

Mediating Role of Innovations as a Factor of Firm's Competitiveness¹

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Abstract

The goal of this paper is to clarify *conceptually* the role of innovations as a firm's competitiveness factor. Particularly, it aims to reveal how the innovations mediate the impact of innovation antecedents and determinants on performance. The paper is based on the achievements of the basic theories of competitiveness such as activity-based view, resource-based view, dynamic capability view, configuration approach, and innovation studies. As a conceptual paper it tries to identify previously unexplored connections between some constructs.

The paper proposes a conceptual model which links the influence of the firm's internal and external factors *on both* innovations and performance, with the innovations' own impact on performance. In this case the innovations mediate the performance effects of the preceding factors. The interrelation of different types of innovation implies also that innovations can influence performance directly or indirectly (through their interaction).

The paper is restricted to the analysis of selected theories which are considered as most relevant to the study of the firm's competitiveness. It is acknowledged that other economic and institutional theories can also contribute to this topic.

The implications for managers are that developing some basic factors that impact both innovations and performance, may lead to both higher innovativeness and competitiveness.

Keywords: firm's competitiveness, theories, factors, innovations, mediation

JEL: O30; O31

Introduction

The capacity of firms to create and maintain a competitive advantage has long been investigated (Prahalad and Hamel, 1990; Porter, 1998; Barney, 1997). There are different definitions of competitiveness, depending on the level of analysis: macro (nation), mezzo (regional, industry or cluster of firms), and micro (firm) level. Respectively, there are macro- and micro-level theories, and macro- and micro-level measures for competitiveness (Siudek and Zawajska, 2014, pp. 93-95). This paper considers only theories related to the competitiveness at a micro (firm) level.

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In a narrow sense the firm competitiveness is a firm's ability to perform better than other companies in the same industry (Lall, 2001). It is synonymous to a firm's long-term positive *performance*, which explains its measurement by financial and non-financial performance indicators (Buckley *et al.*, 1988). Many researches on firm competitiveness, however, use the term more broadly by seeking to identify the factors influencing it (Fagerberg, 1996). The IMD and WEF (1993) define competitiveness as a multidimensional construct which includes a *combination* of factors (assets, capabilities, and environmental conditions) that determine the firm's performance.

The literature review on firm competitiveness identifies two major streams of studies. The first stream investigates the antecedents and determinants of firm performance without considering the role of innovations, while the second one includes innovations. The first stream is based on the theories of firm-level competitiveness such as: industrial organization (IO), resource-based view (RBV), dynamic capabilities view (DCV), configuration approach, and entrepreneurship theories (Porter, 1998; Barney, 1991; Teece *et al.*, 1997; Miller, 1996; Ferreira *et al.*, 2017).

It is widely accepted that Porter's framework, derived from the IO theory, focuses mainly on external (industry-level) characteristics, while the RBV underlines the role of the firm's internal resources. These approaches can be combined because at least they reveal the two sides of the firm – external and internal (Wernerfelt, 1984). The two concepts provide also similar recommendations on how firms can gain a competitive advantage – through the *unique combination* of resources and capabilities (Grant, 2002, p. 139), or through continuous

innovations (Porter, 1991, p. 111). As the sources of competitiveness are multiple and cannot be confined to one group of factors, the combinations of different factors refer to the configuration approach (Fiss, 2007).

The necessity of firm innovation is determined by the increased global competition, under which the more innovative firms tend to have higher performance (Artz *et al.*, 2010). Therefore, to sustain the new competition pressure the firms need to develop their innovation capabilities (Rajapathirana and Hui, 2018). The previous studies reveal that similar to the firm competitiveness theories such as RBV, knowledge-based view, organisational learning, network theory, and organisational culture, are used to explain the innovation antecedents and determinants (Crossan and Apaydin, 2010; Chatzoglou and Chatzoudes, 2018).

The bridging of competitiveness and innovation literatures is based on the fact that the same groups of factors (internal and external) serve as antecedents and determinants of both innovations and performance. Hence being determined by the firm's internal and external factors and having their own impact on performance, innovations *mediate* the influence of some of these factors on performance. Although the innovation is a determinant factor of competitiveness (Srivastava *et al.*, 2017), very few studies link simultaneously innovation antecedents, innovation itself, and organizational performance outcomes (Vincent *et al.*, 2004, p. 13). The lack of such studies compounds the difficulties of understanding the *relative* impact of innovations on performance in comparison to other factors. According to Mytelka (1999), there is still a gap in terms of competitiveness and the role of innovation in it.

The present paper aims to fill this gap by proposing a *conceptual model* which links the effects of the firm's internal and external factors on both innovation and performance, with innovation's own impact on performance. In particular, the paper seeks to reveal new relationships among well-known constructs by developing a logical argumentation about these associations. As a conceptual paper, it falls under the category of "model paper", which tries to identify previously unexplored connections between constructs (Cornelissen, 2017). For that reason, the paper uses a literature review as a necessary tool, but not as an ultimate objective (Jaakkola, 2020, p. 21). The *goal* is to explain the mediating role of innovations as a firm's competitiveness factor and to propose new associations between studied constructs. Specifically, the paper addresses the following research questions:

1. Are the same groups of factors antecedents or determinants of both innovations and performance?
2. Do the innovations mediate the impact of some of these factors (which influence both innovations and performance) on performance?

Based on previous research, the paper proposes a model of firm competitiveness factors, in which these factors are situated on two levels. The first level includes the firm internal and external characteristics, while the second level supplements innovation-related factors. Both the innovations and performance depend on the first level factors, and if the innovations have their own influence on performance, these mediate the performance impact of some of the preceding factors. The interrelation of different types of innovation suggests also that innovations can influence

performance directly or indirectly (through their interaction).

The paper has four sections containing: firm's external and internal competitiveness factors; innovation antecedents and determinants, innovation-performance relationships, mediating role of innovation; conceptual model, proposals, and discussion; and conclusion.

1. External and internal competitiveness factors at the firm level

The review of the literature on competitiveness factors at the firm level shows that the most relevant and used theories are M. Porter's concept, RBV, DCV, and configuration approach (Man et al., 2002; Siudek and Zawojka, 2014; Momaya, 2019). The choice of these theories is based on their ability to address some previously untested relationships between studied constructs.

1.1. External competitiveness factors (Porter's framework)

The starting point of Porter's view on competitiveness is the relentlessness of the environmental changes to which firms have to respond mainly through innovation and upgrading (Porter, 1991). He develops the concept of five *market forces*, which influence firm competitiveness on the levels of industry, strategic group, and *individual firm* (Porter, 1998, p. 4). Subsequently, the industry structure is systematized into four components (Porter's *diamond*): factor conditions; demand conditions; related and supporting industries; and industry strategy, structure and rivalry. Government effects and chance events constitute two additional components in the model. Porter (1996) proposes also an important difference between the firm's operational and strategic

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performance. Operational effectiveness stresses on achieving excellence in *individual* activities, while strategy concentrates on genius *combinations* of activities (innovations).

1.2. Internal competitiveness factors (RBV)

The RBV refocuses the attention on the firm's internal tangible and intangible resources as the most important sources of competitiveness (Wernerfelt, 1984; Barney, 1991). According to this concept, some resources (production factors) are inelastic in supply, which constitutes a source of sustained competitive advantage. A firm has a competitive advantage if its resources are valuable, rare, immobile and non-substitutable (VRIN framework). However, the simple possession of resources is insufficient for realizing such an advantage – important is how these resources are used (Mahoney and Pandian, 1992). For this reason, Barney (1997) transforms the VRIN framework into a VRIO model, adding the capacity of organizations to use the resources. Many authors consider that intangible resources influence more significantly firm success than tangible ones (Galbreath, 2005; Kamasak, 2017). These resources include assets (something that the firm “has”) and capabilities (something that the firm can “do”) (Hall, 1992). Therefore, capabilities refer to the firm's capacity to deploy resources and to create a new configuration of resources that can sustain a competitive advantage (Wang et al., 2015).

The RBV is criticized for some limitations. For instance, Black and Boal (1994) suggest that no single resource, but rather their *combinations* explain better the firm's performance. The RBV is also criticized for neglecting the role of entrepreneur for performance, which is particularly important

for smaller firms (Foss *et al.*, 2007). As the RBV cannot explain the firm's advantages in the situations of rapid changes (Teece and Pisano, 1994, p. 537), the dynamic capabilities view (DCV) has been developed.

1.3. Internal competitiveness factors (DCV)

Teece *et al.* (1997, p. 516) define dynamic capabilities as “the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments”. Particularly significant is the distinction between ordinary (“zero-level”) and dynamic (“higher-level”) capabilities (Collis, 1994). If the ordinary capabilities are “operating routines”, dynamic capabilities are concerned with change (Winter, 2003). Despite the importance accorded to dynamic capabilities, Eisenhardt and Martin (2000) contend that competitive advantage does not rely on these per se, but on the resource *configurations* created by them. Dynamic capabilities do not involve the production of goods or services, rather they help a firm to *adapt* ordinary capabilities to the changing environment (Helfat and Peteraf, 2003).

1.4. Configuration approach

According to Miller (1996), both Porter's competitive analysis framework and the RBV can be extended by searching for the most successful configurations of organizational elements. The configuration approach views the organization as an entity of complex relationships amongst interconnected variables, grouped in respective domains (Meyer *et al.*, 1993). This approach aims to identify groups of firms that share common features on some important dimensions. The approach overcomes some shortages of the linear paradigm (Fiss, 2007, p. 1181), although it cannot reveal the *interaction*

among variables, including the mediating role of innovations.

1.5. Combining different approaches

The integration of the activity-based view and the RBV (incl. DCV) is justified by the fact that the two perspectives reveal the two sides of the firm - external and internal (Wernerfelt, 1984, p. 171). According to Newbert (2007, p. 122), “while a firm’s performance is driven directly by its products, it is indirectly (and ultimately) driven by the resources that go into their production.” Other

authors also agree that the RBV and Porter’s perspective are complementary (Gellweiler, 2018). As Sarasvathy (2004) suggests, a shift in competitiveness research is needed to overcome the separated analysis of the impact of internal and external factors on performance towards the *interaction* between them. Gupta et al. (2013) propose a framework of internal and external environmental factors, which influence the growth patterns of SMEs. The firm level competitiveness factors under these approaches are presented in figure 1.

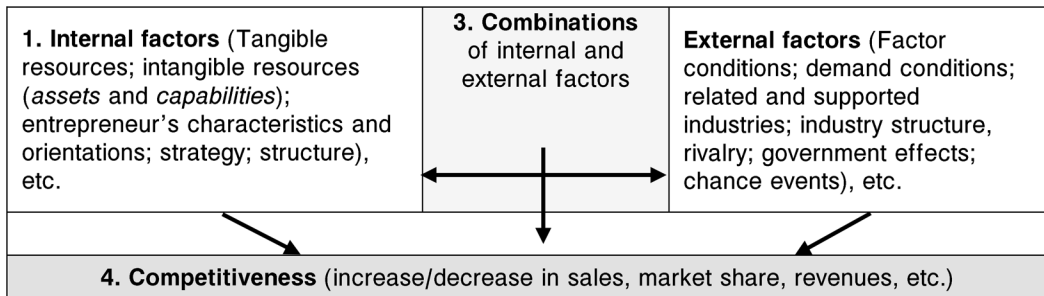


Figure 1. Internal and external competitiveness factors at a firm level

Figure 1 visualises the impact of firm internal and external factors and their combinations on competitiveness. The internal factors refer to the firm’s tangible and intangible resources, entrepreneurial/managerial characteristics, and firm strategies and structures, while the external ones encompass Porter’s “diamond” factors. Competitiveness is measured often by some (objective or perceptual) performance indicators such as growth in sales, market share, profit, etc. (Buckley *et al.*, 1988). In order not to complicate the schema, not all of the relationships among its components are displayed. For example, external factors are interrelated, which is implicitly assumed, but not reflected in figure 1. Changes in government policies may affect all other factors, and the same applies to changes in demand conditions, factors conditions,

etc. Internal factors also interact with each other. Firms with different capabilities may use similar assets differently, and similar assets may impose different constraints on capabilities.

1.6. Empirical studies on competitiveness under the main theories

There is a considerable empirical research on firm level competitiveness, which is based on Porter’s framework, RBV, DCV, and configuration approach. Other studies use more complex models to examine the *joint impact* of internal and external factors on firm competitiveness (Appendix 1, Table 1).

The unifying moment of DCV, Porter’s view, and configuration approach is that these underline the importance of combination

and *recombination* of firm resources to performance (Zahra *et al.*, 2003, p. 166; Porter, 1991, p. 108; Miller, 1996, p. 508). Therefore, the joint application of these theories suggests to include *new factor combinations* (innovations) (Edquist, 2001) as a determinant of the firm level competitiveness.

The problem that arises, however, is that innovations are often included in such models at the same level of analysis as the innovations' antecedents and determinants. The issue derives from the fact that the same groups of factors (internal and external) serve as antecedents or determinants of both innovations and performance, along with the innovation own influence on performance. In order to address this problem, the innovation antecedents and determinants, the innovation-performance relationships, and the mediating role of innovations will be analysed.

2. Innovations as a firm's competitiveness factor

2.1. Definitions, types and interaction of innovations

The innovation is defined broadly as "the adoption of an idea or behavior, whether a system, policy, program, device, process, product or service, that is new to the adopting organization" (Damanpour, 1991, p. 556). Unlike invention, the innovation reflects both adoption and commercialization of a new idea (Jiménez-Jiménez and Sanz-Valle, 2011).

According to Schumpeter (1934), the entrepreneurs may introduce *new combinations* of production factors in the forms of: new product, higher quality of an existing product, new production methods, new markets, new sources of raw materials, or new organizational forms. Subsequently the Oslo Manual has synthesized different

innovations into *four types*: product/ service, process, marketing, and organizational innovations, along with the fundamental distinction between *incremental* and *radical* innovations (OECD, 2005, p. 58).

Most of the innovation studies deal with product innovations and to a lesser degree with process ones (Keupp *et al.*, 2012). The *process* innovations focus mainly on technological changes, while the *organizational* innovations deal primarily with people and the organisation of work (OECD, 2005, p. 55). *Marketing* innovations refer to the significant changes in product design or packaging, product placement, product promotion or pricing (OECD, 2005, p. 49).

Although the existing researches suggest that different types of innovations are closely interrelated (Piening and Salge, 2015), there are few studies investigating the interdependence of types of innovations (Gunday *et al.*, 2011). For example, Lee *et al.* (2019) find that process innovation supports both radical and incremental product innovation. The results of other studies demonstrate that there is a strong interdependence, complementarities, and mutual support between *product and different process innovations* (Damanpour *et al.*, 2009; Hullova *et al.*, 2016). This complementarity, however, is different among different types of innovation (Ballot *et al.*, 2015).

2.2. Internal antecedents and determinants of innovation

Although the innovation antecedents and determinants differ, they tend to cluster around two groups: internal and external to the firm (Damanpour, 1991, p. 557; Souitaris, 2003, p. 519). The internal antecedents and determinants refer to the firm's tangible and intangible resources, entrepreneur/manager orientations, and their combinations. These

factors are reflected by the RBV, DCV (Crossan and Apaydin, 2010), and entrepreneurship studies. For example, Becheikh *et al.*, (2006) identify seven *internal groups of variables*, which influence innovation: characteristics of the firm, strategies, structure, control, culture, top management, and functional assets. Julienti *et al.*, (2010) reveal the significance of firm tangible resources (access to capital, location of buildings, etc.) and intangible assets and capabilities (knowledge, skills, reputation, and entrepreneurial orientation) for product innovation performance.

McAdam *et al.*, (2014) highlight the particular role of *knowledge* factors for innovation. The significance of knowledge as an innovation resource is reflected in the concepts of *absorptive capacity* (Cohen and Levinthal, 1990) and *networking* (Lavie, 2006). Therefore, the sustained competitive advantage may be created from *network capabilities* (Ritter and Gemünden, 2003) and *organisational learning* (Wang *et al.*, 2010, p. 175). Particularly important for learning is the firm's R&D capacity and experience (Grimpe and Kaiser, 2010). Tang and Murphy (2012) show that the largest stream of innovation research emphasizes knowledge, skills, and competencies that are encompassed by the *human capital* theory. Linked to this theory, many researches reveal that the *entrepreneur* is a key figure for innovations in small enterprises (Oksanen and Rilla, 2009; Rosenbusch *et al.*, 2011). Other internal determinants of innovation include: firm size; age, structure; strategies; marketing; advanced technology; participation of foreign capital, etc. (Becheikh *et al.*, 2006, p. 651) (Appendix 1, Table 2).

2.3. External antecedents and determinants of innovation

External antecedents and determinants of innovation refer to government regulations, labour market, and institutional environment. These factors are similar to those in Porter's diamond model, with a greater emphasis again on knowledge and networking. Some of the works in this field relate to national innovation systems (Lundvall, 1998), or innovation in clusters and geographical innovation systems (Iammarino and McCann, 2006; Ketels, 2013). Culture also plays a significant role in the firm's innovativeness as some organizational cultures contain more barriers to novelties (Hernández-Mogollon *et al.*, 2010).

The importance of external factors is central to the notion of *open innovation* (Chesbrough *et al.*, 2006; Bogers *et al.*, 2017). It assumes that enterprises cannot conduct all the R&D activities, and have to resort to external knowledge. This knowledge is necessary for both the generation of internal and the adoption of external innovation in terms of technology, product, policy or practice (Walker *et al.*, 2015). Aldieri *et al.* (2018, p. 39) reveal that firms that are closer to the world technology frontier tend to benefit more from knowledge spillovers. The concept of open innovation includes in- and outgoing of the firm movements of technology and ideas, called also "technological exploration" and "technological exploitation". The organizations with sustainable competitive advantages are those which can balance the two aspects ("organizational ambidexterity") (Raisch *et al.*, 2009). Other *external factors* for innovation are: the industry sector; location and region; access to both information and finance; intellectual property rights protection; government policies; internationalisation, etc. (Hong *et al.*, 2012, p. 435) (Appendix 1, Table 2).

2.4. Combining internal and external antecedents and determinants of innovation

Chang et al. (2011) state that a few empirical researches have examined the combinations of internal and external antecedents of innovation. López-Fernández et al. (2011) also find that the identification of joint effects of internal and external factors is relatively new in the firm innovation literature. According to Gupta et al. (2013), there should be empirical research on how internal and external factors contribute to sustainable firm's innovativeness. Vega-Jurado et al. (2008, p. 631) consider that the methodological difficulty to integrate theoretical perspectives has led researchers to analyse separately external characteristics and the firm's internal capacities as determinants of innovation. The results of their research, however, show that the models which include two types of factors, explain innovative performance better than models with only one type of factors.

Other studies also demonstrate the significance of investigating the combined effect of internal and external factors on innovations. According to Naranjo-Gil (2009), combining the two groups of factors leads to a better understanding of the antecedents of innovation. Love and Roper (2015) base their review of the links between the small firms' innovation, export and growth on firm internal and external enablers. Carayannis and Wang (2012) conclude that both firm-level characteristics and national innovation systems are key factors in the firm's innovation capacities (Appendix 1, Table 2).

2.5. Innovations and firm performance

The empirical studies on the performance effects of innovations exhibit contradictory

results. The findings reveal positive (Ngo and O'Casey, 2013), negative (Simpson et al., 2006), and even a lack of such relations (Zaied and Affes, 2016). This can be explained by the fact that the "innovation-performance" relationship is context dependent as the performance is influenced by both innovations and other internal and external factors (Rosenbusch et al., 2011, p. 441). Many researches find that product innovations are positively associated with firm performance and growth (McNally et al., 2010; Ramadani et al., 2019). According to Fagerberg et al. (2004), while the new products generally have a positive effect on the firm's growth, the effects of process innovations are not so clear. Other studies, however, reveal that process innovations may contribute to firm performance (Piening and Salge, 2015).

The positive influence of both *organizational* (Azar and Ciabuschi, 2017) and *marketing* (Gupta et al., 2016) innovations on the firms' performance is also demonstrated. Lin and Chen (2007) consider that organizational innovations rather than technological ones seem to be the most important factor for total sales. Focusing on a single type of innovation activity hinders the potential advantages resulting from the synergy effects of diverse innovation activities (Lee et al., 2019). Other studies also indicate that the synchronous co-adoption of organizational and technological innovations is positively related to innovative performance (Hervas-Oliver *et al.*, 2014) (Appendix 1, Table 3).

2.6. The mediating role of innovations

The review of the literature leads to the conclusion that both competitiveness and innovation depend on the same groups of

internal and external factors. When innovation also influences performance, it becomes a *mediator* between some of the environmental and organizational antecedents and performance. A few studies, however, link both innovation antecedents and innovation itself to performance. Empirical studies have used either innovation outcomes or performance as a dependent variable, while including both of these in a model would reveal the mediation role of innovation between innovation determinants and firm performance (Crossan and Apaydin, 2010, p. 1176). The lack of such studies limits our understanding of the *relative weights* of innovations on performance in comparison to other factors.

Vincent *et al.* (2004) demonstrate that the innovation serves as a link between certain antecedents and financial performance, thereby supporting the *partial mediation* model. In addition, competition, age, and organizational resources have both direct and indirect (through innovation) relationships with performance. Allred and Swan (2005) reveal that the relationships between industrial dynamism and a country's patent protection and the firms' performance are *mediated* by the firms' investment in innovation. According to Kostopoulos *et al.* (2011), the innovation performance *mediates* fully the influence of external knowledge and absorptive capacity on financial performance. Hoonsopon and Ruenrom (2012) find that radical and incremental product innovation *mediate* the impact of both culture and structure on marketing and financial performance. The study of Wang and Lin (2013) show that organizational innovation *partially mediates* the relationship between knowledge management orientation and performance.

Peña-Vinces *et al.* (2012) demonstrate the *mediating* role of technological innovation (the ICT use) as a factor enhancing the international competitiveness of small firms. The results of Uz Kurt *et al.* (2016) reveal that product innovation mediates the relationship between environmental uncertainty and firm performance.

Other studies on the mediating role of innovations consider the relationships between the firm's strategic orientations such as: market, entrepreneurial, and learning orientations (MO, EO, and LO) and performance. For example, Keskin (2006) finds that MO indirectly impacts firm performance via firm innovativeness and learning orientation, while firm innovativeness positively and directly affects firm performance. According to Jiménez Jiménez *et al.* (2014), LO and radical innovation *mediate completely* the influence of EO on performance. Radical innovation *mediates partially* the impact of LO on performance, while LO and radical innovation influence firm performance directly and positively. Kollmann and Stöckmann (2014) show that both the explorative and the exploitative innovations *mediate* the influence of EO on firm performance. Chang *et al.* (2014) demonstrate that the radical and incremental innovations play differential *mediating roles* in manufacturing and service firms with respect to the "MO-performance" relationship (Appendix 1, Table 4).

3. Conceptual model, proposals, and discussion

Based on these studies, the following conceptual model on the mediating role of innovations as a firm's competitiveness factor is proposed (Fig. 2).

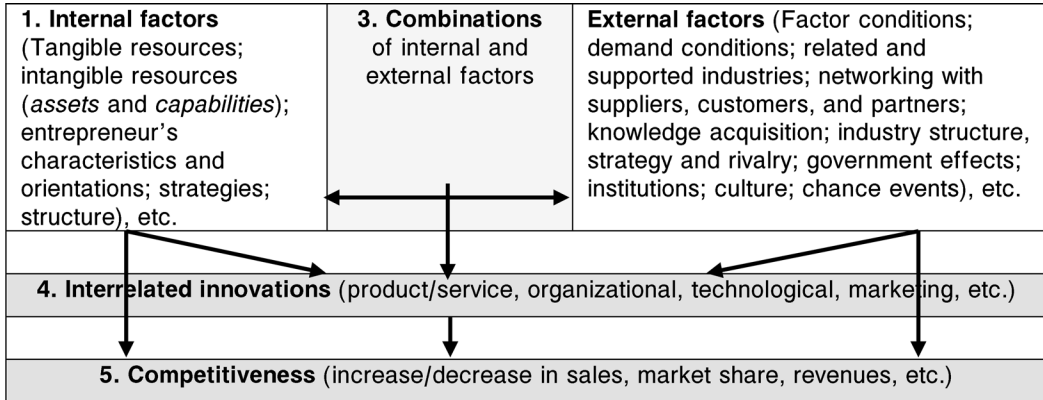


Figure 2. The mediating role of innovations as a factor of the firm's competitiveness

The model shows that both performance and innovations depend on the same pool of internal and external factors, which can have direct or indirect impacts on them. All these factors and their combinations can be referred to as *primary* or *basic* factors. These factors are basic, because they reflect the primary mix of resources and capabilities under given external conditions as in the classical *production function*. The resulting from these factors *operational activities* assure the firm everyday functioning. Unlike basic factors, the *innovation-related* ones are firm specific and lead to sustainable competitive advantages, as it is difficult to imitate the new combinations (Gruber *et al.*, 2010, p. 1347). These factors belong to the "residual element" of the production function, which includes technological progress and innovations (Solow, 1957).

The assumption that both innovations and performance have the same groups of antecedents and determinants along with the innovations' own impact on performance allows for suggesting the first proposal:

P1. *When innovations influence performance, these will mediate the effects of some basic factors (which impact both innovations and performance) on performance.*

The previous studies have shown that different types of innovations are interrelated and influence each other, albeit to a different degree. Consequently, the innovations can also influence firm performance directly or indirectly (through their interaction). While some research finds that product innovation impact more directly performance, others studies emphasise the *underpinning effect* of process innovation for successful product launches (Piening and Salge, 2015). Therefore, the theories of innovation need to account for the mutual interaction of types of innovation (Reichstein and Salter, 2006, p. 676). The second proposal is the following:

P2. *Innovations can influence directly or indirectly (through their interactions) firm performance.*

Gunday *et al.* (2011, p. 671) find that the innovative performance is directly and positively affected by organizational, product and marketing innovations, while process innovation influences performance indirectly through product innovation. Organizational and marketing innovations have both direct and indirect (through product innovation) effects on innovative performance. Camisón and Villar-López (2014) also reveal that the product innovation capabilities mediate the

relationships between process innovation and firm performance. The results of Vladimirov (2016) show that product innovations *mediate* fully the effects of process innovations and external factors and partially the effects of internal factors on performance. The third proposal specifies the effects of the innovations' interaction:

P3. *The type(s) of innovation, which impact directly performance, will mediate the effects of other innovations and basic factors on performance.*

The findings supporting the innovation as a mediator do not imply that innovation is the only means to achieve superior performance. Other factors such as technology, R&D capacity, demand, price, etc., influence also competitiveness (Fagerberg et al., 2007). Business performance does not coincide always with the innovativeness (Coad and Rao, 2008, p. 30), and the innovation success is not always guaranteed (Baker and Sinkula, 2005). There are cases when innovations are too expensive (O'Connor and Rice, 2013), inappropriate or badly executed, and consequently the performance would depend exclusively on firm basic factors. For example, access to finance, resources, location, institutional context, etc. might be more important than innovations for performance (Lin and Chen, 2007). As García-Sánchez et al. (2019) show the high costs and the insufficient government support for sustainability innovations may have a negative effect on competitiveness. The results of Santos *et al.* (2014, p. 533) indicate little evidence that innovation characteristics of the sample of Brazilian firms in one period have a positive impact on firm performance in the next period. Under economic crises companies may be interested more by improving cash flows, increasing access to

finance, etc., than by innovations. In these situations, the performance will depend mainly on firm basic factors. It follows that:

P4. *When innovations have no impact on performance or this impact is insignificant, the performance will depend mainly on firm basic factors.*

According to the reviewed theories, the performance that is based on innovations differs from the performance based on operational effectiveness. Striving for operational effectiveness leads to *temporary* benefits because of the uniformity of the resulting *best practices* (Porter, 1996, p. 63). Teece (2014, p. 33) considers that with globalisation, barriers to the transfer of ordinary capabilities have been reduced, which means that many ordinary activities even on the level of "best practices" are no longer critical to competitive advantage. Therefore, the advantages of firms without innovations are not sustainable, while innovative firms may achieve long lasting advantages. This leads to the next proposal:

P5. *The basic factors, which impact both firm innovations and performance, will be most important for achieving sustainable competitive advantages.*

These proposals reveal some understudied associations between competitiveness factors at a firm level and innovations, and their common impact on performance. For example, positing innovations at the same level of analysis as the other competitiveness factors, ignores the fact that some of these factors are also innovation antecedents and determinants. Hence these relationships remain hidden.

From the first proposal it follows that when innovations influence performance, these mediate the impact of some of the basic factors, although other primary factors may

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also have direct effects on performance. The results of Vladimirov (2016, p. 224) show that while innovations influence positively the manufacturing firms' performance, the two basic factors (firm size and export orientation) have the strongest total (direct and indirect) effects on performance.

The mediating role of leading type(s) of innovations (which impact directly performance) between other types of innovations and performance is conceptually supported by the innovations' interaction. This role is reflected in the second and third proposals. From these it follows that the innovative activities need to be focused on many aspects simultaneously such as new products, organizational and marketing practices, and process technologies (Drejfer, 2002). The fourth proposal reveals the cases of unsuccessful innovations, which have also been identified in the literature (Lin and Chen, 2007, p. 125). In these situations, the performance will depend exclusively on the firm's internal and external competitiveness factors. The fifth proposal suggests that some basic factors are most important as they can influence both innovations and performance. These factors, however, might be different for different industries (Magliulo, 2013).

Therefore, these proposals help to understand better the mediating role of innovations as a factor of the firm's competitiveness along with other internal and external factors. The proposals conceptually justify how the innovations can contribute to the competitiveness at a firm level.

Conclusion

The paper aims to clarify conceptually the mediating role of innovations as a firm's competitiveness factor. The review of relevant theories (Porter's framework, RBV, DCV, and

configurational approach) and the related empirical research find that these theories converge to some degree in their assumptions and recommendations. Combining these approaches results in a framework which encompasses firm internal and external sources of competitiveness. These sources and their combinations constitute the firm primary (basic) factors.

The paper reveals that both competitiveness and innovation depend on the same groups of firm internal and external factors. This leads to the enlarged conceptual model of firm competitiveness, in which these factors are positioned on two levels. The first level retains the traditional distinction between the firm external and internal factors, while the second one supplements the innovation-related factors.

The paper does not introduce new competitiveness factors, rather it sheds light on the mechanism of how the firm's basic factors and innovations impact performance. Being determined by some of the internal and external factors and having their own impact on performance, the innovations *mediate* the influence of these factors on performance. Following the innovations' interaction, it is shown that innovations can influence directly or indirectly firm performance. If there is a leading type(s) of innovation, which impacts directly performance, it will mediate the effects of some other innovations and basic factors on performance. The mediating role of innovations can help identify the relative significance of innovations to the firm's competitiveness in comparison to other factors. It can also help explain why there is still no consensus on the importance of innovations for performance (Santos et al., 2014).

The interdependence between firm basic factors and innovations provides a means to connect the main theories of firm competitiveness with innovation studies in a single framework. While most of the existing research have analysed certain aspects of competitiveness in isolation (Singh *et al.*, 2008), the proposed model responds to the need for a more holistic approach towards competitiveness. Thereby, the paper contributes to the competitiveness literature at a firm level.

The policy implications are that in general, the innovation promotion programmes aim to support the new products/services by neglecting the underpinning role of other types of innovations and basic factors. However, the model suggests that arriving at a successful product/service innovation requires significant changes in organizational, technological, and marketing processes. Therefore, these programmes should distribute funds to support the whole process of innovation.

Based on the fifth proposal, the implications for managers are that they need to identify basic factors from different domains (structure, staff, sales, marketing, etc.), which impact both firm innovations and performance. Developing these primary factors may result into both higher innovativeness and greater competitiveness.

The paper is limited in scope to the analysis of selected theories that are considered the most appropriate for the study of the firm's competitiveness. It is acknowledged that other theories from evolutionary economics, institutional theories, etc. can also contribute to this topic. The other restrictions refer to not discussing incremental vs radical innovations (Slater *et al.*, 2014). As the proposed model is conceptual, the derived from it propositions are also general. Further

empirical researches could test more specific hypotheses. The studies under this model, however, may be complicated when looking for determinants and performance effects of more than one innovation. This is because different innovations may have both different determinants (Edquist, 2001, p. 7) and different effects on competitiveness (Hermundsdottir and Aspelund, 2021, p. 14). These issues open an important area of further research.

Despite these limitations, the paper contributes to the clarification of the complex relations between innovation antecedents and determinants, innovation itself, and performance consequences.

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Appendix 1

Table 1. Studies on firm level competitiveness under the basic theories

Basic theories	Some studies based on the respective theories
Activity-based view (Porter' framework) (Porter, 1991, 1996, 1998)	Jin and Moon, 2006; Oral and Mistikoglu, 2007; Sun <i>et al.</i> , 2010; Watchraveringkan <i>et al.</i> , 2010; Ozgen, 2011; Bakan and Doğan, 2012; Sumer and Bayraktar, 2012; Tsai, <i>et al.</i> , 2021.
RBV - (Wernerfelt, 1984; Barney, 1991, 1997; Hall, 1992; Mahoney and Pandian, 1992; Black and Boal, 1994; Grant, 2002)	Hult and Ketchen, 2001; Fahy, 2002; McEvily and Chakravarth, 2002; Foss <i>et al.</i> , 2007; Galbreath, 2005; Newbert, 2007; Armstrong and Shimizu, 2007; Pertusa-Ortega <i>et al.</i> , 2010; Sirmon <i>et al.</i> , 2011; Balashova and Gromova, 2016; Collins, 2020.
DCV - (Teece and Pisano, 1994; Collis, 1994; Teece <i>et al.</i> , 1997; Eisenhardt and Martin, 2000; Winter, 2003; Helfat and Peteraf, 2003; Teece, 2014).	Zahra <i>et al.</i> , 2006; Wang and Ahmed, 2007; Cavusgil <i>et al.</i> , 2007; Drnevich and Kraucaunas, 2011; Protogerou <i>et al.</i> , 2011; Vogel and Güttel, 2013; Helfat and Martin, 2015; Furnival <i>et al.</i> , 2019.
Configuration approach (Miller, 1996; Meyer <i>et al.</i> , 1993; Fiss, 2007)	Wiklund and Shepherd, 2005; Furrer <i>et al.</i> , 2008; Homburg <i>et al.</i> , 2008; Harms <i>et al.</i> , 2009; Gruber <i>et al.</i> , 2010; Swoboda and Olejnik, 2013.
Combining Porter's model, RBV, DCV, and configuration approache	Man <i>et al.</i> , 2002; Chew <i>et al.</i> , 2008; Sirikrai and Tang, 2006; Toppinen <i>et al.</i> , 2007; Furrer <i>et al.</i> , 2008; Pavlou and Sawy, 2011; Awuah and Amal, 2011; Carayannis and Wang, 2012; Simpson <i>et al.</i> , 2012; Gupta <i>et al.</i> , 2013.

Table 2. Research on internal and external antecedents and determinants of innovations

Types of antecedents and determinants	Authors
Internal antecedents and determinants of innovation (main concepts)	Tangible and intangible assets and capabilities (Julienti <i>et al.</i> , 2010); Knowledge factors (McAdam <i>et al.</i> , 2014); Absorptive capacity (Cohen and Levinthal, 1990); Networking (Ritter and Gemünden, 2003; Lavie, 2006); Human capital (Tang and Murphy, 2012); Organizational learning (Wang <i>et al.</i> , 2010); Staff training (Freel, 2005); Entrepreneur (Oksanen and Rilla, 2009; Rosenbusch <i>et al.</i> , 2011); R&D (Grimpe and Kaiser, 2010).
Other internal antecedents and determinants	Firm size; age; structure; strategies; technology; IT; quality standards; foreign capital, and others – (Becheikh <i>et al.</i> , 2006; Hong <i>et al.</i> , 2012)
External antecedents and determinants of innovation (main concepts)	National innovation system (Lundvall, 1998); Clusters and geographical (regional) innovation systems (Iammarino and McCann, 2006; Ketels, 2013); Open innovation, "technological exploration", "technological exploitation", and "organizational ambidexterity" (Chesbrough <i>et al.</i> , 2006; Bogers <i>et al.</i> , 2017; Raisch <i>et al.</i> , 2009); Organisational culture (Hernández-Mogollon <i>et al.</i> , 2010; Chen <i>et al.</i> , 2017).
Other external antecedents and determinants of innovation	Access to information; access to finance; intellectual property rights protection; networking; internationalisation; industry sector; competitive structure; location and region; government policies - (Souitaris, 2003; Becheikh <i>et al.</i> , 2006; Oksanen and Rilla, 2009; Hong <i>et al.</i> , 2012)
Combining internal and external innovation antecedents and determinants	<ul style="list-style-type: none"> • The models with both internal and external factors explain innovative performance better than models that include only one type of factor (Vega-Jurado <i>et al.</i>, 2008). • Combining the two groups of factors leads to better understanding of the antecedents of innovation (Naranjo-Gil, 2009); • Links between SMEs innovation, export and growth is based on firm's internal (assets and capabilities) and external enablers (Love and Roper, 2015); • Both firm-level characteristics and national innovation system are key factors that determine firm's innovation capacities (Carayannis and Wang, 2012).

Table 3. Studies on innovation-performance relationships

Types of relationships	Authors
Positive relations	Rosenbusch <i>et al.</i> , 2011; Ngo and O’Cass, 2013
Negative relations	Balkin <i>et al.</i> , 2000; Simpson <i>et al.</i> , 2006
Negative direct relationship between innovation and financial performance, while market performance reverses this negative effect to a positive total influence through its suppression effect	Gök and Peker, 2016
Lack of relations	Zaied and Affes, 2016
U shape form of the relationships between innovation and performance	Kleinschmidt and Cooper, 1991
<i>Product</i> innovations are positively associated with firm performance	Fagerberg <i>et al.</i> , 2004; McNally <i>et al.</i> , 2010; Ramadani <i>et al.</i> , 2019
<i>Process</i> innovations is an important source of firm performance	Reichstein and Salter, 2006; Keupp <i>et al.</i> , 2012; Piening and Salge, 2014
<i>Organizational</i> innovations have a positive impact on firm performance	Lin and Chen, 2007; Azar and Ciabuschi, 2017
<i>Marketing</i> innovations lead to the increased competitiveness	Gupta <i>et al.</i> , 2016; Ungerman <i>et al.</i> , 2018
Firms which develop <i>simultaneously</i> technical and organizational innovations achieve competitive advantage	Damanpour <i>et al.</i> , 2009; Hervas-Oliver <i>et al.</i> , 2014; Lee <i>et al.</i> (2019)
Firms that are closer to the world technology frontier tend to benefit more from knowledge spillovers	Aldieri <i>et al.</i> , 2018
The relationship between innovation and performance is still an open question	Jiménez-Jiménez and Sanz-Valle, 2011

Table 4. Mediating role of innovations as a factor of firm’s competitiveness

Types of innovation mediations	Authors
Innovations partially mediate the effects of certain antecedents and performance	Vincent <i>et al.</i> , 2004
Investment in innovation mediates the relationships between industry dynamism, country’s patent protection and firm performance	Allred and Swan, 2005
The innovation performance <i>mediates</i> fully the influence of external knowledge and absorptive capacity on financial performance	Kostopoulos <i>et al.</i> , 2011
Radical and incremental product innovations <i>mediate</i> the impact of both culture and structure on marketing and financial performance	Hoonsopon and Ruenrom, 2012
Organizational innovation <i>partially mediates</i> the relationship between knowledge management orientation and performance	Wang and Lin, 2013
<i>Mediating</i> role of the ICT use as a factor enhancing the international competitiveness of SMEs from developing countries	Peña-Vinces <i>et al.</i> , 2012
Product innovation mediates the relationship between environment uncertainty and firm performance	Uzkurt <i>et al.</i> , 2016
Innovative performance is directly and positively affected by organizational, product and marketing innovations, while process innovation influences performance indirectly through product innovation	Gunday <i>et al.</i> , 2011
Product innovation capabilities mediate the relationships between process innovation and firm performance	Camisón and Villar-López, 2014
Product innovations <i>mediate</i> fully the effects of process innovations and external factors and partially the effects of internal factors on performance	Vladimirov, 2016
Innovation as a mediator between firm’s strategic orientations and performance	
MO indirectly impacts firm performance via firm innovativeness and learning orientation; firm innovativeness positively and directly affects firm performance	Keskin, 2006
The impact of customer and competitor orientations on new service performance is <i>mediated</i> by service innovation	Cheng and Krumwiede, 2010
LO and radical innovation <i>mediate completely</i> the influence of EO on performance. Radical innovation <i>mediates partially</i> the impact of LO on performance, while LO and radical innovation influence directly and positively firm performance	Jiménez Jiménez <i>et al.</i> , 2014
Both the explorative and the exploitative innovations <i>mediate</i> the influence of EO on firm performance	Kollmann and Stöckmann, 2014
Radical and incremental innovation play differential <i>mediating roles</i> on the MO - performance relationship	Chang <i>et al.</i> , 2014