

Entrepreneurial orientation and performance

- are sexes equal?

Abstract

Purpose – The main objective of this contribution is to shed light on the different perceptions of entrepreneurial orientation (EO) of females compared to those of their male counterparts. EO and its links to performance are examined at the level of both the individual and the firm.

Design/methodology/approach – Multiple linear regression analyses of a dataset with 301 employees in different industries reveal significant differences between genders.

Findings – EO has a positive impact on performance at both individual and firm levels of analysis. Females tend to perceive their individual EO as lower than males, but their self-evaluated work performance is higher than that of males. The firm's EO is also perceived differently by men and by women, but the perceptions of firm's performance are similar.

Research limitations/implications – The results draw attention to the differences between individuals when they evaluate firm-level constructs like EO. While our sample is based on a small number of firms, our findings suggest that EO is neither pervasive throughout the firm nor gender-neutral.

Practical implications – The different gender-related perceptions should be kept in mind when promoting entrepreneurially oriented behaviour within organizations. A strong focus on EO in entrepreneurship policy or education may discourage women.

Originality/value – So far, multi-level organizational interrelationships have been substantially neglected with respect to the gender dimension.

Keywords entrepreneurial orientation, female entrepreneurial orientation, individual entrepreneurial orientation, work performance, entrepreneurial orientation-performance relationship.

Introduction

In a nascent avenue of research dedicated to entrepreneurial orientation (EO) females gain centre stage (e.g., Dawson and Henley, 2012; Goktan and Gupta, 2013; Júnior and Gimenez, 2012; Kickul *et al.*, 2010a; Kundu and Rani, 2004; Ndubisi and Agarwal, 2014). While many contributions dedicated to gender differences in entrepreneurship are based on qualitative research, some recent quantitative empirical studies display interesting gender differences in entrepreneurial activities (e.g., Goktan and Gupta, 2013; Kelley *et al.*, 2016; Tsyganova and Shirokova, 2010). In particular, in the latest Global Entrepreneurship Monitor (GEM) report Kelley *et al.* (2016) highlight that females tend to be less engaged in entrepreneurship compared to their male counterparts, especially in developed, innovation-driven economies. The total entrepreneurial activity for females only reaches 6 % of the whole adult female population while for males it reaches 11 % of the whole adult male population in innovation-driven economies based on the latest GEM data (Kelley *et al.*, 2016). This difference in entrepreneurial activities motivates to shed light on gender differences particularly within the EO context at the organizational level to enhance both our understanding and knowledge as well as academic conversation in this regard.

While according to Kundu and Rani (2004) female aspiring managers achieve higher EO scores, Goktan and Gupta (2013) state in their four-country study including the United States, Hong Kong, India, and Turkey that individual EO tends to be higher in males, whereas Júnior and Gimenez (2012) detected no significant difference between male and female scores when implementing the Carland Entrepreneurship Index (CEI) with 495 students in Brazil. However, analysing women-led businesses in Russia Kickul *et al.* (2010a) stress that female entrepreneurs are able to identify opportunities as well as discover and exploit resources as essential key skills for being entrepreneurial. Overall, there has been a long-lasting call for research on both EO across organizational levels (Wales *et al.*, 2011) and on gender differences with a multi-country approach (Shane *et al.*, 1991) which has not been staunched yet (Carter *et al.*, 2000; Mueller and Dato-On, 2008). Because of the international inconsistency so far this academic discourse requires further in-depth analyses exploring different organisational levels. Differences between sexes require more attention to increase our understanding more comprehensively. As a consequence, based on the theory of planned behaviour (TPB) the core objective of this multi-national study is to enlighten different perceptions of EO of females compared to those of their male counterparts at the individual level. In this regard EO and its gender-related impact on performance are explored at both the individual and firm level. The theoretical EO framework at the firm level is synthesized with the theoretical nature discussed by Miller (2011) and Wales (2016).

Overall, the EO construct enjoys popularity among entrepreneurship scholars (e.g., Covin and Lumpkin, 2011; Edmond and Wiklund, 2010; Rauch *et al.*, 2009a; Wales *et al.*, 2011). In particular, the EO concept serves to identify entrepreneurial behaviours at the firm level (Miller and Le Breton-Miller, 2011) or in other words, EO consists of “*the strategy-making processes that provide organisations with a basis for entrepreneurial decisions and actions*” (Rauch *et al.*, 2009b, p. 762). Within this research stream numerous scholars have focused on the EO-performance relationship (e.g., De Clercq *et al.*, 2010; Filser and Eggers, 2014; Schepers *et al.*, 2014; Shehu and Mahmood, 2014) arguing that a high level of EO leads to superior performance (Al-Nuami *et al.*, 2014; Hughes *et al.*, 2007; Madsen, 2007; Schepers *et al.*, 2014; Van Doorn *et al.*, 2013; Vij and Bedi, 2012; Wiklund, 1999) and also has a positive effect on business growth (e.g., Alarape, 2013; Laukkanen *et al.*, 2013; Moreno and Casillas, 2008; Soininen *et al.*, 2012). While implicitly assuming homogeneity in EO across different units and levels in an organization (Wales *et al.*, 2011), the role of individuals within organizations has not so far been sufficiently addressed in academic research (Joshi *et al.*, 2015; Wiklund and Shepherd, 2003a). Our multi-national study focuses on gender, as females can play a crucial part in exploiting the potential of EO for enhancing organizational performance. Furthermore, as stressed by several academics (e.g., Covin and Miller, 2013; Wales *et al.*, 2011) important efforts are required for stretching the EO concept to the individual level for adding value to theoretical constructs. In this framework the following research question will be answered: *Are men and women equal in their perceptions of EO and performance at individual and firm levels?*

The outlined controversial findings when analyzing female and male EO shaped our chosen research design. We selected four firms of different size from developed and less developed regions, representing both female and male dominated sectors, and collected a survey-based dataset of 301 employees. Our multiple linear regression analyses reveal how gender affects the EO relationships at different hierarchical levels within a company. The detected gender differences challenge the implicitly assumed organizational homogeneity and pervasiveness of EO across firm levels, in line with earlier discussions by Wales *et al.* (2011). As females represent a driving force in economies (Acs *et al.*, 2011; Silverstein and Sayre, 2009; Tatli *et al.*,

2013) and also show higher representativeness in top positions within organizations (Mensi-Klarbach, 2014; van Emmerik *et al.*, 2010; Wang and Kelan, 2013) the differences in perceptions are relevant and essential for firms to strengthen EO and in turn performance across hierarchical levels especially in future.

The paper is structured as follows: after an introduction to the theoretical background and the development of the hypotheses, the methodological approach of this study is described. The results are presented followed by a discussion section dedicated to the implications of the study for theory and practice. As a matter of course the limitations and further research avenues are specified and conclude this research work.

Theoretical background and hypotheses development

Despite the attractiveness of EO in entrepreneurship research the multi-level organizational interrelationships have been largely neglected (Joshi *et al.*, 2015; Wiklund and Shepherd, 2003a) – especially from a gender perspective. The gender-neutral pervasiveness of the EO construct across different organizational levels remains still an open research question. In particular, Wales *et al.* (2011) examine theoretically both why and how EO represents a pervasive manifestation heterogeneously across hierarchical levels. In this regard, one focus was set on employees, who build a fundamental link between organizational tasks and firm performance. As key executives of day-to-day operations the workforce deserves more attention from EO scholars (Floyd and Wooldridge, 1999; Floyd and Lane, 2000). Wales *et al.* (2011) expected significant differences in perceived and manifested EO between employees, depending on their different roles and responsibilities.

To examine the EO at the individual level with a focus on sexes, we draw on the theory of planned behaviour (TPB) (e.g., Ajzen, 1988; 1991; Fishbein and Ajzen, 1975) and its relevance to the EO framework (e.g., Kickul *et al.*, 2010b). TPB predicts behavioural intention to be driven by attitudes, subjective norms and perceptions of behavioural control (Ajzen, 1991). Furthermore, intention represents one of the paramount indicators of behaviour (Bagozzi *et al.*, 1989). Quite a great amount of researchers have used TPB not only in a diverse set of research areas (e.g., Engle *et al.*, 2010; Shook and Bratianu, 2010; Van Gelderen *et al.*, 2008) but also in the sphere of EO and entrepreneurial intention (e.g., De Clercq *et al.*, 2013; Fayolle *et al.*, 2010; Heuer and Kolvereid, 2014; Iglesias-Sánchez *et al.*, 2016; Soininen *et al.*, 2013). Because EO is considered as entrepreneurial activity, intention models can be applied (Krueger and Carsrud, 1993). For Krueger *et al.* (2000) it is manifested that most entrepreneurial actions are intentionally planned behaviour. For linking this fundamental to our EO context, we build on a crucial explanation of entrepreneurial intentions through TPB introduced by Van Gelderen *et al.* (2008) – the stronger an individual desires (subjective norm) doing something entrepreneurial oriented, while believing in his or her required entrepreneurial abilities and skills (behavioural control), the higher is the probability that particular entrepreneurial behaviour within the organizational context follows.

Previous research findings indicated that in general individuals tend to prefer employment at an early stage because they expect to obtain the required knowledge, skills, and networks needed to become entrepreneurial active at a later career stage (Brenner *et al.*, 1991; Galloway *et al.*, 2006; Henderson and Robertson, 1999). With respect to our multi-national frame this prediction regarding entrepreneurial intention based on Ajzen's TPB found support in 12 countries by Engle *et al.* (2010). Overall, the entrepreneurial intentions are shaped by desirability and feasibility, which can be applied in the EO context.

At the firm level we build our hypotheses on previous literature on EO. As discussed by Miller (2011) and Wales (2016) the theoretical explanations for EO and its links to firm performance in previous research are quite heterogeneous and a number of theories are proposed, including the resource based view (RBV)/dynamic capabilities perspective – which has been also discussed by Covin and Lumpkin (2011), Covin and Miller (2014), Edmond and Wiklund (2010), and Miller (2011); the theory of organizational change – implemented by Miller (2011) and Wales *et al.* (2011); the theory of organizational ecology, network theory and the institutional theory – cited by Covin and Miller (2014) and Miller (2011); the neo-bureaucratic and contingency theory – implemented by Covin and Slevin (1991), Lumpkin and Dess (1996a), Miller (2011), and Rauch *et al.* (2009); the agency theory and governance as well as the theory of institutional logics – cited by Miller (2011); and finally the theory of entrepreneurial dominant logic, subjectivist theory of entrepreneurship, and learning theory – implemented by Covin and Lumpkin (2011).

The gender-different construct of entrepreneurial orientation at the individual level

The firm-level EO construct also shows great potential as an individual-level phenomenon according to Bolton (2012), Joardar and Wu (2011), Kropp *et al.* (2008), Langkamp Bolton and Lane (2012), and Poon *et al.* (2006b). Although research in this area requires further in-depth attention, among those viewing EO as an individual-level construct the argumentation is based on the incontrovertible fact that executive individuals take actions, drive and lead themselves through the day-to-day operations as well as through organizational tasks to a feasible and desired outcome. Despite further required evidence, the individual-level construct may be measured at the firm-level and vice versa (Covin and Miller, 2013). Shedding further light on this sphere, this contribution illuminates the nature of the EO-performance interplay on two levels – the individual and the firm – focusing on four dimensions of the prevalent concept of EO – namely proactiveness, innovativeness, risk-taking and autonomy (Covin and Slevin, 1989b; Lumpkin and Dess, 1996; Vij and Bedi, 2012; Wales *et al.*, 2013). These items have not been only used for comparing performance differences between (entrepreneurial) individuals (e.g., Lumpkin and Dess, 1996b; Wiklund and Shepherd, 2003b), these have also already been applied in studies including the individual-level concept of EO (Joardar and Wu, 2011; Poon *et al.*, 2006a; Weaver *et al.*, 2002). However, several scholars appeal to the academic community to invest greater effort in the individual level of EO (e.g., Bolton, 2012; Covin and Miller, 2013; Joardar and Wu, 2011), claiming that individuals are the fundamental explanation for entrepreneurially oriented firms (e.g. Goktan and Gupta, 2013; Langkamp Bolton and Lane, 2012; Lechner and Gudmundsson, 2014). Indeed, some studies have identified the individual values and experiences of owner-managers as substantial drivers of EO in small firms (James *et al.*, 2015; Soinenen *et al.*, 2013; 2015). However, primarily research has trusted in the organizational pervasiveness of the EO construct throughout vertical and horizontal levels without empirical evidence (e.g., Atuahene-Gima and Ko, 2001; Covin *et al.*, 2006; Covin and Slevin, 1991; Wales *et al.*, 2011; Wiklund and Shepherd, 2003a, 2005). In this study we face the challenge proposed by Covin and Lumpkin (2011) stretching the EO concept not for the sake of generalizability but rather for the construct's value by inspecting the pervasiveness to a particular organizational level.

In particular, studies dedicated to gender differences at the individual EO level are rare and in these few the results are contradictory. Neither Júnior and Gimenez (2012) identified any significant gender differences in their sample of 495 students using the CEI. Nor did Kickul *et al.* (2010a) discover evidence of this when analysing women-led businesses in Russia. However, Resmi and Kamalanabhan (2013) found significant differences between management techniques

and competencies employed by female and male entrepreneurs. In addition, Bertoneclj and Kovač (2009) found also a gender difference in EO between managers in Slovenia. Prior American research concluded that females are not more risk-averse than males (Sonfield *et al.*, 2001). However, a more recent study by Coleman (2007) stresses that women tend to be more conservative with personal assets and strategic decisions. While Kundu and Rani (2004) stress that female aspiring managers achieve higher EO scores, a four-country study by Goktan and Gupta (2013) including 389 university students argues that males' individual EO tends to be higher than females'. In line with this multi-country finding in a cross-cultural study to clarify the complex relationship of biological sex, Mueller and Dato-on (2013) identified a novel entrepreneur typecast with balanced stereotypical feminine and masculine characteristics which is rising in America but not in European countries. Apparently, habitual gender-role stereotypes associated with EO dominate in Europe. Significant differences in EO between genders were also discovered by Lim and Envick (2013) when analysing 389 university students in the US, Korea, Fiji, and Malaysia. In short, if females tend to take fewer risks and are less engaged in innovative-driven day-to-day activities because of their organizational position, they will also perceive their individual EO differently than males do. In line with these argumentations and based on TPB, females could feel EO as less desirable through social norms. In addition, females could feel EO as less feasible for them due to family obligations. To shed further light on this controversial argumentation to an organizational context with a multi-national dataset, we propose the following hypothesis:

Hypothesis 1a: The individual EO of males is different from the individual EO of females.

Paull and Geneste (2014) as well as Watson *et al.* (2014) demonstrate that females appear to experience higher levels of satisfaction with their business achievements than do their male counterparts. These observed gender differences from an entrepreneurial perspective are in line with the literature dedicated to differences between employees. Overall, the academic discussion on gender differences in work performance is abundant but not unanimous. Some scholars propose that females tend to receive lower performance evaluations than their male counterparts (e.g., Greenhaus and Parasuraman, 1993). In contradiction to this early research, the latest published meta-analysis dedicated to gender differences in work performance (Roth *et al.*, 2012) discovered that females generally scored slightly higher than males. Nevertheless, according to Buchanan (2014) gender differences regarding perceptions of work performance appear to be more significant among white men and women. In contrast to this finding, earlier Mano (2013) argued that females' and males' work performance is similar. However, Sackett and DuBois (1991) demonstrate male-female differences in performance ratings in 486 work groups. In addition, research investigating the relationships between variables such as work performance and turnover intentions among others using a sample of 292 retail salespeople also illustrate differences between female and male Chinese salespeople (Rutherford *et al.*, 2012). As a consequence, we go in line with the meta-analysis of Roth *et al.* (2012) and predict the following:

Hypothesis 1b: The individual work performance of males is different from the individual work performance of females.

As already noted, scientists rely on the homogenous pervasiveness of EO across organizational levels (e.g., Covin and Slevin, 1991; Krauss *et al.*, 2005; Wiklund, 1999). While prior studies have identified the individual values and experiences of owner-managers as substantial drivers of EO in small firms (James *et al.*, 2015; Soininen *et al.*, 2013; 2015), other latest investigations of Zhang *et al.* (2013) explored the individual EO dimensions highlighting

that these push firms to develop certain capabilities. Earlier several scholars discussed the impact of different EO dimensions on individual performance levels in the sphere of typologies in entrepreneurial behaviour (e.g., Pearce Ii *et al.*, 1997; Woo *et al.*, 1991) which has been only studied with respect to gender also quite some time ago (Lerner *et al.*, 1997). Recently, Krishnakumar *et al.* (2013) designed and developed a business model related to EO for employees that facilitates performance. Since a company is a result of individuals' behaviours and in line with prior findings that EO impacts performance (e.g., Lechner and Gudmundsson, 2014; Lindsay *et al.*, 2014; Shehu and Mahmood, 2014), we propose the following hypothesis:

Hypothesis 1c: Individual EO influences individual work performance.

The gender-different construct of entrepreneurial orientation at the firm level

Although studies indicate that females are increasingly essential to the entrepreneurial growth of an economy, little is known about how females value entrepreneurial thinking (Brush *et al.*, 2009; Krueger, 2007). Earlier multi-country entrepreneurial research has reported a tendency in women to perceive themselves and their surroundings in a less favourable light than men (Langowitz and Minniti, 2007). As earlier mentioned, several studies highlight the gender-related disagreement in EO perceptions – a non-significant difference between the female and male students' scores (Júnior and Gimenez 2012), but a significant difference between scores of female and male entrepreneurs, which is found by Kariv (2011) when assessing the EO between different entrepreneurs in 13 countries. Within an organizational framework at the firm-level another study published by Richard *et al.* (2004) also emphasized that the EO relationship patterns are influenced by both ethnic background and gender. In line with our first assumption and prior findings on gender differences in perceptions in the whole corporate entrepreneurship process (e.g., Bertoneclj and Kovač, 2009; Malach-Pines and Schwartz, 2008; Pepper and Anderson, 2009; Shinnar *et al.*, 2012; Wales *et al.*, 2011), when it comes to the perception of the firm's EO, it is likely that females and males tend to perceive these differently. Thus, we propose the following hypothesis:

Hypothesis 2a: Females perceive the firm's EO differently from males.

Despite complexity, while some studies argue that gender *per se* does not influence business performance (e.g., Chell and Baines, 1998; Kariv, 2008), others report inconclusive results concerning the impact of gender on firm performance (e.g., Boubaker *et al.*, 2014; Fischer *et al.*, 1993; Kochan *et al.*, 2003). A recent meta-analytical investigation by Pletzer *et al.* (2015) shows that the representation of female board members is not connected to firm performance. Biernat *et al.* (2012) demonstrate different gender-based performance evaluations in consistency and content of judgments at the firm level. Nevertheless, other findings show that companies established by men possess more assets, are active in high-technology industries, and are more likely to be located in clustered regions. According to Powell and Eddleston (2008) female entrepreneurs tend to undervalue performance indicators compared to their male counterparts. Additionally, these research results suggest that these abovementioned framework characteristics and available resources fully mediate the entrepreneur gender-firm performance relationship (Lee and Marvel, 2014). In other words, gender related key performance factors have the potential to determine the firm's success (e.g., Coleman and Kariv, 2013; 2014; Hallak *et al.*, 2015; Joardar *et al.*, 2014; Thapa, 2015) which should be kept in mind in considering performance. As a result of this argumentation, we assume the following:

Hypothesis 2b: Females perceive the firm's performance differently from males.

At the heart of the EO-performance relationship, individuals enhance organizational entrepreneurial performance (Bolton, 2012; Joardar and Wu, 2011; Langkamp Bolton and Lane, 2012; Lee and Peterson, 2000; Poon *et al.*, 2006a). In line with the firm-level EO construct we expect a positive EO-performance relationship (e.g., Covin and Slevin, 1989a; Grimmer *et al.*, 2015; Gunawan *et al.*, 2015; Lechner and Gudmundsson, 2014; Lumpkin and Dess, 1996a; Runyan *et al.*, 2008; Schepers *et al.*, 2014). Thus, the following hypothesis is proposed:

Hypothesis 2c: The perception of firm EO is positively related to the perception of firm performance.

Figure 1 summarizes the proposed research hypotheses and the expected directions.

Insert Figure 1 about here

On the basis of the research model outlined in Figure 1, the research methods will be discussed in detail next.

Research method

Data collection and sample characteristics

This study is based on a questionnaire sent to four globally operating companies headquartered in Austria with German (59%), Chinese (15%), Czech (23%), Hungarian (3%), and Slovak (1%) speaking employees in the period from June to September 2015. These firms are active in four industrial sectors: construction, transportation, ICT, and supplying aircraft parts. This diverse sample has been chosen to cover two major business areas – production (construction and aircraft parts supplier) and services (transportation and ICT) – with respect to company size. According to the definitions by the European Commission (EC, 2003) the aircraft parts supplier and the company active in the transportation sector are large companies, whereas the construction and ICT firm are small and medium-sized companies (SMEs). Accordingly, our sample design covers one large and one medium-sized company in each major industry sector. As illustrated in Table 2, 301 subjects, 53.16% of them female, participated in the survey. Where female participation reached 20% in our survey, it was approximately 31.84% of all employees in the ICT sector (Iclaves and EC, 2013, p.83). According to the European Transport Workers' Federation (ETF) and the international organization of public transport UITP in the transportation sector approximately 17.5% are females (UITP and ETF, 2012, p.1). In our survey female participation was 16.28%. In the construction sector, 10% of workers are females (Bennett *et al.*, 1999) whereas in our survey 35.21% of respondents in this sector are female. Finally, in the aircraft

parts business females represent approximately 21% of the workforce (Adler, 1984; Orser *et al.*, 2012) compared to 71.19% in our sample. As women tend to be underrepresented in these sectors our high response rate among women allows us to compare females and males with an almost equal sample size (160 females versus 141 males). In 2014 female employment rates reached 59.6% in the EU-28 (Eurostat, 2015). Accordingly, overall, as outlined in Table 1 with respect to generalizability, the sample with 53.16% females appears to be representative in the European dimension.

Insert Table 1 about here

To avoid the risk of common-method bias we followed numerous suggestions by Podsakoff *et al.* (2003a). Strict methods were implemented to guarantee anonymity and confidentiality for all survey participants (Reio, 2010). Next, all the variables and items were selected from different sources with different scale types (e.g., Baker and Sinkula, 1999; Campion *et al.*, 1993; Covin and Slevin, 1989b; Dess and Lumpkin 1996a; Dill, 1958; Hughes *et al.*, 2007; Jansen *et al.*, 2008; Khandwalla, 1976; Miller and Friesen, 1982; Wales *et al.*, 2013; Wiklund and Shepherd, 2005). In addition, ex ante and ex post techniques in the context of the key dependent variables – performance indicators – were implemented (Podsakoff *et al.*, 2003b; 2012). Firm performance was cross-checked with objective data through a peer group comparison, and the questionnaire was designed so that independent and dependent variables appeared in different sections. The use of perceptual measures is widespread, and earlier investigations show that subjective and objective measurements do indeed correlate (e.g. Gupta and Govindarajan, 1984; Murphy and Callaway, 2004). According to these investigations common-method and single informant bias are not a critical issue in this study.

Measurement

All the measurement items were carefully selected from established instruments (e.g., Baker and Sinkula, 1999; Campion *et al.*, 1993; Covin and Slevin, 1989b; Dess and Lumpkin 1996a; 2005; Dill, 1958; Hughes *et al.*, 2007; Jansen *et al.*, 2008; Khandwalla, 1976; Miller and Friesen, 1982; Wales *et al.*, 2013; Wiklund and Shepherd, 2005). All the scales at the level of the firm and the individual calculate EO as an average of all the items. First, as indicated in Appendix 1, the *EO of the firm* is measured by a twelve-item scale initially developed by Covin and Slevin (1989b) and adapted by Wales *et al.* (2013). The third item of the risk dimension (F_FR3) and the third item of the innovative dimension (F_FI3) were dropped due to poor item-total correlation. Cronbach's alpha with a value of 0.914 is greater than the suggested lower limit of 0.7 (Hair *et al.*, 1995; Nunnally, 1978). Appendix 2 presents the individual EO measured on a 17-item-scale originally developed by Covin and Slevin (1989b) for the firm level EO, then modified to the individual level by Langkamp Bolton and Lane (2012) and Bolton (2012). Cronbach's alpha with a value of 0.931 indicates good internal consistency. The measure of the work performance of individuals is based on the work of Teigland and Wasko (2003) and Koopmans *et al.* (2012) consisting of 21

items. In particular, on a five-point scale nine items range from “seldom” to “always”, six items range from “never” to “often” and six items range from “totally disagree” to “totally agree” (see Appendix 3). Cronbach’s alpha with a value of 0.806 is greater than 0.7 (Hair *et al.*, 1995; Nunnally, 1978). Firm performance is measured by self-reported items used by Wiklund and Shepherd (2005). As presented in Appendix 4, these indicators of performance comprise four aspects entitled revenue, profit, return on assets and an increase of market share which have to be compared to competitors by “*much worse than our competitors*” to “*much better than our competitors*” on a five-point scale. The scale reliability is good, with Cronbach’s alpha value of 0.885.

Results

Descriptive analysis

Table 2 describes the backgrounds of the respondents in our dataset – age, team position, company experience and sector. While the data collected include a large proportion of participants aged between 25 and 44 years (78.10%) with an almost equal percentage of females (54.90%) and males (45.10%), only 11% were below 25 years old or older than 45 years. Interestingly, in the youngest age group of females under 25 years are a clear majority (60.60%), whereas males (66.70%) predominate in the oldest age group. As indicated in Table 2, 44.2% of the survey participants worked as team leaders and 55.8% as team members, reflecting quite small working groups. Women were well represented in team leader positions, as 57.9% of team leaders were female. Table 2 shows that 32.9% had worked in the company for less than two years, 46.8% of all participating individuals had from two to ten years’ company experience, and only 20.3% could be called very experienced employees with more than ten years’ experience in the company. Throughout all categories related to company experience, females (52.5% / 55.3% / 49.2%) and males (47.5% / 44.7% / 50.8%) tend to be equally represented. The gender distribution in firm D was 51 (28.8%) male and 126 (71.2%) female, the corresponding figures for firm B being 8 (80%) and 2 (20%). In the construction sector with a total of 71 respondents, the gender distribution was 46 (64.8%) males and 25 (35.2%) females. Males were also a clear majority (83.7%) of respondents in the transportation firm C with a total of 43 respondents.

Insert Table 2 about here

Comparison between genders

In this study independent samples t- tests were performed to detect significant differences in perceptions of EO and performance between genders.

Insert Table 3 about here

Table 3 compares the means between females and males. It shows that females tend to evaluate their individual EO level similarly to their EO of the firm (mean values of 4.89 and 4.82 respectively). However, females scored significantly lower than males on individual EO (mean values of 4.89 and 5.15; with independent samples t-test statistics of -2.23, which is statistically significant at the .05 level). In general, males seem to estimate their individual EO higher than that of the firm (means of 5.14 and 4.87). Nevertheless, females and males appeared to evaluate both the EO of the firm (means 4.82 and 4.87) as well as firm performance (means 3.59 and 3.60) quite similarly. However, in firm B females and males perceived firm-level EO (t-value = 2.494**) and firm performance (t-value = 2.108*) significantly differently. Firm B was characterized by a very small sample size (n = 10), thus the difference in the whole sample is not significant.

Overall, Table 3 indicates no significant difference in the individual level EO or performance between the four different firms. The one-way ANOVA F-values are 1.480 for individual EO and .224 for work performance. In contrast, the F-values for differences in means between the four firms show significance at the firm-level EO (9.293***) and the firm performance (6.650***).

In the next step, bivariate Pearson’s correlations between all variables were examined (see Table 4). The strongest correlations are found between the individual level EO and performance, being even higher among the females (r = .732) than males (r = .513). Individual EO also correlated strongly and positively with the perception of firm EO, implying that more entrepreneurial individuals tend also to perceive their organization to be more entrepreneurial. The perception of firm performance was likewise positively and significantly associated with the other variables, but the associations were weaker.

Insert Table 4 about here

Results of hypotheses testing

To test our hypotheses we ran multiple linear regression analyses (see Table 5). We graphically examined the residual patterns of the regression models and detected no evidence of heteroscedasticity or non-linearity. Furthermore, all the values of Durbin-Watson statistics (between 1.5 and 2.5) implied no autocorrelation in the error terms. Nor were our results affected by multicollinearity as the tolerance values for all independent variables in our models were greater than 0.51 (Bartlett, 1937; Tabachnick and Fidell 1996). Thus the basic assumptions of multiple linear regressions were fulfilled and we proceed to interpret the model fit statistics and parameter estimates.

Insert Table 5 about here

The regression models explaining the individual level EO and performance are shown in the first two columns of Table 5. In addition to the hypothesized independent variables (gender and EO), we controlled for the effects of age and team position. The control variables were based on the assumption that younger respondents and those in leadership positions might exhibit higher levels of EO. The model for individual EO is statistically significant ($F = 2.445$), although it explains only 3.1% of the variance. The control variables had no significant effects, but the parameter estimate for gender (.257) was statistically significant, implying that males had a higher level of EO. This finding supports our Hypothesis 1a, namely that *the individual EO of males is different from the individual EO of females*. This result is in line with some multi-country EO research reporting a tendency in women to perceive themselves in a less favourable light than men (Langowitz and Minniti, 2007). Next, the model for individual work performance was also statistically significant ($F = 40.007$), and explained 40.4% of the variance. The control variables had no significant effects, but the parameter estimate for gender (-.100) was statistically significant, implying that females achieved a higher level of performance. This finding supports our Hypothesis 1b: *The individual work performance of males is different from the individual work performance of females*. In addition, the parameter estimate for individual EO (.358) is statistically significant, meaning that individual EO has a positive impact on work performance. This result provides evidence for our Hypothesis 1c: *Individual EO influences individual work performance*.

The regression models explaining the firm level EO and performance are illustrated in the last two columns of Table 5. In addition to the hypothesized independent variables (gender and EO), we controlled for the effects of team position, company experience, and sector. The control variables were based on the assumption that experienced respondents in a firm and those in leadership positions might exhibit higher levels of EO. Additionally, mindful of earlier research we assume that different sectors show different firm EO levels (Caruana *et al.*, 2002; Camelo-Ordaz *et al.*, 2009; Meynhardt and Diefenbach, 2012). The model for firm EO was statistically significant ($F=5.048$), explaining 10.7% of the variance. The control variables had no significant effect with the single exception of the aircraft parts supplier, which has a lower EO than other

firms (-.760). The parameter estimate for gender (-.275) was statistically significant, implying that the males evaluated the EO of their employer firm higher than did the females working in the same firm. This finding supports our Hypothesis 2a: *Females perceive the firm's EO differently from males*. Next, the model for firm performance was also statistically significant ($F = 5.557$), and explained 13.2% of the variance. The control variables had no significant effects with the single exception of the transportation sector firm performing poorly compared to the other firms (-.291). The parameter estimate for gender (-.056) was not statistically significant, implying that females and males perceived similar levels of firm performance. This finding lends no support to our Hypothesis 2b: *Females perceive the firm's performance differently from males*. In addition, the parameter estimate for firm EO (.178) was statistically significant, meaning that firm EO impacts firm performance positively. This result serves to support our Hypothesis 1c: *Firm EO impacts firm performance*.

The ultimate answer to our research question – *Are men and women equal in their perceptions of EO and performance at individual and firm levels?* – is “no”. Gender matters at both the individual as well as at the firm level. This answer is illustrated in Figure 2, which summarizes the results of all the regression analyses to shed further light on the long assumed homogeneity of the EO construct.

Insert Figure 2 about here

Conclusion

The main aim of this contribution was to shed light on the perceptions of EO and performance between genders. Our results show that females have a lower individual EO compared to their male counterparts. However, the average values of self-reported work performance do not differ significantly between the sexes. In fact, when the positive effect of individual EO on work performance is controlled for, women score higher on performance. These results contradict the study by Kundu and Rani (2004), who report that female aspiring managers have higher EO scores. However, our results are also in line with those of Goktan and Gupta (2013), who state that individual EO tended to be higher for males when investigating 1,575 undergraduate business students in four countries. Furthermore, our findings corroborate the work of Júnior and Gimenez (2012), who also detected significant differences between male and female scores in Brazilian samples consisting of business students and general adult population. At this point it is worth mentioning that our study contributes to the academic discussion because of its multi-faceted sample characteristics. While most studies tested the individual EO-performance relationship only on students (e.g., Goktan and Gupta, 2013), only few studies have used a sample of non-students (Kundu and Rani, 2004; Júnior and Gimenez, 2012). In particular, our multi-national sample design covers a diverse set of industries from two major business areas – production (construction and aircraft parts supplier) and services (transportation and ICT) – and takes individuals of both developed and less developed regions into account. As a consequence, despite a gender-balanced study sample the results might apply only to male dominated sectors in which females can play a crucial part in exploiting the potential of EO for enhancing organizational performance. However, we also investigated different company sizes from small

and medium-sized to large companies. Therefore, with respect of our chosen study design our results enrich the current EO debate with a focus on gender when launching the EO concept to the individual level for a requested adding value to theoretical constructs (e.g., Covin and Miller, 2013; Wales *et al.*, 2011). However, as discussed later in this section related to further research, this broad approach calls for further research avenues to explain the significant gender differences in more detail.

When it comes to the perceptions of the firm-level EO and performance, females tend to score higher on perceptions of firm EO but see the firm performance similarly to their male counterparts. This finding contradicts the findings of Lim and Envick (2013), who studied the firm level EO in a sample of students. Using student samples to study firm level constructs inevitably has limitations, and therefore our study is better positioned to uncover the relationships within the real life context of organizations.

Implications for theory and practice

To the best of our knowledge this paper is the first to study the influence of gender on EO in a multi-level setting, with representative samples of employees in four companies selected from different industries. As such, it questions the assumption that EO as a firm level construct is pervasively and homogeneously implemented throughout the organization (Wales *et al.*, 2011). While females and males assess their individual EO level and work performance and also the firm EO significantly differently, they perceive the firm performance in a similar way – in other words, perceptions of EO are less gender-neutral than those of firm performance. In short, EO is neither pervasive throughout the firm nor gender-neutral across different organizational levels. Drawing on TPB (Ajzen, 1988; 1991; Fishbein and Ajzen, 1975) and enriching the theoretical framework initially constructed by Wales *et al.* (2011), we empirically examined how perceived EO of employees in their day-to-day operations impact the fundamental link between organizational tasks and firm performance (Floyd and Wooldridge, 1999; Floyd and Lane, 2000). In line with the discussion by Wales *et al.* (2011), the empirical significant differences in perceived and manifested EO at different organizational levels are particular different between sexes.

From a practical perspective, the findings of this study also have implications for management and entrepreneurship education. The results about individual EO and work performance imply that encouraging entrepreneurially oriented behaviour within organizations can result in improved work performance, but it may be more effective for males. Females may also benefit from a different type of entrepreneurial education than males. Women's lower perceptions of their own EO may discourage them from becoming entrepreneurs if the characteristics of innovativeness, proactiveness, autonomy and risk taking are over-emphasized in entrepreneurship education and policy. With respect to this more conservative perception of females in EO, organizational career management needs to provide adjusted challenging entrepreneurial assignments, learning entrepreneurial opportunities, and entrepreneurial skill development. For instance, individuals with high EO could be encouraged to start corporate venture outs independently while maintaining the former employer as a safe business partner. This is especially interesting for innovative flexible and family-friendly work arrangements which appear to be still more important for females than for males. Further investigations are required, which leads to the next sub-chapter considering the detailed investigations required for gender-related issues which need to be taken into account in future EO studies.

Limitations

As in scientific contribution in general, this study suffers from limitations. Sampling only four companies limits the generalizability of the findings to other populations despite our adequate gender distributions across Europe as highlighted in Table 1. Accordingly, the research sample and design should be expanded to other countries and cultures. Even though a regional focus was implemented in other EO studies (e.g., Kickul *et al.*, 2010a; Kim *et al.*, 2015; Munoz *et al.*, 2015), a multi-country contribution would serve to reveal further geographical and cultural differences with respect to gender issues (e.g., Goktan and Gupta, 2013; Gunawan *et al.*, 2015; Lee *et al.*, 2011; Mueller and Conway Dato-on, 2013). Furthermore, the research design only implemented independent t-tests and multiple regression analyses. These limitations open future research paths which will be discussed in the next section.

Future research paths

This study implies that EO may not be a homogeneous gender-neutral pervasive construct throughout organizations (Wales *et al.*, 2011). As a result, new research questions have been raised which require further investigations with bigger samples in international contexts. Based on our findings, we recommend the following agenda of substantial, valuable and interesting research questions that our followers could explore. Because our sample is characterized with a multi-national approach and recent studies highlighted the importance of culture in EO the answer to following research questions would explain reasons for our discovered gender-related differences in more detail: Are the differences in EO between men and women culture-bound? To what extent do the linkages between individual EO and work performance differ across countries? Furthermore, because our empirical study covers a diverse set of sectors and different company sizes further qualitative investigations are required for providing additional in-depth explanations in perceived gender differences: Why do females estimate their individual EO scores to be low but assess their individual work performance and firm performance similarly to their male counterparts? Are the gender-related differences weaker in female-dominating sectors such as health care or wholesale? In particular, unattractive sectors for women provide an interesting research avenue for the EO-performance interrelationship (Veidal and Flaten, 2014). Finally, case studies dedicated to EO with respect to gender issues in entrepreneurship education (e.g., Anderson *et al.*, 2013) will shed further light on this entrepreneurial topic comparing the impact of gender on individual EO.

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