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KEY DRIVERS OF BUSINESS PROCESS INNOVATION – THE ROLE OF STRATEGIC FOCUSES AND PRODUCT INNOVATION

MI HAJTJA AZ ÜZLETI-FOLYAMATINNOVÁCIÓT? – A STRATÉGIAI FÓKUSZOK ÉS A TERMÉKINNOVÁCIÓ SZEREPE

In this paper, the authors examine how and to what extent various strategic focuses of companies as well as product innovation influence business process innovation (BPI) outcomes in manufacturing companies. This empirical study is based on a large-scale representative sample of 4,000 Hungarian manufacturing companies using the 2016 version of the Community Innovation Survey. The results suggest that larger firms and prospector business strategy have higher BPI outcomes. Empirical findings indicate that the prospector strategy-led strategic focus on new products and new customer groups has a significant positive effect on BPI outcomes. On the contrary, the focus on low-price, customer-specific solutions, and improved products has no significant relationship with BPI outcomes. Furthermore, product innovation only amplifies the relationship between specific strategy focuses and BPI does not directly drive it.

Keywords: **business strategy, business process innovation, process innovation, organisational innovation, marketing innovation**

Ebben a cikkben a szerzők azt vizsgálják, hogy a vállalatok üzleti stratégiájának fókusza, valamint a termékinnováció hogyan és milyen mértékben befolyásolják az üzleti folyamatok innovációjának (BPI) eredményeit a gyártó vállalatoknál. Empirikus vizsgálatuk a Közösségi Innovációs Felmérés (Community Innovation Survey, CIS) 2016-os verziójának 4000 magyar feldolgozóipari vállalatból álló reprezentatív mintáján alapul. Eredményeik szerint a nagyobb méretű és a kutató üzletistratégia-típust követő vállalatokra jellemzőbb a BPI. A kutató üzleti stratégia az új termékekre és új vásárlói csoportokra történő stratégiai fókuszálást jelent, aminek jelentős pozitív hatása van a BPI-eredményekre. Ezzel szemben az alacsony árra, ügyfélspecifikus megoldásokra és a továbbfejlesztett termékekre való fókuszálásnak nincs szignifikáns kapcsolata a BPI-eredményekkel. Kutatásuk szerint a termékinnováció csak felerősíti az egyes üzleti stratégiai fókuszok és a BPI-eredmények közötti kapcsolatot, de azokra közvetlenül nem hat.

Kulcsszavak: **üzleti stratégia, üzleti folyamatinnováció, folyamatinnováció, szervezeti innováció, marketinginnováció**

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The constantly changing economic environment of companies requires continuous adaptation and renewal. One only needs to think about the challenges of rapidly changing customer tastes and habits, global competition, digitalisation, or the climate crisis. This continuous drive for renewal requires innovation not only in goods and services, but also in business processes, including operational routines, skills, marketing, or organisational matters. We refer to this complex renewal of business processes as Business Process Innovation (BPI).

Understanding the relationship between strategic focus and BPI is crucial for managers and policymakers. By strategic focus, we mean the key direction of business efforts that provides a compass for business decisions, including innovation-related decisions. Managers should be aware of the amount and direction of effort that they should put into the renewal of their business processes to support the strategies they want to achieve. However, this issue is also important to policymakers. For example, we can find government support schemes for technological investments, but if that investment is not paralleled with additional innovation in areas such as processes, organisation, or marketing, then the innovation effort can easily fail.

According to Gobble (2012), companies with high R&D spending are not necessarily the best financial performers. And the reason behind this is the lack of strategic alignment of innovation efforts. As she says, "*one of the keys is a clear, actionable corporate strategy and a thorough understanding of how and where innovation fits in that strategy*" (Gobble, 2012, p. 63). Ramanujam & Mensch (1985) also mentioned setting innovation goals and allocating resources to innovative activities as the first two most important strategic choices in innovation strategy.

Although there is existing research that examines the relationship between strategy and process, marketing or organisational innovation, its integrated consideration as a BPI is rare. Therefore, we investigate the relationship between some specific strategic focuses and the efforts put into BPI, answering the following research question: How do strategic focuses relate to business process innovation outcomes?

We are aware that the number of potential strategic focuses is numerous. In this study, our attention is focused on a limited set of them, representing an innovation-push approach (focusing on improving products or developing new ones), a customer-pull approach (focusing on customer- specific solutions or new markets), and a competition-based approach (focusing on low price).

We use data from the Community Innovation Survey (CIS) of Hungarian manufacturing companies from 2016. Our sample covers 4,000 manufacturing companies.

In this paper, we first investigate the relevant literature. Then, we form our research model and elaborate the hypotheses. After introducing the data, we present the analysis. The paper is closed with a discussion and conclusions.

Theoretical background

A widely shared belief in Operations Management that processes – specifically, business processes – can provide a competitive advantage for companies. Therefore, our focus lies in understanding how companies can develop their business processes, and how different strategic intents or focuses can influence the outcome of BPI. By „outcome," we mean that the company has completed or finalised the BPI process. For simplicity, we use BPI instead of the BPI outcome throughout the paper.

The drivers of innovation in the literature have received a great deal of attention. Grounded in the strategic management literature, drivers of innovation can be internal or external, for example,

1) environmental pressure: drivers that stimulate the organisation to innovate (Gann & Salter, 2000).
2) knowledge exchange between partners (Goverse et al., 2001).
3) business strategy and related innovation strategy (Pisano, 2015).
4) technological capabilities (consisting of technical factors allowing firms to develop innovative products and processes (Gann & Salter, 2000).
5) absorptive capacity of the firm (Zahra & George, 2002).

Our study explores the interplay between business strategic focus and BPI, while also considers the role of product innovation. Therefore, based on the literature, we first introduce BPI, followed by the business strategies behind the strategic focus. We will then examine the relationship between a company's strategic focus and its BPI efforts. Finally, we investigate the role of product innovation.

Business process innovation – building blocks

Business innovation as a concept is multi-dimensional, consisting of different types of innovation which affect organisations in multiple ways. For innovation researchers (see, e.g., Reichstein & Slater, 2006), the Oslo manuals (OECD/Eurostat, 2005, 2018) provide definitions of business innovation and its types. According to the Oslo Manual (OECD/Eurostat, 2018), business innovation consists of product innovation and business process innovation (process, organisational, and marketing), and "*it is a new or improved product or business process that differs significantly from the firm's previous products or business processes and that has been introduced on the market or brought into use by the firm*" (p. 68). However, the 2018 manual does not give a definition for the types within BPI. We should go back to the previous edition (OECD/Eurostat, 2005) to find them. We summarised the definitions in Table 1. These manuals provide the basis for the Community Innovation Survey (CIS) for European countries and are the most relevant sources of information for our paper.

Regarding BPI, the 2018 manual considers the following functional areas of business where business process innovation can occur: a) production of goods and services,

b) distribution and logistics, c) marketing and sales, d) information and communication systems, e) administration and management, f) product and business process development (p. 73). This coverage is larger than it was in the 2005 manual; for example, product and business process development (point f)), or innovation in sales, after-sales, and other support functions within the marketing field (c) have not been investigated before.

Table 1

Basic definitions of innovation types

Type	Definition	Source
Business innovation	*"...a new or improved product or business process that differs significantly from the firm's previous products or business processes and that has been introduced on the market or brought into use by the firm." (p. 68)*	OECD/ Eurostat (2018)
Product innovation	a new or improved good or service that differs significantly from the firm's previous goods or services and that has been introduced on the market. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness, or other functional characteristics.	OECD/ Eurostat (2005, 2018)
Business process innovation	a new or improved business process for one or more business functions that differs significantly from the firm's previous business processes and that has been brought into use in the firm.	OECD/ Eurostat (2018)
Process innovation	the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.	OECD/ Eurostat (2005)
Marketing innovation	the implementation of a new marketing method involves significant changes in product design or packaging, product placement, product promotion or pricing	OECD/ Eurostat (2005)
Organizational innovation	the implementation of a new organisational method in the firm's business practices workplace organisation or external relations	OECD/ Eurostat (2005)

Source: own compilation

Business process innovation typically occurs within the internal operations of organisations, and it is closely linked to technology and digital advancement. It represents an updated version of approaches such as business process management, business re-engineering, or business process re-design (Anand et al., 2013). In a sense, BPI can potentially eliminate non-value-adding business processes and improve cost, quality, and time. In this way, it efficiently meets the goals of the business and the demands of the customers. Other authors provide slightly different definitions compared to the Oslo manual. Based on the literature review by Anand et al. (2013) about these approaches, Davenport defines BPI as "*performing work activities in a radically new way to attain visible and dramatic results to meet the business objectives*"; Smith considers it as "*end-to-end process by which improved, renewed, or replacement products, solutions, and services are delivered in practice, generating new 'top line' business value*"; Leigh sees BPI as achieving "*an entirely new set of performance features*" (Anand et al., 2013, p. 4).

Practically, BPI includes process, organizational, and marketing innovation as different layers of innovation, providing a wider end-to-end, multiple-layer approach. This is one of the ways to achieve long-term positive business results. To illustrate this, consider an analogy from process design: having a high-capacity machine is useless if the other machines are unable to keep pace. The same holds for the entire business.

In this paper, we approach process innovation in the wider BPI sense. We do this because we have witnessed dynamic changes in manufacturing over the last few years. We should also consider the blooming of lean management (Stone, 2012), recent digital and Industry 4.0 efforts (Demeter, Losonci, & Nagy, 2021), or the servitization of manufacturing companies (Matthyssens & Vandenbempt, 2010). Although the longevity, starting point, or scope of efforts might differ in various examples, we argue that these changes should be considered more widely than simple marketing, process routine, or technology changes because they trigger organisational adjustments (Báthory, 2020) and even modifications in the way products are sold to customers. It is no coincidence that the literature discusses the "lean transformation" or "digital transformation" of companies, referring to organisation-wide, profound changes.

Although the literature is relatively rich in grasping the characteristics and impacts of these building blocks (i.e., process, organisational, and marketing innovation) (e.g., Reichstein & Salter, 2006; Wu & Lin, 2010; Naidoo, 2010) there is much less research on BPI as a complex phenomenon. Surprisingly, few empirical articles explicitly deal with BPI.

Business strategy focus

We aim to investigate the relationship between strategic focus and BPI. Companies can focus their efforts on many different things (in relation to innovation), but due to the limited set of potential focus we have in our dataset (CIS 2016 database), we focus our attention on a limited set of strategic focuses listed in Table 1, first column. In this chapter, we identify how these potential strategic focuses can be related to the business strategy of companies.

Business strategy specifies how a specific business in the firm's portfolio will compete in the marketplace (Varadarajan, 2018). The principal focus of business strategy is

the achievement and maintenance of competitive advantage by leveraging the distinctive resources of the firm and the focal business to implement a value-creating strategy (Varadarajan & Jayachandran, 1999). Business strategy has been regarded as important for creating competitive advantage, determining financial performance (if it is associated with innovation types), and customer value (marketing performance) (Porter, 1980; Varadarajan, 2009; Zahra & Covin, 1994).

Due to the limited resources that companies have, they must focus their efforts. According to Berthon et al. (1999), companies can have a customer or innovation orientation. A customer-orientated (also known as demand-pull, Adams et al., 2019) strategy listens to the voice of the customer and starts development from customer inputs. An innovation-oriented (also known as technology-push, Adams et al., 2019) strategy makes developments in-house and then finds the relevant market for the development.

There are two well-known frameworks of business strategy (Hambrick, 2003). Porter's (1980) generic business strategy framework focuses on customers and competitors, while Miles and Snow's (1978) typology focuses on the intended rate of product market change. Porter's generic strategies (1980) provide a fundamental means of achieving competitive advantage by proposing how firms create customer value compared to its customers. He introduced three types of strategies: (1) cost leadership (low cost); (2) differentiation (uniqueness); (3) focus (defining market niches). Miles and Snow (1978) classified business units into four strategic types: *Prospectors* (exploit new products and market opportunities), *analysers* (minimise risk while maximising the opportunity to profit), *defenders* (attempt to seal off a portion of the total market to create a stable set of products and customers), *reactors* (a "residual strategy, arising when one of the other three strategies is improperly pursued).

Walker and Ruekert (1987) created a hybrid typology. Their model synthesizes the Miles and Snow (1978) typologies and Porter's (1980) generic strategies. The hybrid typology defines business strategies in terms of two major dimensions: (1) the unit's desired rate of new product market development (consistent with the prospector, analyser, and defender categories of Miles and Snow), and (2) the unit's intended method of competing in its core business or established product markets (either through maintaining a low-cost position or by differentiating itself by offering the higher quality or better service, as suggested by Porter). In other words, this strategy consists of prospectors, low-cost defenders, differentiated defenders, and reactors. Our study does not include the reactors due to a lack of proactive manner.

The suggested relationship between CIS 2016 strategic focuses and the business strategy frameworks is shown in Table 2.

Table 2 elucidates the reasons behind the assignment of variables to specific business strategies. Slater and Olson (2000) stressed that the key to success for *prospectors* is the development of innovative new products and entry into new markets. Hambrick (1983) found that prospectors, who can be regarded as (technology) leaders, have large product R&D expenses. For prospectors, maintaining a reputation as an innovator in products and markets is important. Moreover, for differentiation strategy, it is vital to clearly identify the customer on whose needs the differentiation is based. Product innovation is an option to differentiate and create something unique. Therefore, we place the strategy focuses on new products and new customer groups in the prospectors' and differentiation business strategy.

On the contrary, the high priority of *low-cost defenders* is on improving efficiency, focusing on engineering tasks, and emphasizing cost control (Laugen et al., 2006; Olson et al., 2005). So, these firms compete primarily based on the price (cost) and quality. Walker and Ruekert (1987) suggest that process engineering, production, distribution, and finance (rather than marketing) constitute the dominant functions in low-cost defender firms. These firms pursue efficiency in all parts of their value chain by attempting to reduce costs in primary activities (Porter, 1985). Consequently, these firms 'will focus on a low-cost strategy.

Analysers are a combination of prospectors and defenders. Analysers strive for improved efficiency and adopt only those innovations that appear to have strong market potential (Snow & Miles, 1978). For this reason, they strive to improve product and process innovation.

The key to success for *differentiated defenders* is to provide premium services and/or high-quality products to select sets of customers who value and are willing to pay for them (Olson, 2005). Therefore, these companies will focus more on customer orientation solutions by maintaining customer loyalty through superior products/services.

Table 2

Own classification of strategy focuses driven from CIS 2016

Strategic focuses (CIS 2016)	Berthon et al. (1999)	Porter (1980)	Miles & Snow (1978)	Walker & Reukert (1987)
New products	Innovation orientation (Technology push)	Differentiation	Prospector	Prospector
Improved products		Differentiation	Analyser	Analyser
New customer groups	Customer orientation (Demand pull)	Differentiation	Prospector	Prospector
Customer specific solution		Differentiation	Defender	Differentiated defender
Low price		Cost Leadership	Defender	Low-cost defender

Source: own compilation

Overall, the business strategies in Table 2 provide a theoretical background for the positioning of strategic focuses used in CIS 2016. However, it is worth noting that despite their limitations in providing a comprehensive perspective, these focuses still offer a useful framework for delineating the directions of business strategy.

Strategic focus and business process innovation

The issue of whether the business strategy should be aligned with innovation or not has been the subject of numerous studies. For instance, a study by Zahra and Covin (1994) examines how the business-level strategy influences a company's focus on different types of innovation (product, process, and administrative) and sources. They suggest that the starting point in the deployment of innovation types is to reconcile them with business strategy. To consolidate, Varadarajan (2009) emphasizes that innovations of various types are central to a business strategy for achieving and sustaining a competitive advantage in the marketplace.

A strategic innovation orientation provides collective guidance and direction that drive a firm to achieve sustainable competitive advantage (Narver & Slater, 1990; Zhou et al., 2005). For instance, cost-reduction strategies have become predominant as firms seek new ways of reducing the cost of production to gain a competitive advantage in price. In this context, process innovation strategy implementation involves actions that improve the speed, efficiency, and reliability of production processes, resulting in improved product innovation and product quality performance (Jayaram et al., 2014). Defenders are best at capturing such a strategy by introducing cost control and continually attempting to develop greater efficiency in existing operations (Snow & Miles, 1978).

Furthermore, marketing innovation strategies help the company to adapt to the new demand patterns of their target customers to realise the survivability of their existing businesses (Wang et al., 2020). Thus, the firm efficiently attempts to meet the demand of customers and create superior customer value. According to a study by Naidoo (2010), marketing innovation assisted in developing and sustaining competitive advantage based on Porter's business strategies (differentiation and cost leadership).

Organisational innovation strategies are strongly associated with greater flexibility, adaptability, and organisational performance (Alänge & Steiber, 2011). For instance, organisational innovation strategy is driven by factors such as the introduction of new or improved workplace organisation methods to sustain competitive advantage. Based on these arguments, low-cost defenders and analysers may adopt organisational innovation, as they tend to have clearly defined objectives and well-established operational procedures for holding down the costs (Walker & Reukert, 1987).

When the results regarding the relationship between strategies and innovation are considered, the defender is associated with process innovation; the analyser is the most related to administrative innovation, but it also supports other innovation types; prospector goes with product innovation, and the reactor with no innovation (Zahra & Covin, 1994). Marketing differentiation strategy has a relationship to process innovation, and this relationship is negative.

If we consider the dimensions of business strategy (e.g., Miles & Snow (1978) typology, or the research of Zahra & Covin (1994)), prospector firms tend to be the main driver of business process innovation, followed by analysers and defenders. Generally, it can be asserted that business strategy plays a significant role as a driver of business process innovation, particularly when combined with the availability of sufficient resources.

Based on the very diverse and puzzled approaches the most, we can say that there seems to be a relationship between the business strategy (focus) and innovation. So, we formulate the following hypothesis:

H1: Business process innovation is driven by strategic focus.

The relationship of product innovation with strategic focuses and BPI

BPI is not independent of product innovation. Product innovation can be the main reason for BPI, since new products can require new technologies to be able to produce new features (Reichstein & Salter, 2006) they may also need new procedures, new skills, new managers, as well as new markets and customers. Therefore, product innovation can be a driver for BPI. However, product innovation is not necessarily required to achieve BPI. Existing products can also be produced and delivered using new processes, organisational structures, or marketing approaches.

Product innovation differentiation affects each type of innovation positively. Product and service efficiency strategy are negatively related to product innovation and positively to process innovation (Augusto et al., 2014). Furthermore, Varadarajan (2009) suggests that product innovations are central to a business marketing strategy in myriad contexts such as (i) meeting customer needs and wants, (ii) responding to changes and shaping customer preferences, (iii) entering a new market.

Product innovation can be an important driver and has the potential to serve as a crucial catalyst for the innovation of processes. Reichstein and Salter (2006) analysed the relationship between product and process innovation and found a strong correlation between the ratio of product and process innovation based on data from eighteen industries. Martinez-Ros (2000) also found complementarities between the two innovation types, although product innovation encouraged process innovation more than vice versa. In contrast, Kraft (1990) found that while product innovation drives process innovation, process innovation does not influence product innovation.

Similarly, new products and/or services might lead to innovation in marketing (Purchase & Volery, 2020). For example, companies turning to developing digital products and getting skills in digital technologies might also adopt new communication channels and rely on service-dominant logic or on user community perspectives.

H2: Product innovation is a driver for business process innovation.

Product innovation is critical to the growth and success of most companies. Even if a company has a brilliant strategy, it may not be able enough to execute that strategy without making the necessary innovations. According to Prajogo (2016), it has been observed that product innovation offers firms and customers various values other than the "newest" or "novelty" itself. Firm's new product strategy typically delineates the direction of the firm's new product program (for example, the types of products, market, and technology), the orientation or stance (for example, leader/aggressive versus follower/passive), and the commitment to the program. Atuahene-Gima (1995) investigated the moderating effect of product innovativeness on the relationship between market orientation and new product performance.

A key motivation for employing product and process innovation in manufacturing firms is to improve product performance (Jayarama et al., 2014). Product innovation can facilitate the relationship between strategic focus and BPI. Having real product innovation can strengthen this relationship by making the strategy a reality, thus making changes in business processes necessary. Product innovation literature recognises that strategic orientation is important for developing new products ((Jeong, Pae, & Zhou, 2006). The literature is rather limited on the moderating effect of product innovation between strategic focus and BPI. A study by Li et al. (2008) showed that product innovativeness could positively moderate the relationship between market orientation and performance in small Chinese firms. Another study by Liu and Chen (2015), investigated the moderating effect of product innovativeness between strategy orientation and new product performance. They confirmed the moderating role of product innovativeness, which influences the relationship between market orientation strategy and new product performance. Therefore, product innovation can serve as a moderator between strategic focuses and BPI because while strategic focuses e.g., new products or new customer solutions, are in line and influenced by product innovation, BPI involves improving or re-engineering the way a firm's operations and processes are structured that can leverage to support the development of new products or processes. Thus, based on the above-mentioned, we propose:

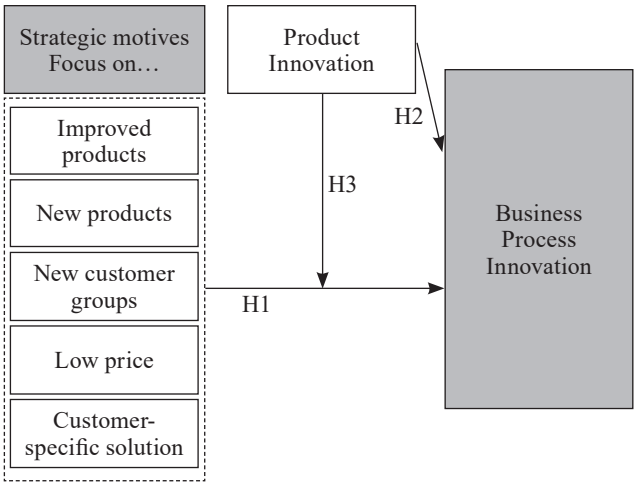
H3: Product innovation is a moderator between strategic focus and BPI.

The research framework

To structure our analysis, we will investigate the relationship between strategic focus and BPI. It is expected that BPI is driven by strategic focus and affected by product innovation. The research model of this study is presented in Figure 1.

Figure 1

Research model



Source: own compilation

In our view, it is our contention that the strategic motives for innovation exert a significant influence on both the extent to which BPI occurs and the specific type of innovation that emerges within the BPI framework. For example, focusing on new products can stimulate all elements of BPI because new products might need new technologies to produce (and related processes), new ways to market them, and new organisational units to manage. Moreover, a cost orientation leads to a focus on reducing non-value-added services, identifying cost-saving sourcing options, and developing lower-cost alternative product and service delivery methods (Scott et al., 2009). Therefore, focusing on low prices requires process innovation, organisational as well as marketing innovation, because the prices might need more efficient processes to lower costs, and processes can be facilitated by organisational changes. Marketing literature focuses mainly on two orientations: customer and competitor orientation (Naver & Slater, 1990). Customer orientation is an organisational culture that facilitates the understanding of targeted buyers and allows for the continuous creation of customer value. Focusing on new customer groups probably requires marketing innovation the most, but logistics can also be significantly impacted by this strategic shift, as the organisation may need to adjust its supply chain and distribution networks to reach and serve these new customer groups effectively. Customer-specific solution focus can require a more customer-focused organisational setup and different marketing tools, just like in the case of servitized companies.

In addition, it is worth noting that the actual implementation of product innovation, as opposed to mere strategic planning, can serve as an even more powerful catalyst for BPI. While strategic intentions and plans are certainly important, the tangible results and outcomes of product innovation can provide valuable insights and opportunities for organisations to innovate their business processes in more effective and impactful ways.

Research methodology and data

We used the Hungarian dataset from the 2016 edition of the Community Innovation Survey (CIS). This survey is used biannually by the European Commission in European countries to continuously monitor innovation performance (for details, see the website of the survey: https://ec.europa.ue/eurostat/cache/metadata/EN/inn_cis10_esms.htm). In Hungary, the Hungarian Statistical Office has been responsible to manage the questionnaire and the data.

The target population for CIS 2016 consisted of all enterprises with 10 or more employees that had activity in innovation statistics within NACE Rev2 sections B, C, D, E, H, J, K, and divisions 46, 71, 72, and 73. In Hungary, the survey was conducted online and was compulsory for companies with more than 100 employees, while a sample was taken from smaller companies. A total of 6,741 companies responded to the questionnaire, and we used only data from the manufacturing sector (Section C), which comprised exactly 4,000 companies.

According to Figure 1, we used three groups of data from various parts of the questionnaire. One group consisted of the components of BPI, (with each variable being nominal with yes/no options):

1) process innovation (measured using three variables: new methods of manufacturing; logistics, delivery, or distribution methods; supporting activities),
2) organisational innovation (measured using three variables: new business practices; new methods of organising work responsibilities and decision making; new methods of organising external relations),
3) marketing innovation (measured using four variables: significant changes to the aesthetic design or packaging; new media or techniques for product promotion; new methods for product placement or sales channels; new methods of pricing goods or services).

The BPI construct, (with a range of 0-10) was created by adding up all these 10 variables, with a "yes" response indicating the use of each variable.

The next group is product innovation, which is calculated as the sum of two binary (yes/no) variables: goods innovations and service innovations.

The third group describes the strategic focus of enterprises using five variables, with a degree of importance value ranging between 0-3 (0-not important; 3-high importance):

a) improving existing goods or services,
b) introducing entirely new goods or services,
c) reaching new customer groups,
d) providing customer-specific solutions,
e) offering low prices.

Beyond these three main groups, we used three control variables for our analysis: 1) the (logarithm) of the number of employees, since the size of the company can influence the available resources for any innovation; 2) industry (measured as a dummy), since different industries have different levels of innovation (see Reichstein & Salter, 2006); 3) whether the company belonged to a group, that is, subsidiary of a group (measured as a dummy), since the headquarter or other members of the group's network can facilitate (by knowledge and resources) BPI in the company.

The descriptive statistics of the variables are summarised in Table 3. Based on these statistics, focusing on improving existing products and services is the most im-

Table 3

The descriptive statistics of key variables

Variable group	Variable	Mean	Standard variation
Process innovation	New methods of manufacturing (ratio of companies)	0.1090	0.3117
	New logistics, delivery, or distribution methods (ratio of companies)	0.0365	0.1876
	New supporting activities (ratio of companies)	0.0678	0.2513
Organisational innovation	New business practises for organising procedures (ratio of companies)	0.0530	0.2241
	New methods for organising work responsibilities (ratio of companies)	0.0700	0.2552
	New methods of organising external relations (ratio of companies)	0.1043	0.3056
Marketing innovation	Significant changes to design or packaging (ratio of companies)	0.0780	0.2682
	New media or techniques for product promotion (ratio of companies)	0.0688	0.2531
	New methods for product placement (ratio of companies)	0.0443	0.2057
	New methods of pricing (ratio of companies)	0.0558	0.2295
Product innovation	The company introduced new goods (ratio of companies)	0.1745	0.3796
	The company introduced new service (ratio of companies)	0.0445	0.2062
Strategic focus	Focus on improving existing goods or services (0-3 scale)	2.509	0.811
	Focus on introducing new goods or services (0-3 scale)	1.698	1.006
	Focus on reaching new customer groups (0-3 scale)	2.016	0.976
	Focus on customer specific solutions (0-3 scale)	2.028	1.005
	Focus on low price (0-3 scale)	1.725	0.899
Control variables	Number of employees	131	376
	Belonging to company group (ratio of companies)	0.2910	0.4543

Source: own compilation

portant strategic focus, followed by reaching new customers and providing customer-specific solutions. Among the innovation types, new product innovation (0.1745, which is 17% of companies) is by far the most frequently used. The next two are new manufacturing methods (11%) and new methods of organising external relations (10%). New logistics methods, product placement, and service innovation are the least frequently used.

Analysis and results

For the analysis, we used linear regression models estimated using the ordinary least squares (OLS) method, since our dependent variables are discrete. Although alternative methods such as logistic regression could also be used, binary logistic regression requires a simplified version of the dependent variable, resulting in a loss of information. The choice of multiple logistic regression as another alternative generates many parameters, making it difficult to overview the results and it is also extremely complex to interpret the parameters of such a model.

We have estimated 3 models for BPI depending on the set of explained variables:

- In Model 1, we used only the potential control variables: the number of employees, the dummy of enterprise group membership (0 or 1), and the dummies of the main activity of the company (according to its NACE code).
- In Model 2, we added the dummies of the strategic focuses (5 variables) and product innovation.
- Model 3 is completed by the interaction of the strategic focuses and product innovation (5 additional variables).

We assumed that the strategic focuses are highly correlated with each other. Therefore, we attempted to use some factors instead of the five variables. However, investigating the correlation matrix of these variables, we found that even the largest correlation coefficient is only slightly over 0.5 (Table 4). So, we decided to keep them as separate variables.

Model estimations for BPI are presented in Table 5. The coefficients of the industry dummies are not shown in

Table 4

The correlation matrix of the strategic focuses

Focus on ...	Improved products	New products	New customer groups	Customer-specific solutions	Low price
Improved products	1.000	0.358	0.393	0.436	0.352
New products	0.358	1.000	0.477	0.387	0.353
New customer groups	0.393	0.477	1.000	0.522	0.420
Customer-specific solutions	0.436	0.387	0.522	1.000	0.434
Low price	0.352	0.353	0.420	0.434	1.000

Source: own compilation

Table 5

The OLS model for business process innovation

		Dependent variable: Business process innovation					
		Model 1		**Model 2**		**Model 3**	
		Coefficient	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*
	Intercept	-.454	0.000	-.783	0.000	-.651	0.000
Control variables	Number of employees (log)	.307	0.000	.174	0.000	.170	0.000
	Group membership	.067	0.270	.049	0.356	.059	0.272
	Product innovation			1.68	0.000	.016	0.951
Strategy Focus on …	improving existing goods or services			.066	0.023	.045	0.149
	introducing new goods or services			.092	0.000	.067	0.013
	reaching new customer groups			.062	0.020	.049	0.092
	customer-specific solutions			.033	0.201	.029	0.299
	low-price			-.030	0.249	-.029	0.326
Inter-actions with product innovation	improving existing goods or services					.253	0.003
	introducing new goods or services					.237	0.001
	reaching new customer groups					.136	0.056
	customer-specific solutions					.036	0.586
	low-price					.037	0.572
		Adj R^2 = 0.086		Adj R^2= 0.293		Adj R^2= 0.301	
		F (25, 3974) = 16.04		F (31, 3968) = 54.58		F (36, 963) = 48.78	

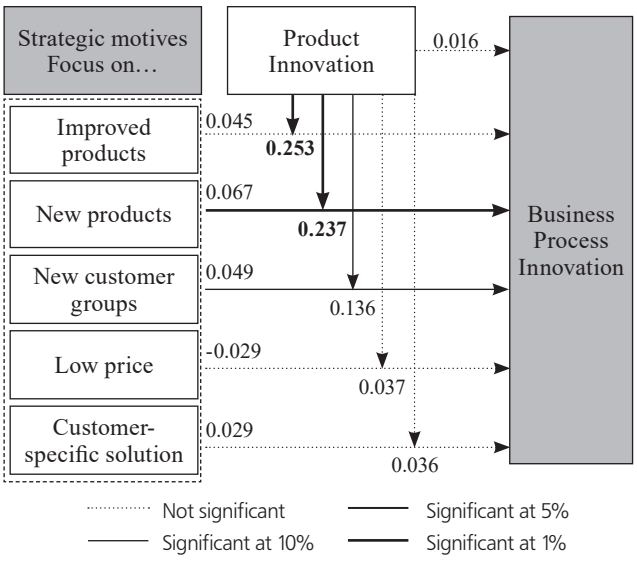
Source: own compilation

the tables because of practical reasons (24 manufacturing industries), but they were significant.

All models are significant, but the R^2 measure is quite low in Model 1. When we add strategic focuses as independent variables, the explaining power of the model increased significantly. Model 3 for BPI is the best model of all with the highest R^2, indicating that it is easier to explain the more complex dependent variable.

Figure 2

Model 3 – the impact (coefficient) of strategic motives on BPI



Source: own compilation

The number of employees is significant in all models, and its coefficient is positive, indicating that larger enterprises tend to innovate their business processes more than smaller ones. The group membership parameter is positive only in the case of organisational innovation. So, if a company operates in a group of enterprises, it helps to innovate the organisation, but it does not hold for the other types of innovation.

The interaction terms show similar significance to the strategic goal dummies. However, the interactions of product innovation with the "Focus on low-price" and the "Focus on customer-specific solutions" strategies are not significant. In case of the "Focus on reaching new customer groups" strategy, the interaction parameter is close to the significance level, but it is not significant at 5%. On the other hand, the interactions of product innovation with the "Focus on improving your existing goods or services" and the "Focus on introducing new goods or services" strategies are significant with a positive coefficient. This means that product innovation positively moderates the impact of these two strategic focuses; the higher level of product innovation causes a higher partial effect of the "Focus on improving your existing goods or services" and the "Focus on introducing new goods or services" strategies (see Figure 2).

The models have relatively high explaining power with an adjusted R-squared of 0.3. However, despite the good explanation power, there are very few significant relationships.

A peculiar finding is that although Model 2 indicates that product innovation has a significant effect on BPI (as shown in Table 5), this relationship becomes non-significant when interaction effects are added in Model 3, as it is absorbed by the interaction terms. This means that product innovation does not directly affect BPI. Instead, it strengthens the relationship between strategic focuses and BPI.

Regarding the control variables, the number of employees is significant in each model. The industry also matters and is significant (although not shown in the Table). Contrary to expectations, the study suggests that being part of a multinational corporation may not have a significant effect on an organisation's ability to undertake successful (BPI) initiatives.

Discussion

This paper offers an insight into how strategic focuses are tied to BPI. According to the results in Table 5 and Figure 2, focusing on new products and/or reaching new customers and acting for product innovation will result in a corresponding impact on BPI (*H1 is partially accepted*, as 2 of the 5 strategic focuses have a significant relationship with BPI). The results are consistent with the starting point in the referred articles, namely that strategic focuses are related to BPI and have a significant impact on it (Zahra & Covin, 1994; Augusto et al., 2014; Ramanujam & Mensch, 1985). However, only the two most ambitious business focuses (new products or new customer groups) significantly influence the BPI.

If the BPI measure ranges from 0 to 10, it implies that the BPI score is a composite index that is based on the number and type of BPI that a company has accomplished. A higher score indicates that a company has achieved more types of BPI and, therefore, has a higher level of BPI. Consequently, the extent to which changes occur in terms of scope (i.e., the number of distinct BPI components affected) and depth (the degree to which these components are affected) is a crucial factor. The introduction of new products and new customer groups entails a significantly broader scope and depth of change since multiple components of business processes require more radical changes.

Generally, the data suggest that prospectors (represented by focusing on new product development and/or new customer groups) dedicate more attention to BPI than defenders and analysers. These findings are partially supported and are consistent with extant literature (Porter, 1980; Walker & Reukert, 1987; Augusto et al., 2014; Zahra, 1994; Miles & Snow, 1978; Berthon et al., 1999; Csepeti, 2010). For instance, Augusto et al. (2014) found that product innovation differentiation affects each type of innovation positively, which also suggests a strong impact of new product focus.

However, we did not find that the product/service efficiency strategy (that we relate to a low-price focus) would go with process innovation, as argued by Augusto et al. (2014). This strategic focus, which was claimed as the most important driver by Ramanujam & Mensch (1985), can hardly be detected as a driver of BPI. Focus on low prices, which can be related to efficiency (although their match depends on the pricing strategy of the company), is the most rarely chosen, and the relationship to BPI even has a negative coefficient (although non-significant).

When examining our findings, it becomes apparent that the strategic focus on low prices and customer-specific solutions exerts a relatively minor influence on BPI as a complex system, probably because the scope and depth of these changes are relatively low. Their impact is not wide enough, targeting only specific areas. For this reason, the low-cost and customer-specific solutions strategy focuses may not serve as a primary driver of BPI, and they may engender other forms of innovation, such as technological innovation (for example, buying/developing a more productive machine). Our results contradict Naidoo (2010), who found a negative relationship between customer orientation and marketing innovation and a positive relationship between the other two orientations (competitor and inter-functional coordination) and marketing innovation. Although the categories do not entirely match, we found the opposite. Reaching new customer groups (what we consider as customer orientation) has the strongest positive relationship with BPI, and low price (which can be related to competitor orientation) has no impact on BPI. This contradiction can be the result of different formulations of strategies, but also due to us considering not only marketing innovation but overall BPI.

The results of our investigation failed to furnish substantive empirical corroboration for the hypothesized proposition encapsulated in hypothesis 2 (*H2 is rejected*). As soon as the regression incorporates the moderation effect, product innovation stops being a driver for BPI and instead has a strong moderating effect on the relationship between strategy focuses and BPI. This result goes against the findings in the literature (Reichstein & Salter, 2006), which says that product innovation is a key driver of process innovation. This result might stem from the fact that the moderation effect of product innovation has not been considered before. Leaving that out of the regression product innovation would have a driver effect. It means that not product innovation per se, but the strategic focus (more specifically, focus on developing new products and/or searching for new markets) drives BPI, and it is just amplified by product innovation. This suggests that companies that prioritise these objectives view BPI as an integral part of business innovation from the outset.

The analysis indicates that the moderation effect of product innovation on the relationship between strategic focuses and BPI is significant in three instances, namely the introduction of improved or new products and new customer groups (*H3 is partially accepted*). Since the literature focuses more on the moderation between strategy and product performance (Li et al., 2008; Liu & Chen, 2015), this result is new to the literature. Furthermore, in the light of the previous paragraph discussing the role of product innovation as a driver (assumed in the literature before) versus as a moderator of the relationship between strategic focus and BPI, this indicates an important result.

Conclusions

The aim of this research is two-fold: first, to examine the link between strategic focuses and BPI; second, to explore the role of product innovation. We presented compelling evidence sourced from a significant number of companies (4,000) operating within the Hungarian manufacturing industry, derived from the 2016 Community Innovation Survey.

There are two main contributions of this research. First, our research found that complex BPI is only driven by ambitious prospector business strategies, which are based on developing new products and/or searching for new customers. Second, product innovation is not a driver of BPI, but plays a moderating role in the relationship between strategic focus and BPI. It does not eliminate the important role of product innovation in BPI, but its role is limited to a subset of strategic focuses (developing improved/new products or searching for new customers).

As for the managerial implications, if a company intends to introduce new products to the market, managers should be aware that they must innovate their business processes, which include not only the manufacturing processes but also marketing and logistics. Moreover, innovation might also be required in external relations and/or internal organisational structures. On the contrary, if the company focuses on improving existing products, which is usually the case, then the magnitude of required innovation in business processes is usually smaller. Regarding the role of product innovation, the primary driver of BPI is the business strategy, and product innovation only can amplify its impact on business processes. Therefore, managers should understand and focus their attention on the direction and radicality of the strategy and handle business processes accordingly.

Our paper explored a limited set of potential strategic focuses, and a more extensive set could provide more detailed insight into the relationship between strategy and BPI. The 2018 CIS survey has completely revised the strategic section, presenting opportunities for a more in-depth analysis. Furthermore, given that a low-price strategic focus does not demonstrate a significant relationship with BPI, based on the findings of this study, it would be worthwhile for future research to address how this specific strategic focus can be supported from an innovation-based perspective.

Whilst this study employs a widely recognised survey, it is not exempt from limitations. First, we relied on a general-purpose survey that had an influence on the item selection and research model. Still, the number of observations is a unique feature of our study, so it compensates for the operationalisation problem to some extent.

Second, given the data collection period (2014-2016), the geographical (Hungary) and industrial focus (manufacturing), our results can only be generalized for countries with similar features (in terms of innovation). Third, we assumed a linear relationship between strategic focuses and BPI outcomes. Future research could address this relation assuming curvilinear links that are proved viable in the innovation outcome literature (Sharma et al., 2019).

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Appendix: The original survey questions used for the analysis

During the three years 2014 to 2016, how important were each of the following strategies to your enterprise?

	Degree of importance			
	High	**Medium**	**Low**	**Not important**
Focus on improving your existing goods or services	☐	☐	☐	☐
Focus on introducing entirely new goods or services	☐	☐	☐	☐
Focus on reaching new customer groups	☐	☐	☐	☐
Focus on customer specific solutions	☐	☐	☐	☐
Focus on low-price	☐	☐	☐	☐

During the three years 2014 to 2016, did your enterprise introduce:

	Yes	**No**
New or significantly improved methods of manufacturing for producing goods or services	☐	☐
New or significantly improved logistics, delivery or distribution methods for your inputs, goods, or services	☐	☐
New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing	☐	☐

During the three years 2014 to 2016, did your enterprise introduce:

	Yes	**No**
New **business practices** for organising procedures (i.e., first time use of supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.)	☐	☐
New methods of **organising work responsibilities and decision making** (i.e., first time use of a new system of employee responsibilities, teamwork, decentralisation, integration or de-integration of departments, education/training systems, etc.)	☐	☐
New methods of **organising external relations** with other enterprises or public organisations (i.e., first time use of alliances, partnerships, outsourcing or sub- contracting, etc.)	☐	☐

During the three years 2014 to 2016, did your enterprise introduce:

	Yes	**No**
Significant changes to the aesthetic **design** or **packaging** of a good or service (*exclude changes that alter the product's functional or user characteristics – these are product innovations*)	☐	☐
New media or techniques for **product promotion** *(i.e., first time use of a new advertising media, a new brand image, introduction of loyalty cards, etc*)	☐	☐
New methods for **product placement** or sales channels *(i.e., first time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc)*	☐	☐
New methods of **pricing** goods or services *(i.e., first time use of variable pricing by demand, discount systems, etc)*	☐	☐

What was your enterprise's average number of employees in 2014 and 2016?

2014 ☐☐☐☐☐☐☐ **2016** ☐☐☐☐☐☐☐

Source: own compilation