managerial decision468 making style (managerial ambidexterity). By testing the proposed conceptual model with 469 407 Belarusian small-medium-sized companies (SMEs), three relevant conclusions emerged
470 from our results. *First, we conclude that effectual reasoning is positively related to innovation* 471 *outcomes in uncertain contexts like a post-soviet economy*. In this vein, the study expands 472 the accumulated knowledge about the influence of causal and effectual reasonings (entrepre473 neurial tensions) adopted during exploration and exploitation processes (innovative tensions)
474 to achieve the expected innovation outcomes of SMEs (Yeganegi et al., 2019; Werhahn et al.,
475 2015; Wiltbank et al., 2006) that are allocated in uncertain contexts like transition economies
476 (Lingelbach et al., 2015; Yu et al., 2017). What to do next? This insight opens an academic 477 debate about how balanced causal-effectual reasonings within ambidextrous organizations 478 may help manage tensions related to

entrepreneurial-innovation processes and achieve the highest innovation indicators of performance (Guerrero, 2021). *Second, we conclude that* *women are more prone to adopt hybrid causal-effectual decision-making processes than men, especially in uncertain contexts like a post-soviet economy.* In this vein, the study extends the insights about how a diversified workforce's sociodemographic characteristics generate significant impacts on corporate entrepreneurship and innovation outcomes (Guerrero, 2022; Ruiz et al., 2022; Parrotta et al., 2014). The study provides insights into the influence of balanced gendered entrepreneurial reasonings and managerial styles within innovative SMEs in developed and transition economies (Tegtmeier & Meyer, 2018). What to do next? This insight opens an academic debate about how gendered causal-effectual reasonings within entrepreneurial and innovative organizations may help manage innovation and generate a vast number of innovations as a response to internal crises provoked by internal decisions (i.e., high-risk innovation investments in different markets or industries) or by external shakeouts (i.e., financial crises and recessions, pandemics, and natural disasters).

5.2 Limitations and future research agenda

Our study has some limitations due to the available data. *First*, it is a cross-sectional analysis that does not check the potential endogeneity problem that should be kept in mind. A natural extension of the study is developing a longitudinal analysis to understand the dynamic evolution of effectual, causal, or combined entrepreneurial reasonings across the life cycle of single or multiple entrepreneurial and innovation processes within organizations. *Second*, our results' generability is limited to understanding the phenomenon in the analyzed sample and research setting. Belarus is a post-soviet country in transition; therefore, this research setting has its' peculiarities that strongly influence innovation decision-making processes (Brinkmann et al., 2010; Piniuta, 2017). Future agenda should consider the role of institutional conditions in comparative analysis within post-soviet economies and developed economies. For example, cross-country data would understand the cultural impact on the decision-making reasoning process within innovative organizations (Guerrero, 2022). *Third*, innovation management practices and learning processes have been limited to the available dataset. Therefore, the managerial interplay between innovation and entrepreneurial tensions should also be analyzed in future research (Szulanski, 1996). It takes particular relevance on reasonings' entrepreneurial and innovative response to unpredictable external conditions like economic shakeouts, natural disasters, or pandemics. *Four*, the gendered managerial styles were limited to specific owners' information. Future research should extend the gendered view analysis by focusing on different entrepreneurial, managerial, and leadership among owners, managers, and the workforce. Novel theoretical and empirical studies are still needed to recognize the crucial role of ambidextrous organizations as the missing link between entrepreneurship, innovation, and management fields (Guerrero, 2021).

5.3 Implications for stakeholders

From the results of our study emerged several implications. *For SMEs' managers*, our results provided insights into the positive influence of experimenting and affordable loss (effectual principles) on innovation outcomes. Autonomy and reward systems foster innovative and entrepreneurial behaviors within entrepreneurial and innovative organizations (Guerrero, 2021, 2022). Our results also highlighted that the absence of flexibility represented a limitation for achieving innovation outcomes. In this vein, managers should provide favorable organizational conditions for improving the exploration and exploitation of opportunities (innovation ambidexterity) that could be transformed into innovation or entrepreneurial outcomes. Likewise, learning from failure experiences is favorable for identifying limits of affordable losses and understanding how available resources should be managed in an optimal way to achieve innovations outcomes (Arino & de la Torre, 1998; Smolka et al., 2016), as well as to develop entrepreneurial initiatives (Espinoza-Benavides et al., 2021). Also, SMEs' managers should consider the contributions of a diversified workforce to reduce tensions during entrepreneurial and innovative processes (managerial ambidexterity). Our results show how women's and men's reasoning are complementary to achieving the expected innovation outcomes. Therefore, managers should reinforce the adoption of combined causal-effectual reasoning (entrepreneurial ambidexterity) beneficial for becoming more ambidextrous organizations (Fisher, 2012). *For SMEs' workforce*, our results provide relevant insights into the contribution of both women and men in innovation and entrepreneurial processes. Indeed, females are more flexible and

combine causal-effectual reasonings than males that take uni536 directional decisions. A diversified and ambidextrous workforce could be an organizational 537 competitive advantage to manage uncertainty and exploit it as a motivation for exploring/
538 exploiting new radical and incremental innovations (innovation ambidexterity). It is very 539 important in the post-soviet contexts where organizations operate under the highest level 540 of uncertainty than other contexts (Alonso-Almeida & Bremser, 2014; Yu et al., 2017). *For* 541 *policymakers,* our results highlight the importance of establishing policy frameworks or 542 instruments that ensure equality and diversity within workplaces based on environmental 543 uncertainty conditions. Belarus is still transitioning from a planned market model towards 544 an open model. The Belarusian SMEs are faced with several constraints compared with their 545 competitors from the developed economies. Consequently, to be innovative and competitive, 546 policymakers need to implement effectual reasoning for establishing adequate institutional 547 conditions. *For university educators*, our results also evidenced the crucial role of post548 socialist universities in providing more entrepreneurial/innovative action-oriented courses 549 with the demanded market-oriented competencies/skills (Guerrero & Marozau, 2022). It 550 could reduce any negative social perception about gender entrepreneurial-innovation gaps 551 by legitimizing that a gendered owner/manager/workforce has similar capabilities to lead 552 or engage in entrepreneurial and innovative projects.

553 Appendix 1

554 See Table 7

Table 7 VIF analysis

	VIF	1/VIF
Experience of the owner	1.89	0.529218
Age of the owner	1.84	0.542384
Flexibility (effectual reasoning)	1.56	0.639001
Affordable loss (effectual reasoning)	1.46	0.684378
Size of the organization	1.3	0.769072
Age of the organization	1.27	0.788369
The legal form of the organization	1.24	0.806488
Number of owners	1.16	0.864768
Industry	1.13	0.887562
Gender_Female	1.12	0.896836
Experimentation (effectual reasoning)	1.08	0.923364
Region	1.08	0.930041
Causal reasoning	1.07	0.93192
Level of education	1.06	0.94185
Alliances (effectual reasoning)	1.05	0.95663
Mean VIF	1.29	

Appendix 2

See Table 8

Table 8 OLS regression

Specification	Overall innovations	Radical innovations	Incremental innovations
Age of the owner	− 0.072	− 0.267**	0.083
Experience of the owner	− 0.003	0.038	− 0.013
Gender_Female	1.292	0.225	1.323
Level of education_Bachelor	0.004	0.050	− 0.041
Legal form of the organization_LLC	0.001	− 0.034	0.034
Age of the organization	0.045**	0.007	0.036**
Size of the organization	− 0.015	0.001	− 0.0126
Number of owners	0.020	0.024	− 0.008
Industry	Yes	Yes	Yes
Region	Yes	Yes	Yes
Experimentation (effectual reasoning)	0.328**	0.170	0.231*
Affordable loss (effectual reasoning)	0.868***	0.085	0.715***
Flexibility (effectual reasoning)	− 0.585***	− 0.106	− 0.423***
Alliances (effectual reasoning)	− 0.021	− 0.101	− 0.041
Causal reasoning	0.682*	− 0.112	0.686**
Gender_Female* Effectual reasoning	− 0.347	− 0.170	− 0.201
Gender_Female* Causal reasoning	− 0.508	− 0.060	− 0.526*
Experimentation (effectual reasoning)* Causal reasoning	− 0.087**	− 0.047	− 0.057
Affordable loss (effectual reasoning)* Causal reasoning	− 0.249***	− 0.014	− 0.217***
Flexibility (effectual reasoning)* Causal reasoning	0.160***	0.038	0.117***
Alliances (effectual reasoning)* Causal reasoning	− 0.005	0.025	0.003
Gender_Female* Effectual reasoning* Causal reasoning	0.130	0.042	0.098
Constant	− 1.606	1.157	− 2.146*
Observations	407	407	407
R-squared	0.164	0.139	0.169
F	1.94**	1.6*	2.01**

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix 3

See Table 9

Table 9 Sectoral distribution of innovative SMEs by gender

Sectoral distribution	Male (%)	Female (%)
Manunfacturing	33.68	17.39
Agriculture	2.11	0.00
Construction	8.42	6.52
Trade	32.63	28.26
HoReCa	3.16	10.87
Transport	3.16	6.52
IT	4.21	2.17
Financial services	1.05	2.17
Education	0.00	4.35
Healthcare	1.05	4.35
Utility services	0.00	2.17
Other	10.53	15.22

References

Aghion, P., Van Reenen, J., & Zingales, L. (2013). Innovation and institutional ownership. *American Economic Review, 103*(1), 277–304.

Agnew, J., Anderson, L., Gerlach, J., & Szykman, L. (2008). Who chooses annuities? An experimental investigation of the role of gender, framing, and defaults. *The American Economic Review, 98*(2), 418–422.

Akulava, M. (2016). Gender and Innovativeness of the Enterprise: The Case of Transition Countries. BEROC Working Paper # 31.

Alonso-Almeida, M., & Bremser, K. (2014). Strategic management decisions in power positions to achieve business excellence in small service businesses: Does gender matter? *European Accounting and Management Review, 1*(1), 1–24.

Alsos, G. A., Hytti, U., & Ljunggren, E. (2013). Gender and innovation: State of the art and a research agenda. *International Journal of Gender and Entrepreneurship, 5*(3), 236–256.

Amagoh, F. (2009). Leadership development and leadership effectiveness. *Management Decision, 47*(6), 989–999.

Andersson, S. (2011). International entrepreneurship, born globals and the theory of effectuation. *Journal of Small Business and Enterprise Development, 18*(3), 627–643.

Apesteguia, J., Azmat, G., & Iriberri, N. (2012). The impact of gender composition on team performance and decision making: Evidence from the field. *Management Science, 58*(1), 78–93.

Arino, A., & de la Torre, J. (1998). Learning from failure: Towards an evolutionary model of collaborative ventures. *Organization Science, 9*(3), 306–325.

Baer, M., Vadera, A. K., Leenders, R., & Oldham, G. R. (2013). Intergroup competition as a double-edged sword: How sex composition regulates the effects of competition on group creativity. *Organization Science, 25*(3), 892–908.

Banikema, A., & Tite, T. (2018). Causal or effectual? An exploratory study on women's entrepreneurial behavior and decision-making logic. *Jurnal Manajemend an Kewirausahaan, 20*(2), 73–79.

Berends, H., Jelinek, M., Reymen, I., & Stultiëns, R. (2014). Product innovation processes in small firms: Combining entrepreneurial effectuation and managerial causation. *Journal of Product Innovation, 31*(3), 616–635.

Borghans, L., Golsteyn, B., Heckman, J., & Meijers, H. (2009). Gender differences in risk aversion and ambiguity aversion. *Journal of the European Economic Association, 7*(2/3), 649–658.

Brettel, M., Mauer, R., Engelen, A., & Kupper, D. (2012). Corporate effectuation: Entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing, 27*, 167–184.

Brinckmann, J., Grichnik, D., & Kapsa, D. (2010). Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning - performance relationship in small firms. *Journal of Business Venturing, 25*(1), 24–40.

Brush, C., De Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and Entrepreneurship, 1*(1), 8–24.

Brush, C., Greene, P., Balachandra, L. and Davis, A. (2014), "Women entrepreneurs 2014: Bridging the gap in venture capital", Report sponsored by Ernst and Young, Babson College, Wellesley, MA.

Burke, S., & Collins, K. (2001). Gender differences in leadership styles and management skills. *Women in Management Review, 16*(5), 244–257.

Burns, B., Barney, J., Angus, R., & Herrick, H. (2016). Enrolling stakeholders under conditions of risk and uncertainty. *Strategic Entrepreneurship Journal, 10*(1), 97–106.

Cai, L., Guo, R., Fei, Y., & Liu, Z. (2017). Effectuation, exploratory learning and new venture performance: Evidence from China. *Journal of Small Business Management, 55*(3), 388–403.

Caliendo, M., Cobb-Clark, D. A., Hennecke, J., & Uhlendorff, A. (2019). Locus of control and internal migration. *Regional Science and Urban Economics, 79*, 103468.

Castillo, M. & Freer, M. (2018). Revealed differences. Journal of Economic Behavior &

Chalmers, N. (1989). *Industrial relations in Japan: The peripheral workforce*. Routledge.

Chandler, G. N., DeTienne, D. R., McKelvie, A., & Mumford, T. V. (2011). Causation and effectuation processes: A validation study. *Journal of Business Venturing, 26*, 375–390.

Chesbrough, H., & Schwartz, K. (2007). Innovating business models with co-development partnerships. *Research-Technology Management, 50*, 55–59.

Ciszewska-Mlinarič, M., Obloj, K., & Wąsowska, A. (2016). Effectuation and causation: Two decision making logics of INVs at the early stage of growth and internationalization. *Journal for East European Management Studies, 21*(4), 1–23.

Coad, A., Segarra, A., & Teruel, M. (2016). Innovation and firm growth: Does firm age play a role? *Research Policy, 45*(2), 387–400.

Cooper, R. G. (1996). Overhauling the new product process. *Industrial Marketing Management, 25*(6), 465–482.

Cortimiglia, M. N., Ghezzi, A., & Frank, A. G. (2016). Business model innovation and strategy making nexus: Evidence from a cross-industry mixed-methods study. *R&D Management, 46*(3), 414–432.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297–334.

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature, 47*(2), 1–27.

de Bruin, A., Brush, C., & Welter, F. (2006). Introduction to the special issue: Towards building cumulative knowledge on women's entrepreneurship. *Entrepreneurship Theory & Practice, 30*(5), 585–594.

de Bruin, A., Brush, C., & Welter, F. (2007). Advancing a framework for coherent research on women's entrepreneurship. *Entrepreneurship Theory & Practice, 31*(3), 323–339.

Deligianni, I., Voudouris, I., & Lioukas, S. (2017). Do effectuation processes shape the relationship between product diversification and performance in new ventures? *Entrepreneurship Theory & Practice, 41*(3), 349–377.

Dew, N., Sarasvathy, S., Read, S., & Wiltbank, R. (2009). Affordable loss: Behavioral economic aspects of the plunge decision. *Strategic Entrepreneurship Journal, 3*, 105–126.

Eckel, C., & Grossman, P. (2008). Men, women, and risk aversion: Experimental evidence. In: Handbook of experimental economic results, Elsevier, 1(7), 1061-1073.

Espinoza-Benavides, J., Guerrero, M., & Díaz, D. (2021). Dissecting the ecosystems' determinants of entrepreneurial re-entry after a business failure. *European Business Review, 33*(6), 975–998.

Evald, M. R., & Senderovitz, M. (2013). Exploring internal corporate venturing in SMEs: Effectuation at work in a new context. *Journal of Enterprising Culture, 21*, 275–299.

Fairlie, R. W., & Robb, A. M. (2009). Gender differences in business performance: Evidence from the characteristics of business owners survey. *Small Business Economics, 33*(4), 375–395.

Farhat, J., & Mijid, N. (2017). Do women lag behind men? A matched-sample analysis of the dynamics of gender gaps. *Journal of Economics and Finance, 42*(4), 682–709.

Fiol, M. C., & Lyles, M. A. (1985). Organizational learning. *Academy of Management Review, 10*, 803–813. Fisher, G. (2012). Effectuation, causation, and bricolage: A behavioral comparison of emerging theories in entrepreneurship research. *Entrepreneurship Theory & Practice, 36*(5), 1019–1051.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Foss, L., Wolk, K., & Moilanen, M. (2013). Creativity and Implementations of new ideas: Do organisational structure, work and gender matter? *International Journal of Gender and Entrepreneurship, 5*(3), 298–322.

Frese, M., & Gielnik, M. M. (2014). The psychology of entrepreneurship. *Annual Review of Organizational Psychology and Organizational Behavior, 1*, 413–438.

Frigotto, M. L., & Valle, N. D. (2018). Gender and the structuring of the entrepreneurial venture: An effectuation approach. *International Journal of Entrepreneurial Venturing, 10*(4), 412–434.

Gatewood, E. J., Brush, C. J., Carter, N. M., Greene, P. G., & Hart, M. M. (2009). Diana: A symbol of women entrepreneurs' hunt for knowledge, money, and the rewards of entrepreneurship. *Small Business Economics, 32*(2), 129–144.

Gilbert, C. G., & Eyring, M. J. (2010). Beating the odds when you launch a new venture. *Harvard Business Review, 88*(5), 93–98.

Götz, O., Liehr-Gobbers, K., & Krafft, M. (2010). Evaluation of structural equation models using the partial least squares (PLS) approach. In V. Esposito Vinzi, W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of partial least squares*. Springer handbooks of computational statistics. Springer. https:// doi. org/ 10. 1007/ 978-3-540 - 32827-8_ 30

Greve, H. R. (2003). A behavioral theory of R&D expenditures and innovations: Evidence from shipbuilding. *Academy of Management Journal, 46*(6), 685–702.

Guerrero, M. (2021). Ambidexterity and entrepreneurship studies: A literature review and research agenda. *Foundations and Trends® in Entrepreneurship, 17*(5–6), 436–650.

Guerrero, M. (2022). Does workforce diversity matter on corporate venturing? *Economics of Innovation and New Technology, 31*(1), 35–53.

Guerrero, M., & Marozau, R. (2022). Assessing the influence of institutions on students' entrepreneurial dynamics: Evidence from European post-socialist and market-oriented economies. *Small Business Economics*. https://doi . org/ 10.1007 /s11187 -022 - 00600-1

Guo, R., Cai, L., & Zhang, W. (2016). Effectuation and causation in new internet venture growth: The mediating effect of resource bundling strategy. *Internet Research, 26*(2), 460–483.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis*. Pearson Prentice Hall.

He, X., Inman, J. J., & Mittal, V. (2007). Gender jeopardy in financial risk-taking. *Journal of Marketing Research, 44*, 414–24.

Hong, J. F. L., & Zhao, X. (2017). Effectuated innovation process in entrepreneurial firms: A conceptual model. In S. Sindakis & P. Theodorou (Eds.), *Global Opportunities for entrepreneurial growth: Coopetition and knowledge dynamics within and across firms (advanced strategies in entrepreneurship education and ecology)* (pp. 11–29). Emerald Publishing Limited.

Johansson, A. W., & Lindberg, M. (2011). Making a case for gender-inclusive Innovation through the concept of creative imitation. *Annals of Innovation and Entrepreneurship, 2*(2), 1–13.

Kaplan, M. J., & Warren, A. C. (2007). *Patterns of entrepreneurship* (2nd ed.). Wiley.

Katila, R., & Ahuja, G. (2002). Something old, something new: A longitudinal study of search behavior and new product introduction. *Academy of Management Journal, 45*, 1183–1194.

Kushnirovich, N., & Heilbrunn, S. (2013). Innovation and conformity: The intersection of gender and ethnicity in hi-tech organizations. *Journal of Management Development, 32*(2), 204–220.

Laskovaia, A., Marino, L., Shirokova, G., & Wales, W. (2019). Expect the unexpected: Examining the shaping role of entrepreneurial orientation on causal and effectual decision-making logic during economic crisis. *Entrepreneurship & Regional Development, 31*(5–6), 456–475.

Lee, S., & Lee, B. (2014). Entrepreneur characteristics and the success of venture exit: An analysis of single-founder start-ups in the U.S. *International Entrepreneurship and Management Journal, 11*(1), 891–905.

Lei, J., Lin, B., & Sha, S. (2016). Catching-up pattern among countries in science-based industries: A case study in the pharmaceutical industry. *Journal of Industrial Integration and Management, 1*(1), 1650004.

Li, Y., & Rama, M. (2015). Firm dynamics, productivity growth and job creation in developing countries: The role of micro- and small enterprises. *The World Bank Research Observer, 30*(1), 3–38.

Liao, J., Kickul, J. R., & Ma, H. (2009). Organizational dynamic capability and innovation: An empirical examination of internet firms. *Journal of Small Business Management, 47*(3), 263–286.

Lingelbach, D., Sriram, V., Mersha, T., & Saffu, K. (2015). The innovation process in emerging economies

an effectuation perspective. *International Journal of Entrepreneurship and Innovation, 16*(1), 5–17.

Maine, E., Soh, P., & Dosantos, N. (2015). The role of entrepreneurial decision-making in opportunity creation and recognition. *Technovation, 40*, 53–72.

Manolova, T. S., Brush, C. G., & Edelman, L. F. (2008). What do women entrepreneurs want? *Strategic Change, 17*(4), 69–82.

McAdam, M., & Marlow, S. (2013). A gendered critique of the copreneurial business partnership: Exploring the implications for entrepreneurial emancipation. *The International Journal of Entrepreneurship and Innovation, 14*(3), 151–163.

Mthanti, T., & Urban, B. (2014). Effectuation and entrepreneurial orientation in high- technology firms. *Technology Analysis and Strategic Management, 26*(2), 121–133.

Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly, 13*, 705–750.

Netter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. (1996). Building the regression model: II. Diagnostics. In J. Irwin (Ed.), *Applied linear statistical models* (pp. 385–392). McGraw-Hill.

Noland, M., Moran, T. & Kotschwar, B. (2016). Is Gender Diversity Profitable? Evidence from a Global Survey. PIIE Working Paper Series # 16–3.

Nummela, N., Saarenketo, S., Jokela, P., & Loane, S. (2014). Strategic decision-making of a born global: A comparative study from three small open economies. *Management International Review, 54*,

527–550.

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity, 41*(1), 673–690.

O'Connor, G. C., & McDermott, C. M. (2004). The human side of radical innovation. *Journal of Engineering and Technology Management, 21*, 11–30.

Olofsson, S., Hoveskog, M., & Halila, F. (2018). Journey and impact of business model innovation: The case of a social enterprise in the Scandinavian electricity retail market. *Journal of Cleaner Production, 175*(February), 70–81.

Parrotta, P., Pozzoli, D., & Pytlikova, M. (2014). The nexus between labor diversity and firm's innovation.

Journal of Population Economics, 27(2), 303–364.

Piniuta, I. (2017). Belarusian mentality in the context of intercultural communication: Grounds or pessimism and optimism. *Sustainable Multilingualism, 11*(1), 34–53.

Radas, S., & Božić, Lj. (2009). The antecedents of SME innovativeness in an emerging transition economy.

Technovation, 29, 438–450.

Ramadani, V., & Gerguri, S. (2011). Theoretical Framework of Innovation and competitiveness and Innovation Program in Macedonia. *European Journal of Social Sciences, 23*(2), 268–276.

Read, S., Song, M., & Smit, W. (2009). A meta-analytic review of effectuation and venture performance. *Journal of Business Venturing, 24*(6), 573–587.

Reymen, I., Andries, P., Berends, H., Mauer, R., Stephan, U., & van Burg, E. (2015). Understanding the dynamics of strategic decision making in venture creation: A process study of effectuation and causation. *Strategic Entrepreneurship Journal, 9*(4), 351–379.

Robb, A. M., & Watson, J. (2012). Gender differences in firm performance: Evidence from new ventures in

the United States. *Journal of Business Venturing, 27*(5), 544–558.

Rosa, J. M., & Sylla, D. (2018). A comparison of the performance of majority female-owned and majority male-owned small and medium-sized enterprises. *International Journal of Entrepreneurship and Small Business, 35*, 282–302.

749 Rosa, P., Carter, S., & Hamilton, D. (1996). Gender as a determinant of small business performance: 750 Insights from a British study. *Small Business Economics, 8*(6), 463–478.

751 Ruiz, L. E., Amorós, J. E., & Guerrero, M. (2022). Does gender matter for corporate entrepreneurship? A 752 cross-countries study. *Small Business Economics*. https://doi . org/ 10.1007 / s11187- 022- 00617-6 753 Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability 754 to entrepreneurial contingency. *Academy of Management Review, 26*(2), 243–263.

755 Sarasvathy, S. D. (2008). *Effectuation: Elements of Entrepreneurial Expertise*. Edward Elgar.

756 Sarasvathy, S. D., & Dew, N. (2005). New market creation through transformation. *Journal of Evolutionary* 757 *Economics, 15*(5), 533–565.

758 Serviere-Munoz, L., Vicdan, H., & Saran, A. (2013). Two peas in a pod? Exploring the market orientation, 759 innovation, and dynamism of Mexico and Turkey's entrepreneurial culture. *International Journal of* 760 *Entrepreneurship, 17*, 77–98.

761 Slater, S. F., & Narver, J. C. (1995). Market orientation and the learning organization. *Journal of Marketing,*

762 *59*, 63–74.

763 Smolka, K.M., Verheul, I., Burmeister-Lamp, K., Heugens, P. (2016). Get it together! Synergistic effects of 764 causal and effectual decision-making logics on venture performance. Entrepreneurship Theory and 765 Practice. doi: https:// doi. org/ 10. 1111/ etap. 12266.

766 Stelter, N. (2002). Gender differences in leadership: Current social issues and future organizational implica-

767 tions. *The Journal of Leadership Studies, 8*(4), 88–89.

768 Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the 769 firm. *Strategic Management Journal, 17*, 27–43.

770 Tegtmeier, S., & Meyer, V. (2018). Experts of thoroughness and fanatics of planning? Daring insights into 771 the decision-making of German entrepreneurs. *International Journal of Entrepreneurship and Small* 772 *Business, 33*(1), 132–157.

773 Teruel, M., & Segarra-Blasco, A. (2017). The link between gender diversity and innovation: What is the 774 role of firm size? *International Review of Entrepreneurship, 15*(3), 319–340.

775 Van Praag, C. M. (2003). Business survival and success of young small business owners. *Small Business*

776 *Economics, 21*(1), 1–17.

777 Varis, M., & Littunen, H. (2010). Types of innovation, sources of information, and performance in entrepre778 neurial SMEs. *European Journal of Innovation Management, 13*(2), 128–154.

779 Wagner, M. K. (2001). Behavioral characteristics related to substance abuse and risk-taking, sensation-seek780 ing, anxiety sensitivity, and self-reinforcement. *Addictive Behaviors, 26*, 115–120.

781 Weber, E. U., Blais, A. R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk per-

782 ceptions and risk behaviors. *Journal of Behavioral Decision Making, 15*(4), 263–290.

783 Werhahn, D., Mauer, R., Flatten, T. C., & Brettel, M. (2015). Validating effectual orientation as a strategic 784 direction in the corporate context. *European Management Journal, 33*, 305–313.

785 Wiltbank, R., Dew, N., Read, S., & Sarasvathy, S. D. (2006). What to do next? The case for non- predictive 786 strategy. *Strategic Management Journal, 27*(10), 981–998.

787 Yamakawa, Y., Peng, M. W., & Deeds, D. L. (2008). What drives new ventures to internationalize from 788 emerging to developed economies? *Entrepreneurship Theory and Practice, 32*(1), 59–82.

789 Yeganegi, S., Laplume, A. O., Dass, P., & Greidanus, N. S. (2019). Individual-level ambidexterity and

790 entrepreneurial entry. *Journal of Small Business Management, 57*(4), 1444–1463.

791 Yu, X., Tao, Y., Tao, X., Xia, F., & Li, Y. (2017). Managing uncertainty in emerging economies: The inter792 action effects between causation and effectuation on firm performance. *Technological Forecasting* 793 *and Social Change, 135*, 121–131.

794 Zheng, Y., & Mai, Y. (2013). A contextualized transactive memory system view on how founding teams

795 respond to surprises: Evidence from China. *Strategic Entrepreneurship Journal, 7*, 197–213. 796 Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organiza*797 *tion Science, 13*, 339–351.

800