

# Examining the relationship between team-level entrepreneurial orientation and team performance

Team-level  
entrepreneurial  
orientation

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## Abstract

**Purpose** – This article investigates (in)direct relationships between team-level entrepreneurial orientation and team performance, where team entrepreneurial orientation (EO) is measured as a team-level construct, not as concentration of team members' scores. In this article, the authors present and explore how EO-oriented behaviour within a team affect its performance, taking into account the team's trust in a manager and commitment to team and company goals.

**Design/methodology/approach** – This article focuses on a quantitative analysis of 55 teams operating within a large high-tech manufacturing enterprise, gathered through a traditional survey. The conceptual framework for this research was based on the theories of organisational citizenship, extra-role behaviour and social exchange. The authors explain how contextual factors establish a framework which enables team EO transformation towards higher performance of teams.

**Findings** – The results show that (team) performance benefits from EO-related behaviours. However, individual dimensions of EO are not universally beneficial and need to be combined with a mutual trust and/or commitment to team enterprise's goals to achieve high performance.

**Originality/value** – The findings provide important insight into which team factors may be targeted at the intervention or support of team members, including managers and immediate superiors who lack an active personality and are not willing to take risks at workplace. The authors adopted EO instruments, mutual trust and commitment from an individual scale to a team one, and also offer new opportunities to analyse such phenomena from a new level and evaluate them from the perspective of team managers.

**Keywords** Entrepreneurial orientation, Trust, Commitment, Performance, Team

**Paper type** Research paper

**JEL Classification** — L26, M10, M12, M50

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## 1. Introduction

Given current trends in organisations towards more decentralised and team-based structures (Alsharo *et al.*, 2017; Wombacher and Felfe, 2017), where teams are the most popular forms of work (Lin *et al.*, 2019; Liu *et al.*, 2020), little attention has been paid to entrepreneurship in the context of teams (Boone *et al.*, 2020; Hughes *et al.*, 2018; Wales *et al.*, 2021; Zhang *et al.*, 2020) and moderators' interactions at team levels (Covin *et al.*, 2020; Li *et al.*, 2018), and that is why, more research is necessary. Especially that entrepreneurship promotes creative and spontaneous actions (Schröder *et al.*, 2021), recognising and pursuing opportunities, creating new value, assuming risks and realising benefits (Beliaeva *et al.*, 2020), and the behaviour of team members is a relatively controllable determinate of workplace performance, comparing to, for example, market conditions or competitors' behaviour (Middleton and Nowell, 2018). Therefore, research on the team-level entrepreneurial orientation and team performance poses challenges. In this spirit, Ferreira *et al.* (2021) assume that when examining the relationship between entrepreneurial orientation and performance, recognising the multidimensional character of entrepreneurial orientation (EO) construct becomes essential. Recognising the multidimensional character of this construct is critical, and the complexity surrounding this argument involves additional research. It reveals the need for simultaneous search for various entrepreneurial types of behaviour. Such a lack of subject-matter literature is a basis for examining the construct of EO as a multifaceted team attribute (Wales *et al.*, 2020). Thus, recognising the existing ways of manifesting EO-oriented behaviour may help to better understand entrepreneurship as a phenomenon studied more as such inside organisations, for example, in teams.

Taking the above observation into account, our research is focused on (in)direct relationship between team EO and the level of team performance (TP), where team EO is measured as a team-level construct, not as an agglomeration of team members' scores (Covin *et al.*, 2020). Our conceptualisation of team EO is related to the measurement of team EO. We focused on the individual dimensions of team EO, because according to the concept of equifinality (Covin and Lumpkin, 2011), we were interested in an issue worth considering, i.e. whether different team EO dimensions affect TP in different ways.

Moreover, we explore whether the relationship between team-level EO and TP is conditioned by some moderating factors. We propose a framework which considers how contextual conditions such as proactive motivational states (i.e. mutual trust and commitment in teams) can moderate this relationship.

In the subject-matter literature, teams are goal-oriented entities established to instrumentally achieve organisation's goals (Li *et al.*, 2018). For instance, teams are used by enterprises to organise employee resources to support the implementation of complex and non-routine tasks (Alsharo *et al.*, 2017). Team members coordinate work, join efforts, share knowledge and information, and develop mutual competencies, effectively constituting a superordinate entity which goes beyond individual members (Santos *et al.*, 2019). This indicates that organisational resource configurations are crucial for the manifestation of EO (Wales *et al.*, 2021). Taking the above into account, EO as a team attribute reflects what teams "do" rather than what they "are" (Wales *et al.*, 2021). We can therefore assume that EO is present at multiple levels as an organisational phenomenon, which means that EO may be changed "vertically" at different hierarchical levels, depending on different organisational roles of employees and their responsibilities (Mustafa *et al.*, 2018; Wales *et al.*, 2011). As top performers are not limited to higher management, but they may be found at all levels of a given organisation (Neininger *et al.*, 2010), the aforementioned deficiency of empirical research concerns mainly the role of entrepreneurial behaviour among first-level managers and non-managerial employees, individually and collectively (Covin *et al.*, 2020; Hughes *et al.*, 2018; Middleton and Nowell, 2018; Mustafa *et al.*, 2018; Rigtering *et al.*, 2019; Wales *et al.*, 2011; Williams *et al.*, 2010). What is more, it is worth adding that non-managerial employees are a

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group which understands the specificity of workplace and is capable of creating solutions that can be successfully implemented in the enterprise (Wójcik-Karpacz, 2018). And these employees are exposed to various types of personal risk within their roles. Especially when working on exploratory activities, subordinates sometimes have to cross the boundaries of organisation's strategy and culture (Kraus *et al.*, 2019) with or without their superior's consent (Mustafa *et al.*, 2018). This includes challenging existing standards or limiting bureaucracy (Kraus *et al.*, 2019). Also, they may often not get any support of their superiors, which creates further personal risk for subordinates (Kraus *et al.*, 2019).

The complex nature of "employee entrepreneurial behaviours" suggests that a number of contextual influences may have an impact on the emergence of such behaviours (Mustafa *et al.*, 2018). Therefore, it is crucial that both theorists and practitioners understand the ways in which context influences employee entrepreneurial behaviours (Mustafa *et al.*, 2018).

According to our research, these findings suggest that the relationship between team EO and TP may vary depending on some moderators, such as team commitment (TC) and/or mutual trust (MT) between the team manager and the employee. Both of these factors are explained in detail below.

Against this background, scholars encourage research into TC (Wombacher and Felfe, 2017) and MT between managers and employees (Costa *et al.*, 2017), as they are important for maintaining group-oriented EO and improving TP of their subordinates. The issues of establishing and using positive relationships between the superior and subordinates and the implementation of appropriate tools (practices) by the former one may have a real impact on the entrepreneurial behaviour of team members and, consequently, their (team's) performance. This is due to the fact that different instruments (good or bad management practices) have different predictive properties, and hence their usability. If so, the question, basing on the theories of organisational citizenship (Covin *et al.*, 2020; Konovsky and Pugh, 1994), extra-role behaviour (Konovsky and Pugh, 1994; Smith *et al.*, 1983) and social exchange (De Clercq *et al.*, 2010; Emerson, 1976; Homans, 1958; Hui *et al.*, 1999) is: how does EO in a team, together with its commitment to team and enterprise's goals as well as MT between a superior and subordinates in the team, influence TP? We use the above-mentioned theories to explain conditions under which team members use their collective EO behaviour in pursuing desired TP. This applies in particular to the analysis of data samples originating from team members operating in enterprises functioning in the manufacturing sector where there is a lack of sufficient knowledge, while the service sector has turned out to be an area of research interest (Covin *et al.*, 2020). Previous research shows no evidence of whether team EO has a similar impact on workplace performance in teams nested within the enterprises operating in the manufacturing sector (Covin *et al.*, 2020). It is possible that different backgrounds and contextual factors (e.g. TC and MT) may affect estimated relationships. Therefore, developing and expanding theories of how team members' manifestation of EO is related to TP is also important in enterprises belonging to the sector not covered by such research so far.

The present research aims to fill this gap in the literature devoted to EO. Hence, the aims of this research were twofold: the first one was to find out how team EO is related to workplace performance for teams, while the second one was to analyse whether MT and TC moderate a relationship between EO and performance in teams. The implementation of these goals allowed for understanding the unique mechanisms by which TC and MT influence a relationship between EO and workplace performance in teams on the basis of a theoretical framework and empirical evidence. Thus, we responded to academics' calls for further contextual considerations in determining entrepreneurial behaviours (Mustafa *et al.*, 2018) and their impact on valuable organisational performance at various levels of the enterprise (Hughes *et al.*, 2018). The following pages present variables and develop hypotheses.

## 2. Theory and hypotheses

### 2.1 Team-level entrepreneurial orientation and performance in teams

Entrepreneurship is a process implemented by members of a given organisation who, by using opportunities unnoticed by others, break the boundaries of acceptable behavioural patterns and practices in order to generate new values. Entrepreneurial employees are characterised as being unconstrained by situational limitations and likely to seek out opportunities to shape their environment by bringing about positive changes (Wang *et al.*, 2017). These activities result in a change in the state of a given organisation in a variety of contexts.

Organisations as groups of people working together to achieve a common goal may manifest different behaviours at different hierarchical levels. The foundation of these changes is EO, given that EO pervades the whole organisation (e. g. Wales *et al.*, 2011).

EO is one of the well-established concepts in the field of entrepreneurship (Ferreira *et al.*, 2019).

EO as an organisational attribute was initially introduced into the scholarly conversation based on the awareness that organisations, just like individuals and teams, may “be entrepreneurial” (cited by Wales *et al.*, 2021). This means that different actors, including teams that are clearly nested within the organisation, may manifest a broader “global EO” and work to create new value under conditions of uncertainty (cited by Wales *et al.*, 2021). In a similar vein, Wombacher and Felfe (2017) argue that EO-oriented behaviour applies to team members. It may be assumed that this concept is indeed a solid measure of the level of entrepreneurship not only for enterprises, but also employees and teams in which they work.

In the literature, EO is presented as a multidimensional description of how the distribution of EO manifests itself inside an organisation. EO represents practices and processes aimed at creating and seizing opportunities by members of a given organisation (Wales *et al.*, 2011). This suggests that the potential of EO as a driving force for TP may depend on different ways in which the phenomenon is exposed by individual team members (Covin *et al.*, 2006; Krueger and Sussan, 2017). However, the level of EO in teams and the relative composition of its sub-dimensions may actually differ in terms of their exposure (Wales *et al.*, 2011). Hence, these entities are different with regard to their employees’ innovative, proactive and risk-taking, i.e. opportunity-seeking behaviour (Schröder *et al.*, 2021). The three dimensions of EO are discussed in more detail below. It is worth adding that entrepreneurial initiatives can be managerially induced or appear autonomously in teams. In a team environment where autonomy is encouraged, there may be differences in the entrepreneurial behaviour of people who work in a team. EO-related initiatives for bottom-level staff members and managers rely on the generation and implementation of innovative ideas which can contribute to better meeting the needs of internal clients, improving performance and making organisations to function more efficiently. In this bottom-up approach, first-level managers should not only inspire and encourage subordinates to take independent initiatives, but also should allow their subordinates to use all available resources, without consulting them as their superiors for solutions to new problems each time they deal with unusual situations. Considering that non-managerial employees focus more on day-to-day operations than their superiors, it may also be assumed that the lower the position of an individual in the organisational hierarchy, the fewer options this individual has to diversify risks, and the more negatively the predetermined risk-taking strategies may be perceived and responded (Wales *et al.*, 2011). This means that line employees are less likely to be innovative than middle and higher-level managers. These employees take less risk and behave in a less entrepreneurial way, so they also perceive and react to EO differently than their superiors. Thus, team members who are unable to minimise the risks associated with entrepreneurial activity will be more risk-averse than those who can (Hayton, 2005). Moreover, if they encounter and perceive different levels and sources of risk, they are likely to engage in different risk management strategies as well,

which may also lead to different manifestations of EO at lower organisational levels (e.g. team level) (Karpacz, 2016; Rapp *et al.*, 2015). Moreover, if a given organisation is characterised by a high degree of formalisation, it cannot be ruled out that it expects non-managerial employees and first-level managers to behave in accordance with adopted procedures, i.e. that people employed at lower levels act in a way expected by middle-level managers (Bolino *et al.*, 2017). This means that tasks for exploitative behaviour are clear and do not allow bureaucracy to be limited by difficult standards or process changes, nor is it absolutely necessary (Kraus *et al.*, 2019). Therefore, going beyond the roles assigned to them is undesirable and may result in sanctions for such going beyond formal roles in workplaces (Bolino *et al.*, 2017). By contrast, employees must sometimes cross the boundaries of organisation's strategy and culture, taking into account "entrepreneurship within existing enterprises" (Kraus *et al.*, 2019). However, the theory fails to explain the adoption of EO characteristics and exhibition of EO behaviours, for examples, for teams. In other words, previous team EO research in general fails to deliver full insight into the value of EO within different contexts (remain disparate and scarce i.e. Covin *et al.*, 2020).

Given that conceptualisation and measurement are the basis for deepening knowledge of EO, there is also a need for a coherent approach to study EO in teams. According to the majority of existing EO research, we consider EO to encompass three dimensions, namely innovativeness, proactiveness and risk-taking (Covin and Slevin, 1989). These three dimensions best represent the conceptual view of EO, even though other conceptualisations add additional dimensions or exclude individual dimensions (Lomberg *et al.*, 2016). That is why, the above-mentioned three sub-components (Covin and Slevin, 1989)—traditionally recognised as those encompassing the construct of EO at the organisational level of analysis (i.e. enterprise as a whole) (Lomberg *et al.*, 2016) and in recent years also defined and operationalised as sub-dimensions of the construct of individual entrepreneurial orientation (IEO) (Covin *et al.*, 2020)—were considered relevant for the EO team-level analysis construct, except that the specific ratios of these components have been adjusted to reflect team members' behaviour, which involved reformulation of items to the level of teams (see further—part 3.2.1 and Appendix). Such a transfer of this construct to the team level has provided us as researchers with new opportunities to analyse EO from a new level and perspective, because the evaluation of this phenomenon was made by a direct superior.

EO at the team level represents predisposition of working team members to take risks, be proactive and be innovative (Zhang *et al.*, 2020). According to Griffin *et al.* (2007), proactiveness involves self-starting goals and active displays of initiative which may be differentiated both from core task performance and from passive aspects of citizenship, such as adjusting to changing work conditions. Proactiveness is a specific form of motivated behaviour at work (Bateman and Crank, 1993), different from task performance and citizenship behaviour (Griffin *et al.*, 2007). It is worth mentioning that citizenship behaviour refers to "a series of contribution behaviours that maintain and enhance the social and psychological environment in which task performance takes place" (cited by Zhu, 2013). Despite this, previous research concerning proactiveness has included proactiveness as a part of citizenship behaviour (e.g. Strauss *et al.*, 2009), and we did the same. In our research, proactiveness represents team members' behaviour in anticipation of future problems, needs and changes inside a given organisation. It involves persistent initiative taking, anticipating and seizing new opportunities to improve current performance at workplace. Team members' proactiveness is aimed at changing the team situation and the way the team works (Strauss *et al.*, 2009). However, being proactive is not a reaction to external requirements, but self-activating and directed towards the future (Strauss *et al.*, 2009). The review of employee behaviour research in the field of entrepreneurship by Mustafa *et al.* (2018) points to a similar concepts of proactivity defined by some researchers. Mustafa *et al.* (2018) determines, among

others, that employee proactiveness includes a range of self-initiated and future-orientated actions aimed at changing and improving the organisation's current situation. Understanding proactivity is important both for researchers and practitioners, because it determines the qualification of activities to this dimension, and closes the field of considerations as to the possibility of including reactive activities in it. Reactivity suggests a response to actions undertaken by, for example, internal stakeholders (Wójcik-Karpacz, 2016).

Additionally, proactive behaviour promotes change and plays a unique and crucial role in the process of innovation, influencing the transition from idea generation to idea implementation (Strauss *et al.*, 2009). The innovativeness of team members is to solve organisational, team and professional problems by finding official and unofficial solutions to such problems (see Mustafa *et al.*, 2018). In our research, innovativeness is defined as the predisposition of working team members to actively seek and implement creative solutions to work-related problems. Innovative behaviours (IBs) can manifest themselves in different ways. Working team's innovative members intentionally introduce or apply new ideas, products, processes and procedures to their role, working unit or organisation (Yuan and Woodman, 2010). Team members will implement IB only if they intuitively expect that favourable performance outcomes occur and, under the theory of social exchange, when IB is valued by their managers. Employees are not expected to automatically implement IB as its implementation, due to risks associated with innovative and entrepreneurial actions, creates uncertainty as to whether the performance will improve significantly (Hughes *et al.*, 2018). However, the IBs of team members may differ from those at the level of enterprise (Mustafa *et al.*, 2018).

In addition, the entrepreneurial behaviour of team members exposes them to various types of personal risk within their functions, given that risk-taking is part of an intra-entrepreneurial process (Kraus *et al.*, 2019; Mustafa *et al.*, 2018). This indicates that entrepreneurial behaviour grounded in EO is also associated with risks. In our research, risk-taking refers to the tendency of team members to undertake work-related activities which are not authorised by their superiors (team managers) and are burdened with uncertain results. To sum up, the level of entrepreneurship in a team may be estimated according to its EO which consists of three dimensions: proactiveness, innovation and risk-taking.

It should be mentioned that the behaviour of an employee as a member of a team and an organisation can be divided into two types, i.e. the in-role behaviour and the extra-role behaviour. The in-role behaviour of employee refers to the collection of a series of actions of this employee, based on his or her role in a given organisation. The extra-role behaviour of employee refers to the collection of a series of actions that are not described or defined as a part of his or her work or present in the official salary system of the organisation (Zhu, 2013). That is why, when qualifying activities for these dimensions, it is important to consider what constitutes off-role behaviour, as some specific types of occupations require employees to be at least innovative, proactive and risk-taking to some degree (Covin *et al.*, 2020).

In line with the above findings, team EO is made up of collective EO behaviours of a given working team members (Kozłowski and Klein, 2000). On the one hand, working team members may choose to implement entrepreneurial behaviour that is not part of employee's formal role; but on the other, it makes a significant contribution to the efficiency of organisation (Podsakoff *et al.*, 1997). As proactive behaviour at work may involve challenging the status quo, it is not always perceived as positive behaviour, and thus may involve high social costs (Strauss *et al.*, 2009). For this reason, team EO may be either a positive or negative factor. This indicates that the relationship between EO and in TP is complex. Therefore, a proactive, innovative and risk-taking team is often the initiator of actions that higher level management must then respond to.

Based on the theory of organisational citizenship and extra-role behaviour, we assumed that the entrepreneurial behaviour of team members should be oriented towards the goals of the whole team and enterprise to make positive outcomes to occur in working groups. The goals of team should not contradict the goals of enterprise as a whole.

We also made an assumption that citizenship behaviour is motivated by positive attitudes at workplace. Positive participation means participating in activities which do not involve work, bringing benefits for the team and organisation by the transformation of resources, innovation of resources and adaptation of resources (Zhu, 2013) or according to the social exchange theory sharing useful information and suggestions, etc. with others (De Clercq *et al.*, 2010). Consequently, we state the *first hypothesis*.

*H1.* Team EO is positively related to TP.

Moreover, treating the team EO–TP relationship as a profiled phenomenon opens the field of searching for moderators which have an impact on such a relationship. Such research answers the question of what to do and what mediates between team EO and the actual performance achieved by a given team. This generates the need to identify the missing elements of team EO–TP relationship, which may be its moderators, as they allow for a better explanation of the analysed phenomenon. As a result, it will be possible to explain why specific practices are effective or ineffective in a given context. These observations are the basis for identification of variables moderating the team EO–TP relationship.

## *2.2 Team commitment as moderator*

Commitment refers to the emotional bonds between individuals and larger groups, such as teams, professions, unions and organisations (Strauss *et al.*, 2009). In our research, TC includes a genuine desire to be attached to the enterprise's overall direction and the team's goals. Team engagement is based on the consistency of team members' goals with these belonging to the team and organisation. For instance, employees may be committed to both the entire organisation and their team or working group (Wombacher and Felfe, 2017).

Previous research shows that TC is among the most important employee attachments at workplace. It is a key predictor of organisational citizenship behaviour (OCB). OCB can be defined as discretionary behaviour which is not a part of an employee's formal job role, not directly or explicitly known by the prescribed reward system, although it is favourable to the organisation (Jehanzeb, 2020), for example, it makes a significant contribution to the organisation effectiveness (Wombacher and Felfe, 2017), just like the EO-oriented behaviour. However, team members' entrepreneurial behaviour is not always accepted by superiors (Podsakoff *et al.*, 1997) or may not directly or indirectly improve workplace performance (Strauss *et al.*, 2009). That is why, we propose in our research that team EO could be part of a wider set of citizenship behaviour but should not be confused or treated solely as such (Covin *et al.*, 2020).

Due to the fact that extra-role behaviour is discretionary (Konovsky and Pugh, 1994), the same set of behaviours may be defined as extra-role behaviours when displayed within a different context of work (Covin *et al.*, 2020). So, OCB may have slightly different meaning in different teams: certain behaviours are role-related behaviours (e.g. auxiliary or supporting tasks) for some teams than for others (i.e. extra-role behaviour). As we mentioned above, previous research showed that TC predicts OCB. It was stated, for instance, that TC was found to be strongly related to team-directed helping behaviour and TP (Wombacher and Felfe, 2017). Still another research was focussing on identifying different relationships of TC with relevant workplace performance. The analyses confirmed the impact of team involvement on TP. Moreover, these effects have been intensified over time (e. g. Neininger *et al.*, 2010; Wombacher and Felfe, 2017). One of the most recent research on commitment in

working groups has shown that TC is important as it could facilitate long-term cooperation which enhances mutual awareness of members' skills, thus contributing to long-lasting TP and success (Liao *et al.*, 2020).

It also turned out that the team is expected to be committed to predicting proactive behaviour targeted at relevant foci. Specific foci can primarily refer to proactive behaviours targeted at corresponding foci. The foci of commitment mentioned here are the individuals and groups to whom an employee is attached. The relationship between employee's commitment and behaviour will be stronger when the foci of commitment are consistent with those of beneficiaries of this behaviour (Strauss *et al.*, 2009). By developing this issue, depending on the intended beneficiaries of OCB, a distinction is made between OCBs directed towards the organisation (OCBO) and towards individuals (OCBI) (i.e. team members). Organisational citizenship behaviour–individuals (OCBI) includes behaviour that is aimed at other individuals in the workplace while organisational citizenship behaviour–organisation (OCBO) includes behaviour directed at the organisation as a whole. The example of OCBO would be attending voluntary meetings or events pertaining to the organisation, while the example of OCBI would be volunteering to help other team members (Wombacher and Felfe, 2017). Researchers emphasise that highly committed teams in particular are emotionally involved in the aforementioned team success and are motivated to act in the best interests of the group, by making themselves committed at higher levels of independence, goal pursuit and citizenship (Li *et al.*, 2018). Team managers may also wish to combine specific team-building measures with the promotion of overarching organisational values and goals to improve their subordinates' TP (Wombacher and Felfe, 2017). It can therefore be assumed that committed members to a specific target will make an extra effort to help the team achieve its goals. This clearly demonstrates that the extent and degree to which team members are attached to the team plays an important role in their behaviour at workplace (Meyer and Allen, 1991). Therefore, the teams of committed team members are likely to collectively encourage and persist in efforts to achieve high performance at workplace. With regard to team EO, persistence in overcoming the organisation's business failures is crucial as seizing business opportunities requires commitment over a longer period of time and many failures can be expected (Covin *et al.*, 2020; Rigtering *et al.*, 2019).

In summary, factors which enhance proactive work behaviour include contextual factors, such as proactive motivational states (i.e. commitment) or orientations (Covin *et al.*, 2020; Rigtering *et al.*, 2019). Therefore, it is worth exploring more what team factors can motivate team members to undertake EO activities which are spontaneous (sometimes without formal guidance from team managers or without their consent) and not sanctioned by the organisation. In such cases, team EO represents extra-role behaviour and is not part of a formal job description, is not recognised by formal reward systems and is not a source of criminal consequences when not performed by team members (Dyne and LePine, 1998). This team motivation factor is well-captured, for example, by TC which reflects the extent and degree to which team members care about the team's fortunes and successes and are ready to make an effort to support the team's goals (Li *et al.*, 2018). Commitment to a specific goal is a better predictor of behaviour related to that goal than overall organisational commitment (Herscovitch and Meyer, 2002). Hence, it may be thought that team's commitment has the potential to reveal and adapt initiatives related to EO in teams, increasing their strength at the same time. Therefore, we expect that TC may favour EO-related behaviour which, in turn, helps to increase TP, pointing to the importance of TC and justifying its inclusion as a moderating variable. Based on the above rationales, we state the *second hypothesis*.

*H2.* TC positively moderates the relationship between team EO and TP.

### 2.3 Moderating role of mutual trust

Trust is a multifaceted concept which has been a long-standing subject of research (Middleton and Nowell, 2018). Existing research has shown that an employee is involved in at least two social exchange relationships at work: with his/her superior and with the organisation (Masterson *et al.*, 2000). From the employees' perspective, superiors are the representatives of the organisation (Kashyap *et al.*, 2016), who have influence over resource allocation, performance evaluation, and reward (Hughes *et al.*, 2018).

In order to utilise the importance of superior–member exchange, organisations establish teams to bring together individuals possessing the necessary expertise and skills to collaborate with each other on organisation's tasks (Alsharo *et al.*, 2017; Dirks and Ferrin, 2001). In teams, the above-mentioned social exchange relationships are especially important as the main responsibility of the team manager is to coordinate and improve the functions of team tasks and goal-pursuit processes (Li *et al.*, 2018). Importantly, researchers in the field of organisational behaviour (Konovsky and Pugh, 1994) argue that trust in direct superiors is more important than trust in organisations. Furthermore, Kashyap and Rangnekar (2016) revealed in their research that subordinates put greater trust in their immediate superiors, depending on the integrity of the procedures and practices applied by their superiors. This indicates that the behaviour of team managers significantly contributes to the development of trust. Especially when superiors are willing to promote moral behaviour among their subordinates, provide ethical guidance, clearly communicate ethical standards, and provide a clear sense of responsibility for ethical and unethical conduct (Qing *et al.*, 2020). Earlier findings also fit into this research direction, for instance, Whitener (1997) proved that the level of trust that employees place in their superiors and organisation increased with an increase in the implementation of innovative practices within the organisation as these practices conveyed a message of organisational support to its employees. Additionally, Strauss *et al.* (2009) in their study stated that superiors (i.e. transformational leaders) can facilitate proactiveness, increasing the confidence of subordinates in initiating changes. This study also found that the positive impact of superiors on the performance of organisation may result primarily from their influence on proactive behaviour at work.

In addition to the above, these findings highlight that in such social systems as teams, trust is considered a key factor in reducing risk, complexity and uncertainty, enabling a positive atmosphere of collaboration between people in such a system (Alsharo *et al.*, 2017). This argument was well-supported in the findings by Chen and Wang (2008), which indicated that trust increases mutual understanding and reduces doubts in the team.

Other research provides evidence that mutual trust encourages team members to display more purposeful risk-taking (i.e. sharing confidential information, openly discussing conflicts and errors, and asking and giving feedback and assistance, all of which serve to promote TP) (Grossman and Feitosa, 2018), due to the confidence that they will receive appropriate rewards and will not be undeservedly penalised by their superiors if their efforts fail to result in targeted outcomes (Dirks and Ferrin, 2001).

What is more, the research by Hughes *et al.* (2018) has acknowledged the importance of trust in teams in explaining entrepreneurial actions and workplace performance, who claim that when employees trust their team colleagues and superiors, they are more likely to engage in IB aimed at exceeding regular task demands. This argument was well-supported in the findings by Grossman and Feitosa (2018) which indicated that mutual trust prompts team members to undertake risky or susceptible actions. A theoretical mechanism underlying this positive effect is the process of reciprocal social exchange, in which the expression of benevolence by the superior stimulates loyalty, obedience, gratitude and respect among the subordinates, which consequently stimulates them to fulfil their own role (Li *et al.*, 2018).

Furthermore, Hughes *et al.* (2018) concluded that trust (or distrust) among team members favours (or weakens) participation and potentially facilitates (or hinders) the coordination of

innovative and entrepreneurial actions by individuals, elevating (or deflating) the overall performance consequences of those actions. This is in line with previous findings, for instance, Coleman (1988) stated that trust may facilitate other's actions and its lack may inhibit the actions of others.

Literature studies also show that when team members trust each other, they are willing to share what they know (Chen and Wang, 2008). Worth adding that MT as a governance mechanism is based on the confidence of another partner to fulfil the obligation of exchange. Trust allows both parties to assume that one of them will take actions which are predictable and mutually acceptable (Chen and Wang, 2008). Therefore, sharing of knowledge facilitates a key connection among individuals, their co-workers and their team by transferring the knowledge which exists among individuals to the team level, and thus significantly increasing their IBs (Chen and Wang, 2008) and the teams' overall competitiveness (Liu *et al.*, 2020). In particular, when the collective sharing of knowledge takes place in a team where its members have diverse and different knowledge, which in turn increases the team's ability to achieve accomplishments far beyond what each member can do individually (Liu *et al.*, 2020). Importantly, De Clercq *et al.* (2010) in their research argue that knowledge sharing occurs as a function of social exchange among team members. This means that knowledge sharing is dependent on the willingness of individual team members to share the unique knowledge they possess (Alsharo *et al.*, 2017). Without trust, members may make a less than optimal collaborative effort to achieve team's goals (Alsharo *et al.*, 2017). Although many studies emphasise the importance of intra-team trust, trust has also been found to have negative implications. For instance, too much trust can actually be harmful under certain conditions (e.g. high individual's autonomy) (Grossman and Feitosa, 2018; Langfred, 2004). Despite this, it can generally be expected that MT as a motivational state (Strauss *et al.*, 2009) will be particularly important for EO-related behaviour. Thus, trust is critical throughout the team's life (Grossman and Feitosa, 2018).

Moreover, as we mentioned above, Hughes *et al.* (2018) claim that theoretical framing and empirical findings require a continued debate on what are the conditions for employees' entrepreneurial behaviour and their effects on valuable organisational outcomes across the different levels of an enterprise. At the same time, Grossman and Feitosa (2018) also suggest that understanding the unique mechanisms by which trust affects team EO, and team EO affects TP, will allow for more precise and effective team interventions.

Therefore, we based our research proposition on the theory of social exchange (De Clercq *et al.*, 2010; Emerson, 1976; Homans, 1958; Hui *et al.*, 1999; Kashyap and Rangnekar, 2016) and the theories of organisational citizenship and extra-role behaviour (Covin *et al.*, 2020; Konovsky and Pugh, 1994; Smith *et al.*, 1983). We perceive team EO as a form of citizenship characterised by elective extra-role activity (Covin *et al.*, 2020) which requires from employees to go beyond their core tasks and show initiative in a wider context (Konovsky and Pugh, 1994; Smith *et al.*, 1983). Hence, considering that the premise of the theory of social exchange revolves around the principle of reciprocity where one party provides a service to the other one and the other party develops a sense of obligation to reciprocate (Kashyap and Rangnekar, 2016), we theorise that in teams, higher levels of MT between the team manager and his/her subordinates should frame collective EO-oriented behaviour towards the goals of the superior and the team (Covin *et al.*, 2020). With no such trust, their behaviour shifts towards self-protection at the expense of entrepreneurship (Hughes *et al.*, 2018). Moreover, trust in teams can affect the behaviour related to pursuing desired workplace performance (De Jong *et al.*, 2015; Hughes *et al.*, 2018) and team success (Alsharo *et al.*, 2017). Therefore, based on the arguments presented in existing subject-matter literature, we put forward the view that subordinates can reciprocate for beneficial relationships with superiors by displaying entrepreneurial extra-role behaviour, which can increase TP by increasing EO in the team.

Hence, we state the [third hypothesis](#).

*H3.* Mutual trust positively moderates the relationship between team EO and TP.

The above discussions (parts: 2.1. –2.3) is summarised by our conceptual model presented in [Figure 1](#). It presents the analysed constructs and expected relationships.

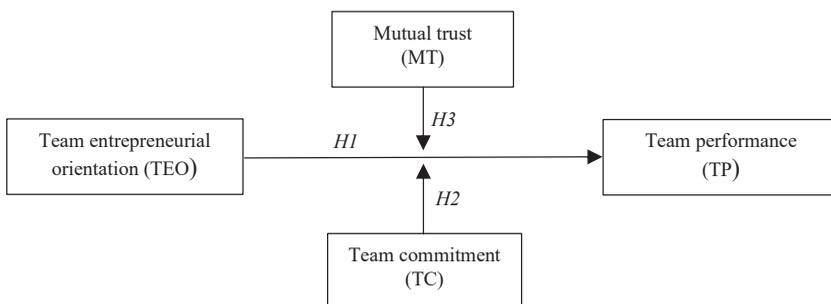
The object of research are contextual factors such as MT and TC which may be moderators and better explain the analysed team EO–TP relationship. That is why, we decided to continue research efforts related to the analysis of the team EO–TP relationship in the conditions of existing moderating variables affecting this relationship. Importantly, the hypotheses were subsequently verified by a hierarchical multiple regression model.

### 3. Research methodology

#### 3.1 Sample and data sources

The enterprise was selected on the basis of theoretical criteria for selecting a sample in the context of the research. First, the enterprise was classified as large, employing over 1,000 employees at the time of the survey. Second, the enterprise represented a specific case as it was a well-established enterprise in a manufacturing sector and a rapidly changing industry. This enterprise has been producing modern devices for the power and energy sector for over 30 years, and thanks to this, it is a significant player among the suppliers of modern equipment for an electro-energy sector. Its success depends on the ability to react quickly to changes taking place on a global scale. Third, the enterprise is a good example because it has adopted a structure that requires intense interdependence among individuals and teams. In this enterprise, team work and is a model of working and working behavior. Using team work in the operational activity of this enterprise is designed to maximise synergy among different parts of it. Each team works for this enterprise’s performance, and each team member works for his or her team’s performance. This means that no team can fully achieve its goals without the support of other teams, w tym top management team (TMT), te ostanie (i.e. TMT) nie byłoby objete badaniem. In practice, it means that when designing and producing appliances, employees have been listening to the opinions and suggestions of industrial clients for years. It is these, combined with the knowledge and experience of members of various teams operating in this enterprise are the source of creating the best solutions in the sector and high class products which work well in hundreds of factories and industrial plants around the world. Thanks to it, the products (devices) provided by this enterprise are created in accordance with the latest technological trends and are able to meet even the most demanding requirements, which is confirmed by the successful implementation of subsequent projects.

The study covers teams across the enterprise, except for TMT. Team managers were the respondents. Each manager was responsible for one team. Teams had to consist of three or more people to be taken into account ([Feitosa et al., 2020](#)). Following [Guzzo and Dickson](#)



**Figure 1.**  
Conceptual model

(1996), we define a work team as a group that is made up of individuals who see themselves and who are seen by others as a social entity, who are interdependent because of the tasks they perform as members of a group, who are embedded in one or more larger social systems (e.g. organisation) and who perform tasks which affect others (such as internal clients/internal stakeholders or co-workers).

We used traditional survey-based method for the research. The survey was conducted in a paper-pencil form, which means that team managers received paper questionnaires for self-completion. Participation was voluntary and confidential (i.e. the survey was conducted using anonymised team and team managers identifiers).

There were 56 teams (with no TMT) nested in the enterprise. The questionnaires were completed by 55 respondents. That team whose manager did not fill in the questionnaire was removed from the dataset during this procedure. Hence, the research sample consisted of 55 teams. The average team size was 17.1 people (standard deviation = 13.33).

### 3.2 Variables and measures

We adopted Brislin's (1980) back-translation method to ensure the accuracy of translating the English-language measures into Polish. Participants were asked to rate on a seven-point Likert scale (1 = "strongly disagree" to 7 = "strongly agree") the extent to which they endorsed each item.

With regard to such constructs as TC, MT and TP, we decided to measure items with a seven-point Likert-type scale (instead of a five-point Likert-type scale). The EO construct had already had the original seven-point Likert-type scale. The use of the seven-point scale allowed for increasing the accuracy of the measurement on a scale representing the continuum of team members' attitudes and behaviour. The Likert scale is assumed to be an interval scale, i.e. it does not have a natural zero point (the continuum of responses from "strongly disagree" to "strongly agree" is divided into equal sections). Thus, a five-point scale would narrow down respondents' ability to assess the phenomenon.

Our literature studies have revealed that the measures such as EO, commitment and trust used so far are dedicated to the evaluation of these phenomena on an individual or organisational level. However, the level of theory in the current research was the level of teams. In order to avoid operationalisation by aggregating individual evaluations of individual variables (i.e. team EO, MT, TC), we reformulated the items of this individual-level scale to the team level. We used well-established instruments developed and validated by Covin *et al.* (2020), due to the fact that the items in individual measures (after their previous adaptation) most appropriately reflected the elements of attitudes and behaviour needed to operationalise constructs, i.e. TEO, TC, MT and the evaluation of these phenomena by immediate superiors. Such a transfer of these constructs to the team level has provided us with new opportunities to analyse EO, commitment, MT from a new level and their evaluation from the perspective of team managers.

Consequently, all constructs were operationalised at the team level of analysis, and the analysis of data was carried out at the team level.

*3.2.1 Independent variable (rated by direct superiors).* In our research, team entrepreneurial orientation (team EO) plays the role of an independent variable. Team EO scale measures the entrepreneurial behaviour of team members (employees and team managers). Creating an EO measure at the team level involved adjusting an interpersonal measure, such as that in Covin *et al.* (2020), and we changed the reference to the team. Consequently, the results of this empirical research correct the common misconception of providing individuals with an EO scale designed to measure behaviour at the level of enterprise or individual, and then referring to the collected data as EO data at the level of team. Team EO scale provides three items for measuring innovativeness (sample item: "Members of our team quickly master new

*routines, procedures, and new ways of working*”), and three items for the measurement of proactiveness (sample item: “*Members of our team always actively assist internal clients, not only when they are asked or approached to do so*”), and three items for the measurement of risk-taking (sample item: “*Members of our team sometimes provide assistance to internal clients without first discussing it with me as their superior*”) (see [Appendix](#)). Team managers were asked to rate on a seven-point Likert scale (1 = “strongly disagree” to 7 = “strongly agree”) the extent to which they endorsed each item.

**3.2.2 Dependent variable (rated by direct superiors).** TP plays the role of a dependent variable. It is worth noting that performance is generally the main dependent variable which the EO researchers sought to explain ([Wales et al., 2021](#)). The items measuring performance at the level of team were taken from the scale by [Hughes et al. \(2018\)](#) and [Covin et al. \(2020\)](#) which included team managers’ views of their teams’ focus on actively improving their working groups’ performance/standards, internal stakeholders’ satisfaction and achieving team’s goals. Team managers were asked to rate their agreement with such statements as “*In our team, members actively improve the performance/standards of our work*” (see [Appendix](#)). The current scale’s version involves three items. All items were measured on a seven-point Likert-type scale (1 = strongly disagree to 7 = strongly agree), instead of the originally proposed five-point Likert-type scale.

**3.2.3 Moderators’ team commitment and mutual trust (rated by direct superiors).** At the team level, the role of moderators is played by commitment and MT. The construct of commitment was measured by items adapted from [Covin et al. \(2020\)](#). Three items of commitment have been reformulated to the team level. The survey included a three-item TC scale based on the congruence among team members’ goals and those of the team, division and enterprise as a whole. An exemplary issue at the team level includes “*Our team members really feel attached to our team’s goals*” (see [Appendix](#)). Team managers were indicating their agreement to these items on a seven-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (7), instead of the originally proposed five-point Likert-type scale.

Creating a measure of MT consisted in adjusting interpersonal measures, such as those in [Covin et al. \(2020\)](#) and changing the reference to the team. MT between the team manager and the employees was measured using a five-point scale. Three of the five items are based on three dimensions (ability, benevolence and integrity) of MT, and the dimension of (sample item: “*As a superior, I am a competent coach at the workplace*”) integrity may be considered more cognitive, whereas benevolence (sample item: “*When members of our team need help from me as their direct superior, they can rely on me to always give them support*”) is more affective. Hence, confidence in competence and confidence in susceptibility can be interpreted as equivalent to cognition-based trust and affection-based trust ([Feitosa et al., 2020](#)). The other two items were developed to provide a more overall measure of MT between the team manager and the employees (subordinates’ general trust in the superior and the superior’s overall trust in the subordinates, sample items: “*Members of our team trust me as a direct superior*” and “*As a direct superior, I trust members of our team*”). Such overall measures are reliable indicators of MT between the employee and the superior, and also contain a more general indicator of the level of trust in the scale of their measurement ([Bijlsma-Frankema et al., 2008](#)). All items were measured on a seven-point Likert-type scale (1 = strongly disagree to 7 = strongly agree), instead of the originally proposed five-point Likert-type scale.

In sum, the level of theory in the current research was that of a team. Consequently, all constructs were operationalised at the team level of analysis, and the analysis of data was carried out at the team level.

## 4. Results and analysis

### 4.1 Exploratory factor analysis

We used the exploratory factor analysis (EFA) to assess the theoretical validity of measurement scales. The EFA assumes that each indicator/measured variable can be related

to any other factor. The EFA was necessary to determine the basic factors/constructs for the set of measured variables. We performed the EFA using the Statistica software. In the case of EFA, we initially calculated the Kaiser–Meyer–Olkin (K–M–O) values and then used principal component analysis with Varimax rotation. The K–M–O measure of sampling adequacy is a statistic that indicates the proportion of variance in variables, which may be caused by underlying factors. The K–M–O statistic varies between 0 and 1. In general, high values (close to 1.0) indicate that a factor analysis may be useful for data processing. If the value is less than 0.50, the results of the factor analysis are unlikely to be very useful (Cerny and Kaiser, 1977). Thus, the higher the value of this indicator, the stronger the basis for using the factor analysis in assessing relationships among observable variables.

In the final stage, we assessed the reliability of obtained scales. For this purpose, we applied the Cronbach's alpha reliability coefficient, which is considered the lower end of the scale's reliability. The upper end of this range is the composite reliability coefficient (CR), which is determined on the basis of factor loadings obtained for the *i*-th factor. As a supplement to the analysis, we determined the average variance extracted (AVE), the value of which should exceed 0.5. Table 1 presents the EFA and reliability analysis results.

In this research, we decided to focus on the individual dimensions of team EO, because according to the concept of equifinality, our interest was in understanding the various team EO dimensions thanks to which TP may be achieved (Covin and Lumpkin, 2011).

The K–M–O statistic value (K–M–O statistic = 0.790) in relation to team EO indicates the legitimacy of using EFA, by means of which we uncovered two factors (team EO proactiveness and team EO risk-taking). We obtained the highest values of the factor loadings in the first factor (i.e. team EO proactiveness, TEO-P) for the following items: TEO\_innov\_2, TEO\_innov\_3, TEO\_proac\_1, TEO\_proac\_2, TEO\_proac\_3, TEO\_riscT\_1; the other items, i.e. TEO\_riscT\_2 and TEO\_riscT\_3 are the second factors (i.e. team EO risk-taking, TEO-RT). Eight items display strong factor loadings (>0.575) on their hypothesised latent dimensions.

Based on these arguments, we distinguished only two, not three, of the assumed dimensions of team EO. This also agrees with the conceptualisation by Anderson *et al.* (2015), which suggests that innovativeness and proactiveness should be combined into one dimension. Moreover, the assumed three-element structure of the next dimension of team EO, i.e. risk-taking has also changed as we included one of the three proposed risk-taking items (i.e. TEO\_riscT\_1) in the dimension of proactiveness. Anderson *et al.* (2015) explains this possibility by the fact that risk-taking may show shared effects with both innovativeness and proactiveness if teams pursue their propensity to take risk through innovative and/or proactive actions.

Although they are correlated (see Table 2), a distinction between these two sub-components of team EO allows for the analysis of their unique impact, and specific profiles resulting from different levels of proactive and risk-taking teams behaviour.

All in all, this two-element EO team structure includes the following dimensions: proactiveness and risk-taking.

Thus, team EO dimensions will be analysed individually. Further empirical research, based on this approach will be focused on, in statistical terms, the independent effects of proactiveness and risk-taking.

Factor 1 (TEO-P) consisting of 5 variables explains 38.9% of the variance of the variables, and factor 2 (TEO-RT)–20.5%, which in total accounts for 59.4% of the explained variance. The value of Cronbach's alpha coefficient for the final TEO-P scale was 0.817. Therefore, a complex measure of TEO-P (i.e. the first factor) was created by calculating the average value of five indicators. The value of Cronbach's alpha coefficient for the final second factor ( $\alpha$  for TEO-RT = 0.625) showed acceptable scale's reliability. Hence, a complex measure of TEO-RT (i.e. the second factor) was created by calculating the average value of two indicators.

Factors	Items	Factor loading	KMO	Eigenvalues	% of Variance	Cronbach's Alpha	Composite reliability	Average variance extracted
Team EO proactiveness (TEO-P)	TEO_innov_2	0.810	0.790	3.114	38.9	0.817	0.857	0.503
	TEO_innov_3	0.614						
	TEO_proac_1	0.692						
	TEO_proac_2	0.575						
	TEO_proac_3	0.804						
Team EO risk-taking (TEO-RT)	TEO_riscT_1	0.726	1.643	20.5	0.625	0.808	0.679	
	TEO_riscT_2	0.782						
	TEO_riscT_3	0.864						
Team commitment (TC)	TC_1	-0.920	0.716	2.657	88.6	0.929	0.959	
	TC_2	-0.974						
	TC_3	-0.929						
Cognitive-affective mutual trust (CA-MT)	C_MT_A_1	0.706	0.691	2.168	43.4	0.807	0.876	
	A_MT_B_2	0.903						
	C_MT_I_3	0.895						
Overall mutual trust (O-MT)	O_MT_4	0.868	1.569	31.4	0.679	0.840	0.725	
	O_MT_5	0.834						
Team performance (TP)	TP_1	-0.848	0.683	1.915	63.8	0.704	0.841	
	TP_2	-0.748						
	TP_3	-0.798						

**Table 1.**  
Results of exploratory  
factor analysis and  
reliability analysis

The CR coefficients are 0.857 and 0.808 respectively, which can be considered high values. The values of the average extracted variance are higher than 0.5 (TEO-P = 0.503; TEO-RT = 0.679) and meet the requirements of this analysis.

While TC is unidimensional (measure of sampling adequacy = 0.716). The K-M-O measure of sampling adequacy (K-M-O = 0.716) highlights the accuracy of the EFA itself. All items display strong factor loadings (>0.920) on their hypothesised latent dimensions. Thus, the three items form one TC dimension explaining 88.6% of the variance, which is a very satisfying level. The values of Cronbach's alpha and CR coefficients are 0.929 and 0.959, respectively, and indicate a high internal reliability of the scale.

The value of K-M-O statistics for MT was K-M-O = 0.691, which means that it was possible to apply the EFA, thanks to which we uncovered two factors. We obtained the highest values of factor loadings in the first factor (i.e. cognitive-affective MT, CA-MT) for the items: C\_MT\_A\_1, A\_MT\_B\_2, C\_MT\_I\_3.

The literature studies report that, in interpersonal relations, the structure of trust can be differentiated according to whether it is rooted in rationality or emotions. The most frequently used distinction in the subject-matter literature is between affective trust and cognitive trust. Cognitive and affective structures of trust can be related to each another, as may happen when a relationship starts from perceived cognitive trust, but can be transformed through experience into affective trust (Erdem and Ozen, 2003). Erdem and Ozen (2003) also stated in their studies that cognitive trust is more important at the beginning of relationship, while affective trust becomes increasingly important as the relationship intensifies. When trust has a cognitive basis, individuals look for a rational reason to trust another party. For instance, trust is based on cognition when a person hopes that another party will properly fulfil his/her role. Similarly, the consistency between another party's behaviour and his/her words may provide a basis for cognitive trust. On the other hand, if the interaction between the two parties is intensive, the relationship of trust deepens, and those involved make a mutual, emotional investment to their relationship. In such a case trust has an affective dimension. Demonstration of concern and benevolence are the trust attitudes best expressing this dimension (Erdem and Ozen, 2003). Therefore, in our research, trust between a manager and employees includes cognitive and affective elements together.

The others, i.e. O\_MT\_4, O\_MT\_5 are the second factors (i.e. overall MT, O-MT). All items display strong or very strong factor loadings (>0.706 or >0.834, respectively) on their hypothesised latent dimensions. Factor 1 (CA-MT) consisting of 3 variables explains 43.4% of the variance of the variables, and factor 2 (O-MT)-31.4%, which in total accounts for 74.8% of the explained variance. The value of Cronbach's alpha coefficient for the final cognitive-affective MT (CA-MT) scale was 0.807. Therefore, we created a complex measure of CA-MT (i.e. the first factor) by calculating the average value of three indicators. The value of Cronbach's alpha coefficient for the final second factor ( $\alpha$  for O-MT = 0.679) showed

**Table 2.**  
Mean values, SD and correlations of key variables

	Means	SD	Team size	TEO-P	TEO-RT	TC	CA-MT	O-MT	TP
Team size	17.11	13.33	1.00						
TEO-P	5.60	0.75	-0.22	1.00					
TEO-RT	5.15	1.22	-0.08	0.36**	1.00				
TC	5.55	1.18	-0.08	0.48**	0.51**	1.00			
CA-MT	6.23	0.66	-0.20	0.54**	0.23*	0.32**	1.00		
O-MT	5.83	0.80	-0.12	0.59**	0.29**	0.56**	0.37**	1.00	
TP	5.94	0.60	-0.24*	0.71**	0.47**	0.51**	0.56**	0.66**	1.00

**Note(s):** \* $p < 0.1$ ; \*\* $p < 0.05$

acceptable scale's reliability. Hence, we created a complex measure of O-MT (i.e. the second factor) by calculating the average value of two indicators. The CR ratios are higher than 0.8, which can be considered high values. The AVE values are higher than 0.7 (0.705 and 0.725, respectively), which indicates that the values are high.

All in all, this two-element MT team structure includes the following dimensions: O-MT and CA-MT. MT dimensions we will be analysed individually. We will use such an approach in further analyses of the relationships between variables.

Furthermore, it showed that TP is unidimensional (measure of sampling adequacy = 0.683). The K-M-O measure of sampling adequacy highlights the accuracy of the EFA itself. The EFA was carried out on a shortened three-point scale. All items display strong factor loadings ( $>0.748$ ) on their hypothesised latent dimensions. Thus, the three items form one TP dimension explaining 63.8% of the variance, which is a satisfying level. Acceptable scale's reliability was shown ( $\alpha$  for TP = 0.704). Moreover, the values of Cronbach's alpha and CR coefficients are 0.704 and 0.841, respectively, and indicate a high internal reliability of the scale.

#### 4.2 Descriptive statistics and correlations

We used the Pearson's correlation coefficients (signified by  $r$ ) to measure the strength of the relationship between two variables. In other words, we applied these correlation coefficients to measure how strong the relationship is between two variables. Importantly, a relationship is linear when the change in one variable is associated with a proportional change in the other variable. Descriptive statistics (means, standard deviations and correlations) of the currently tested variables are presented in [Table 2](#).

Since we calculated all meta-variables as an arithmetic mean of the scored questions (1–7), the mean values between the variables are directly comparable. All relationships are positive between the tested variables. Positive correlation indicates that both variables increase or decrease together, whereas negative correlation indicates that as one variable increases, so the other decreases, and vice versa. The analysis of data included in [Table 2](#) indicates both not very high and high correlations among the variables in individual configurations. We noted that both team EO dimensions were positively correlating with TP. Especially the value of Pearson's correlation coefficient ( $r = 0.71$ ) showed that the relationship between the team EO dimension, i.e. TEO-P and TP was positive, had high strength of correlation ( $r = 0.71$ ) and was statistically significant ( $p < 0.05$ ). At the same time, the correlation of the next team EO dimension, i.e. TEO-RT and TP was positive, although it was slightly weaker ( $r = 0.47$ ,  $p < 0.05$ ). In other words, these variables were only moderately correlated.

Furthermore, we found out that both MT dimensions were positively correlating with TP. Especially the value of Pearson's correlation coefficient ( $r = 0.66$ ) showed that the relationship between the MT dimension, i.e. O-MT and TP was positive, had high strength of correlation and was statistically significant ( $p < 0.05$ ). At the same time, the correlation of the next MT dimension, i.e. CA-MT, and TP was positive, although it was slightly weaker ( $r = 0.56$ ,  $p < 0.05$ ). Moreover, we observed positive and strong ( $r = 0.51$ ) correlation between TC and TP, which was statistically significant ( $p < 0.05$ ).

#### 4.3 Statistical analysis and findings

The effects of team EO in combination with MT and TC are analysed by hierarchical multiple regressions with control entered first (step 1 model, see [Table 3](#)). In sequence, the step 2 model in [Table 3](#) shows the regression results for direct relationships of TEO-P and TEO-RT with TP. The parameters for these variables were as follows: coefficients  $\beta = 0.593$  and  $\beta = 0.249$ ,  $p < 0.05$ , respectively. This means that an increase in TEO-P by one unit will increase TP by 0.593 units, assuming that TEO-RT will not change. In the event of an increase in TEO-RT by

Predictors	Control variables	Main effects	Moderation effects for TC	Moderation effects for MT		
	Step 1	Step 2	Step 3	Step 3 for CA-MT	Step 3 for O-MT	Step 4 for CA-MT and O-MT
Controls	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$
Team size	-0.236	-0.075	-0.081	-0.099	-0.115	-0.135
<i>Independent variables</i>						
TEO-P		0.593**	0.629*	-2.282**	-0.799	-2.120**
TEO-RT		0.249**	0.972**	1.980*	2.723**	2.362**
<i>Moderators</i>						
TC			0.680			-1.333**
CA-MT				-1.219*		0.902*
O-MT					0.418	
<i>Interactions</i>						
TEO-P × TC			-0.044			
TEO-RT × TC			-1.179*			
TEO-P × CA-MT				4.429**		2.942**
TEO-RT × CA-MT				-2.114		0.292
TEO-P × O-MT					2.273*	1.163
TEO-RT × O-MT					-3.231**	-3.114**
<i>Model evaluation</i>						
$R^2$	0.056	0.550	0.594	0.662	0.678	0.743
$p(\Delta R^2)$		0.001	0.188	0.004	0.001	0.020

**Note(s):** The regression coefficients shown are standardised regression coefficients ( $\beta$ )  
\* $p < 0.1$ ; \*\* $p < 0.05$ ; Two-tailed tests for  $\beta$  coefficients

**Table 3.** Hierarchical multiple regression analysis of moderation between team entrepreneurial orientation and team performance

one unit, TP will be increased by 0.292 units, assuming that TEO-P will not change. As standardised regression coefficients are presented in Table 3, it can be concluded that TEO-P has a stronger effect on TP than TEO-RT. The expected positive relationship of TEO and TP was being supported. This means that H1 was thus confirmed. The results of hierarchical multiple regression analysis are presented in Table 3.

While continuing to test further hypotheses, Table 4 shows the moderation effects (i.e. simple slopes) for the relationship between team EO and TP. Low values of individual variables were established as values equal to or less than the median and high values as greater than the median. The moderation effects (i.e. simple slopes) for the team EO-TP relationship versus TC, CA-MT, as well as O-MT are presented in Table 4.

After recognising the relationship between team EO and TP, we determined the effects of moderating role of TC in the relationship between TEO-RT and TP. When analysing the moderation effects, it can be noticed that there is a moderation tendency in the step 3 model in Table 3 with the TC moderator—the parameter for the TEO-RT × TC interaction is  $\beta = -1.179$ ,  $p < 0.1$  (if this parameter was significant at the level of 0.05, then it would be full moderation). An additional condition for the occurrence of moderation is the significance of the parameter standing by TEO-RT in the model from step 2 (Step 2 model, Table 3) and in the analysed step 3 (Step 3 model for TC, Table 3). In both cases, it is statistically significant ( $p < 0.05$ ) with the parameter values in the step 2 model ( $\beta = 0.249$ ) and the step 3 model for TC ( $\beta = 0.972$ ). However, it should be noted that an increase in the value of coefficient of determination ( $R^2$ ) in step 3 (see step 3 model

for TC) is statistically insignificant ( $p = 0.188$ ). This means that the effect for this moderation is insignificant.

Comparing the values of the parameters for the TEO-RT variable in Table 4 (i.e. simple slope models), it may be seen that in the case of low TC values, its value is  $\beta = 0.468$  and it is statistically significant at  $p < 0.05$ . This means that as TEO-RT increases by one unit, the value of TP increases by 0.468 units. In the case of high values for TC, its value is statistically insignificant ( $p > 0.1$ ), which means that the relationship between TEO-RT and TP disappears when TC is high (see Table 4).

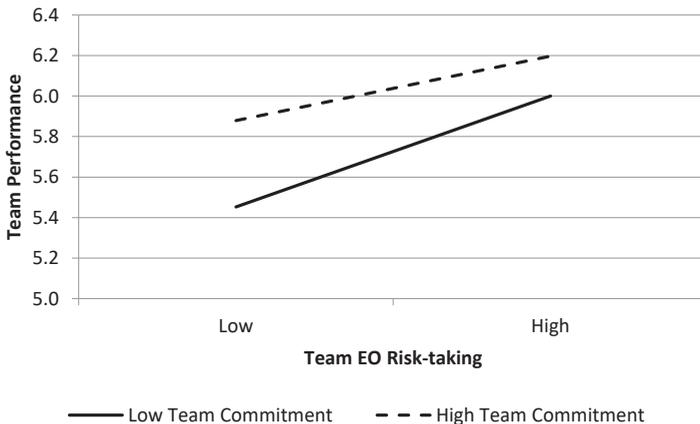
This effect can be seen in Figure 2, where a dashed line (high TC values) is flatter than the solid one (low TC values). In the case of low TEO-RT values, TP is getting higher along with the higher TC values. In the case of high TEO-RT values, regardless of the TC level, the TP values are similar. The moderating effect of TC on the relationship between TEO-RT and TP is presented by Figure 2.

The H2 could not be confirmed with regard to TEO-P. Therefore, the H2 could only be partially confirmed. The H3 was thus only confirmed with regard to TEO-RT. This indicates

	Team Commitment (TC)	$\beta$	Cognitive-Affective Mutual Trust (CA-MT)	$\beta$	Overall Mutual Trust (O-MT)	$\beta$
Team size	Low	0.235	Low	-0.006	Low	0.137
Team EO proactiveness (TEO-P)	Low	0.503**	Low	0.334	Low	0.497**
Team EO risk-taking (TEO-RT)	Low	0.468**	Low	0.492**	Low	0.512**
Team size	High	-0.295**	High	-0.205*	High	-0.189
Team EO proactiveness (TEO-P)	High	0.658**	High	0.852**	High	0.692**
Team EO risk-taking (TEO-RT)	High	0.064	High	-0.055	High	0.022

**Note(s):** \* $p < 0.1$ ; \*\* $p < 0.05$

**Table 4.** Moderation effects (simple slopes) for the team EO-team performance relationship versus team commitment, cognitive-affective mutual trust and overall mutual trust



**Figure 2.** Team commitment as a moderator of the relationship between team EO risk-taking and team performance

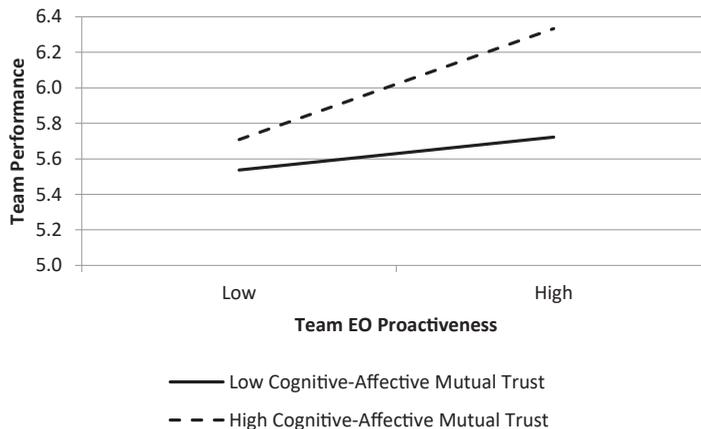
that the relationship between TEO-RT and TP depends on TC. In other words, the performance of employees at the team level can be improved if their commitment to organisation and team's goals is high.

In the next step, we decided to recognise the moderating role of CA-MT in the relationship between TEO-P and TP. When analysing the moderation effects, it can be noticed in Table 3 that there is a moderation in the model with the CA-MT moderator –the parameter for the TEO-P × CA-MT interaction is  $\beta = 4.429$  and is significant at 0.05. An additional condition for the occurrence of moderation is the significance of the parameter standing by the TEO-P in the model from step 2 (Step 2 model, Table 3) and in the analysed step 3 (Step 3 model for CA-MT, Table 3). In both cases, it is statistically significant ( $p < 0.05$ ) with the parameter values in the step 2 model ( $\beta = 0.593$ ) and the step 3 model for CA-MT ( $\beta = -2.282$ ). This means that an increase in TEO-P by one unit causes an increase in TP by 0.593 units. Furthermore, the value of coefficient of determination ( $R^2$ ) increased by 0.112 ( $\Delta R^2 = 0.142$ ) in step 3 (see Step 3 model for CA-MT, Table 3) and is statistically significant ( $p$ -value = 0.004).

Comparing the values of the parameters for the TEO-P variable in Table 4 (i.e. simple slopes), it can be seen that in the case of low values of CA-MT, its value is  $\beta = 0.334$  and is statistically insignificant (which indicates no relationship between TEO-P and TP). In the case of high values of CA-MT, its value is  $\beta = 0.852$  and it is statistically significant ( $p < 0.05$ ). This means that as TEO-P increases by one unit, the value of TP increases by 0.852 units (see Table 4).

This effect can be seen in Figure 3, where the solid line (low CA-MT values) is flatter than the dashed one (high CA-MT values). In the case of low values of TEO-P, TP is similar for low and high values of CA-MT. In the case of high TEO-P values, the TP values for the low CA-MT level are lower than for the high CA-MT level. The moderating effect of CA-MT on the relationship between TEO-P and TP is presented by Figure 3.

In the next step, we decided to determine the moderating role of O-MT in the relationship between TEO-RT and TP. When analysing the moderation effects, it can be noticed in Table 3 that there is a moderation in the model with the O-MT moderator –the parameter for the TEO-RT × O-MT interaction is  $\beta = -3.231$  and is significant at 0.05. An additional condition for the occurrence of moderation is the significance of the parameter standing by TEO-RT in the model from step 2 (Step 2 model, Table 3) and in the analysed step 3 (Step 3 model for O-MT, Table 3). In both cases, it is statistically significant ( $p < 0.05$ ) with the parameter values in the step 2 model ( $\beta = 0.249$ ) and the step 3 model for O-MT ( $\beta = 2.723$ ). This means that an



**Figure 3.** Cognitive-affective mutual trust as a moderator of the relationship between team EO proactiveness and team performance

increase in EO risk-taking by one unit causes an increase in TP by 0.249 units. In the case of step 3 in the model for O-MT, the value of coefficient of determination ( $R^2$ ) increased by 0.128 ( $\Delta R^2 = 0.128$ ) and is statistically significant ( $p = 0.001$ ).

Comparing the values of the parameters for TEO-RT variable in Table 4, it may be seen that in the case of low O-MT values, its value is 0.512 and it is statistically significant at 0.05. This means that as TEO-RT increases by one unit, the value of TP increases by 0.512 units. In the case of high values for the values of O-MT, its value is statistically insignificant, which means that the relationship between TEO-RT and TP disappears when O-MT is high.

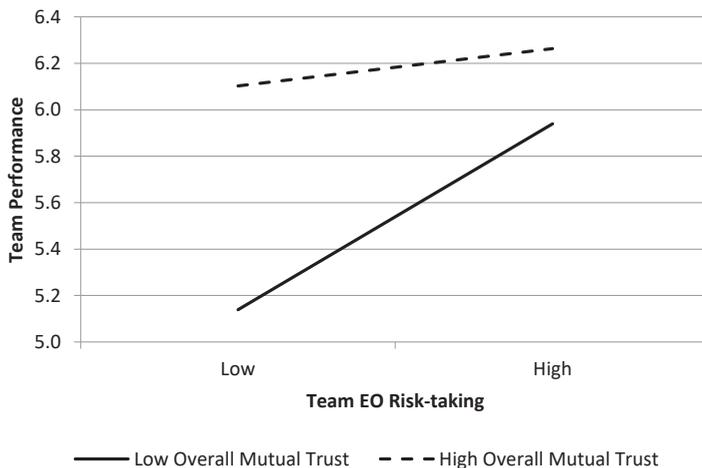
This effect can be seen in Figure 4, where the dashed line (high O-MT values) is flatter than the solid one (low O-MT values). In the case of low TEO-RT values, TP is getting higher along with the higher O-MT values. In the case of high TEO-RT values, regardless of the O-MT level, the TP values are similar. The moderating effect of O-MT on the relationship between TEO-RT and TP is presented by Figure 4.

Moreover, in step 4 (Step 4 model for CA-MT and O-MT, Table 3) both CA-MT and O-MT moderators are included simultaneously. Both previously noted moderations are present. The value of coefficient of determination ( $R^2$ ) increased to 0.743, which indicates that there was a statistically significant increase compared to the model from step 3 (Step 3 model, Table 3 for O-MT) as a model with a higher value of the determination coefficient  $R^2 = 0.678$  in relation to the model from step 3 (see Step 3 model for CA-MT,  $R^2 = 0.662$ ). To sum up, the relationship between TEO-P and TP, where CA-MT is a moderator, is confirmed. The relationship between TEO-RT and TP, where O-MT is a moderator, is also confirmed. It means that the H3 was only partially confirmed. Both effects of moderation can be seen when the CA-MT and O-MT moderators are considered separately (Step 3 model for CA-MT and O-MT) and together (Step 4 model for CA-MT and O-MT, see Table 3).

## 5. Discussion and conclusions

### 5.1 Theoretical contribution

This research represents an effort to empirically develop the knowledge of entrepreneurial teams and contributes to the entrepreneurship literature (i.e. Covin and Lumpkin, 2011; Covin et al., 2020; Hughes et al., 2018). Our approach especially contributes to the scholarly conversation on EO by highlighting the importance of EO-oriented behaviour at the team levels, by showing how proactiveness and risk-taking need to be variously combined with



**Figure 4.** Overall mutual trust as a moderator of the relationship between team EO risk-taking and team performance

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proactive motivational states (i.e. MT and commitment in teams) at the team level, to enable the realisation of high performance.

Based on the statistical results, we argue that team EO is an important predictor of TP. Additionally, we explained the diversity of the team EO–TP relationship by the superior and subordinates' MT, as well as commitment in teams. We stated that team EO must be combined with MT and TC to achieve high performance. In particular, we found out the positive relationship between EO risk-taking (concerning only low TEO-RT values) and TP was stronger among team members who showed a high level of commitment and who showed high overall trust in team managers, while these managers showed equally high levels of trust in their subordinates. However, this effect does not apply to high TEO-RT values because, regardless of the level of O-MT and TC, the TP values were similar. Hence, the benefits of using high O-MT and TC may be greater when team members show low propensity to involve themselves in risky activities, being associated with increased proactiveness. This can be explained by the fact that both O-MT and TC in interdependent relationships lead to results through risk-taking. This suggests that when team members' risk-taking propensity is low, high O-MT between a superior and subordinates makes team members more willing to participate in their team activities and focus their attention on activities that will bring value to the team and organisation, even if these activities go beyond the scope of their roles (Mayer and Gavin, 2005) and are burdened with uncertain results (Covin *et al.*, 2020).

High TC, in turn, means that team members collectively have a strong belief in team goals and are willing to make efforts to achieve them (Bishop *et al.*, 2000), especially when their propensity to take risks associated with increased proactivity is low. This may be explained by the fact that highly committed team members accept the team's mission, autonomously pursue goals on behalf of the team, as well as personalise team achievements and failures (Li *et al.*, 2018).

However, it must be taken into account that accepting risks unrelated to proactiveness could be detrimental to enterprise's performance and should be avoided. This means that only risk-taking, not aligned with an increase in proactiveness, makes performance difficult to be made. Thus, our findings should be consistent with most EO researchers (Covin *et al.*, 2020; Lomberg *et al.*, 2016), and may explain seemingly inconsistent findings regarding risk-taking within the context of EO in work teams.

In addition, we proved that the positive relationship between TEO-P and TP is stronger among team members who believe more in each other's competence and are willing to be susceptible beyond task-related issues (these issues relate to cognitive and affective dimensions of MT). This can be explained by the fact that a trusting party in particular recognises the friendliness, abilities and integrity of the other party and is then more likely to engage in a range of cooperative behaviours (e.g. delegating important tasks, supporting change processes) with that party (Morissette *et al.*, 2020). As a result, the entrepreneurial behaviours of employees can be broader and also include ideas for new product development, process and administration improvements, or innovativeness in the field of professional role (Mustafa *et al.*, 2018).

Research by Hughes *et al.* (2018) also revealed that in such social systems as teams, CA–MT between a superior and subordinates in the team is a key risk mitigating factor that influences the effectiveness of team members' entrepreneurial behaviours.

According to our findings, we conclude that not all contextual factors (i.e. MT and commitment in teams) have the same influence on the relationship between team EO–TP.

The obtained statistical results show that at least for teams operating within the analysed enterprise, the proactiveness and risky behaviour of these teams' members should be taken in a specific team context, so that they can improve their performance.

This argument was well-supported in the findings by Erdem and Ozen (2003) which also indicated that trust must therefore form the behavioural basis of team work, which in turn focuses on the maximisation of synergy between team-manager and employees, and at the same time, TP. This research also found that developing trust in the life of a team is certainly not only the responsibility of individual team members, but also collective responsibility (Erdem and Ozen, 2003).

As we stated above, the impact of EO team on TP is dependent on moderating variables, such as superior and subordinates' MT and TC. However, the dimensions of EO are not equally advantageous because the results of our analysis participated by 55 teams from a large Polish enterprise well-established in the manufacturing sector show that various team EO dimensions influence TP differently. Thus, we proved that proactiveness and risk-taking are substitutes and should be combined with the appropriate moderating variables to achieve high TP.

This is in line with the suggestion made by Lumpkin and Dess (1996) and Covin and Lumpkin (2011) and the practical implications made by Lomberg *et al.* (2016). Lumpkin and Dess (1996) theorised before that different dimensions of EO may matter in different contexts. Then, in this spirit, Covin and Lumpkin (2011) suggested that EO exists as a set of independent dimensions, with each dimension having its own effect on enterprise performance. Furthermore, Lomberg *et al.* (2016) in their research argued that managers should not blindly implement all dimensions of EO or even its individual dimensions, basing on the assumption that EO and all its dimensions are equally advantageous. Therefore, teams should not only be properly established, but also properly managed. This is also consistent with findings by other researchers (i.e. Alsharo *et al.*, 2017; Mustafa *et al.*, 2018).

Hence, we believe that especially in modern business organisations where the use of teams is the symbol of an ideal model of work and behaviour for organisations, first-level managers (i.e. team managers) who are able to develop relationships with their subordinates based on affective and cognitive trust, and who are inclined to team work, are needed more than ever.

### 5.2 Practical implications

The results of our research also have important practical implications. Above all, this research shows that the effects of each EO dimension need to be carefully interpreted in relation to the context in which a given team operates as well as in relation to other dimensions of EO.

For example, team managers should be aware that the proactive behaviour of team members allows them as superiors to anticipate changes in the wishes or desires of internal clients, and act in advance, thus shaping the direction of those changes that will contribute to obtain better TP.

At the same time, superiors should know that their own and subordinates' MT might serve as a moderator of the TEO-P-TP relationship. If it is high, employees will be more willing to accept the proposed changes, remain focused on the team's goals and be motivated to undertake proactive activities.

Furthermore, team managers should understand the importance of distinction between high and low propensity of a team to undertake risks when they are associated with an increase in the team's proactiveness, as this may only increase its performance in certain contexts. Therefore, finding these moderators can be treated as a suggestion for use by superiors who want their teams to achieve better performance.

For example, high trust of a superior towards subordinates increases the strength of the positive influence of the TEO-RT on TP in teams with low risk-taking propensity related to their increased proactiveness. Moreover, when it comes to teams with a high propensity to take risks associated with an increase in their proactiveness, the additional MT-oriented behaviour is not much advantageous in the context of increasing TP in this way.

Furthermore, superiors can help to build the commitment necessary to involve team members in proactive behaviours burdened with the risk of adverse TP effects. However, high TC will exert a greater power of positive influence of the team's risk-taking (inseparable from proactive activities) on TP on condition that the team's tendency to take risks is low at a given moment.

These implications can help team managers to involve themselves in activities which use EO in a way that contributes to better TP.

From a practical point of view, managers can use MT and TC as managerial tools to plan teamwork more effectively and in line with the proactive tendencies of team members and their propensity to undertake work-related activities that may produce uncertain results.

By developing this issue, we support the proposal by [Erdem and Ozen \(2003\)](#) in the field of developing indicators of trustworthy behaviour in the performance evaluation criteria of individuals, groups and work units, and taking actions to protect and promote them as organisational values, and thus also in teams.

### 5.3 Limitations and future research directions

This research is not without limitations. First, in the course of research, it was possible that some superiors saw high-performance teams as being more deserving of benevolence. Second, this research was focused on one level of analysis, i.e. team. Third, our empirical research focuses on the analysis of EO consequences in explaining variations in TP based on unique variations in each of the two dimensions (i.e. proactiveness and risk-taking). Hierarchical multiple regression analyses used by us to test these relationships examine the effect of one dimension while keeping the second dimension constant. Such analyses hide the effects that may result from covariation between those two of the dimensions. We would suggest that this important subject should be analysed further. Finally, our conclusions might be specific to our sample. Because the values of individual variables in a large Polish enterprise well-established in the manufacturing sector may differ in different contexts, it will be important to extend the analysis to include many teams in many organisations. Future research should analyse data including heterogeneous samples from team members in low-tech, high-tech and multi-sector enterprises in order to improve the generalisability of these results and reveal new insights. It is possible that different backgrounds (industry in which an enterprise operates or other environmental or team/enterprise characteristics, e.g. risk-taking, innovativeness) may affect estimated relationships.

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## Appendix

Construct	Scale	Item
Team entrepreneurial orientation (TEO)	Team EO Innovativeness (TEO_innov_1)	In our team, members have very little problem with renewal and change
	Team EO Innovativeness (TEO_innov_2)	Members of our team quickly master new routines, procedures, and new ways of working
	Team Innovativeness (TEO_innov_3)	When it comes to problem solving, our team members always search for creative solutions instead of familiar ones
	Team EO Proactiveness (TEO_proac_1)	Our team members always try to find if internal clients have wishes or desires that they are not aware of
	Team EO Proactiveness (TEO_proac_2)	Members of our team always actively assist internal clients, not only when they are asked or approached to do so
	Team EO Proactiveness (TEO_proac_3)	Our team members are constantly looking for new ways to improve their performance at the job
	Team EO Risk-Taking (TEO_riscT_1)	Our team members appreciate new plans and ideas, even if they feel that they could fail in practice
	Team EO Risk-Taking (TEO_riscT_2)	Members of our team sometimes provide assistance to internal clients without first discussing it with me as their supervisor
	Team EO Risk-Taking (TEO_riscT_3)	In order to be more productive, our team members sometimes act without my permission as their supervisor

(continued)

**Table A1.**  
Scale items  
questionnaire (direct  
supervisor rated)

Construct	Scale	Item
Mutual trust (MT)	Cognitive_Mutual Trust_Ability (C_MT_A_1)	As a supervisor, I am a competent coach at the workplace
	Affective_Mutual Trust_Benevolence (A_MT_B_2)	When members of our team need help from me as their direct supervisor, they can rely on me to always give them support
Team commitment (TC)	Cognitive_Mutual Trust_Integrity (C_MT_I_3)	As an immediate supervisor, I consider things that are important to our team members
	<i>Overall Mutual Trust</i>	Members of our team trust me as a direct supervisor
	Overall trust of the employee to the supervisor (O_MT_4)	As a direct supervisor, I trust members of our team
Team performance (TP)	MT Overall trust of the supervisor to the employee (O_MT_5)	Our team really feels attached to the company's overall direction
	Team Commitment (TC_1)	Our team really feels attached to the goals of our department
	Team Commitment (TC_2)	Our team members really feel attached to our team's goals
Team performance (TP)	Team Commitment (TC3_)	Within our team, we achieve the goals of our team
	Team Performance (TP_1)	In our team, members actively improve the performance/standards of our work
	Team Performance (TP_2)	Our team responds well to the wishes of our clients/internal stakeholders
	Team Performance (TP_3)	

Table A1.

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