

Business Strategies and Innovation Outputs in Manufacturing

Subjects: Business, Finance

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An important factor in maintaining a competitive advantage and efficiency in a knowledge-based economy is the ability to introduce innovations constantly. Considering the idea of sustainable development which has been discussed globally, nowadays innovations must have at least a neutral impact on the environment and society. The ability to create innovation is in turn determined by the business strategy adopted by an enterprise. Such a strategy, involving long-term planning and actions aimed at development, is primarily oriented towards the introduction of innovations that enable the dynamic development of a company. The innovative process in enterprises is characterized by specific features. Regardless of the adopted innovation implementation model, it is required to acquire skills and establish relationships with the environment. An innovative enterprise as a learning organization.

Keywords: innovation ; open innovation ; innovation activity ; business strategies ; strategic innovations ; manufacturing ; cluster analysis

1. Innovation Typology and Innovation Activity

While considering the search for relationships between business strategies and the results of innovation in production, it should be emphasized that currently all economic processes show a strong relationship with new technologies and innovations. One can even say that they are interdependent. In addition, researchers must find an answer to the frequently asked question: what kind of innovation or technology should be used in an enterprise's economic and social life in order to generate an appropriate rate of return?

Definitions of innovation can be found in the works by ^{[1][2][3][4][5][6][7][8][9][10]}. Some authors claim that innovation is the creation of a new idea and its implementation in a new product, process, or service, which may result in the dynamic growth of the national economy and employment rates, as well as the creation of pure profit for the innovative business enterprise ^[11]. In general, the concept of "innovation" is quite a complex and multifaceted subject in research, but there is still no definition of innovation that has been generally accepted in science ^[12]. There are several main ways to analyze this term. Schumpeter, who may be called the father of the theory of innovation in the economy generally, considered innovations as technological changes of an economic nature, as the use of newly formed associations of productive forces to solve business problems ^[13]. According to Twiss, innovation is a process that contains science, technology, economics, and management, as it is working out a new way to conduct an enterprise and extends from the appearance of the idea to its commercialization in terms of production, exchange, and consumption ^[14].

Innovation, as a process, is long and cumulative way of performing a lot of organizational steps, starting from the phase of generating a new idea to its implementation phase. Through the implementation process, a new idea is developed and commercialized into a new marketable product or a new process with a subsequent cost reduction and increased productivity ^[15].

There are many discussions and concerns on how innovation should be measured at each stage. Some authors, such the authors of ^{[15][16]}, suggest measuring new and improved products as the output of innovation, which is considered new product development. West et al. ^[17] and Akgün et al. ^[18] propose measuring improvements in processes and methods, while Czarnitzki and Kraft ^[19] propose measuring the market success of innovation, suggesting the "ratio of innovative product sold in the market to total sales". Considering market aspects, Elenkov and Manev ^[16] discuss indicators of the success of new products on the market and indicate that the rate of success of new products on the market may be very vulnerable and never reach 100%.

Some authors refer to patent applications for innovation ^{[20][21]}; however, Makri and Scandura ^[22] suggest measuring the importance of patents in terms of patent citations. It is also worth mentioning the works by ^{[23][24][25][26][27][28]} which develop

the concept of output performance, including financial, temporal, market, and product-related factors.

Innovativeness is the condition of having a competitive advantage. However, with a broader perception of innovation, researchers can see that the combination of knowledge is essential for the creation of new products, ideas, and technologies [29][30][31][32][33]. The process of commercializing innovation has been categorized by [34] and includes idea generation, initial application, feasibility determination, and implications. Another important aspect of organizational innovation is that it should be adapted to both the needs of the organization and the market.

As global competition rises and product life cycles shorten, the pressure to innovate is growing. Achieving low costs together with high quality is no longer a guarantee for success and earning a lot of money [35]. Most innovation projects fail systematically due to being managed as raw technology projects. The internal and centralized approach to R&D is becoming obsolete in most organizations. More open forms of innovation are required in which internal and external ideas are leveraged across the organization [36].

Currently, there has been a focus on organizational resources and capabilities as the main sources of competitive advantage. In the past, companies developed strategies to minimize product costs by optimally combining land, labor, and capital. In the second part of the 20th century, a fourth dimension, knowledge, was added to these three economic inputs. All scientific, technological, organizational, financial, and commercial steps which lead to, or are intended to lead to, the implementation of innovations are defined as innovation activities [37].

2. Oslo Manual and Community Innovation Survey 2018—How Should Innovation Activity Be Measured?

The fourth edition of the Oslo Manual is an international source strongly committed to creating a database supporting innovation investments. The 2018 edition of the Oslo Manual includes enhanced guidance to reflect changing user interests and accumulated practical experience. The manual measures scientific, technological, and innovation activities. Better measurements of innovation as well as its impact on economic growth and sustainable competitive advantage are key to coordinating innovation policies across countries [37]. The choice of countries analyzed was determined by the availability of data in the Community Innovation Survey (CIS) 2018 [38].

The CIS is the reference survey on innovation in enterprises. It has been the reference for information on business innovation in the EU since 1992. After the fourth revision of the Oslo Manual in 2018, the CIS underwent a substantial change. (Revision efforts were directed to improve the quality of the CIS data as well as to increase the efficiency of data production; to take account of major aspects of the revision of the Oslo Manual; to increase policy relevance of the CIS informative content; and to increase the usability of the statistical outputs of the survey [39]). The CIS 2018 was carried out in the following countries: EU member states, Norway, Iceland, Switzerland, Turkey, Serbia, Macedonia, and Montenegro, but data for the last three countries are not disseminated in Eurobase. An innovation for CIS data collection means a new or improved product or process (or a combination thereof) that differs significantly from the entity's previous products or processes and that has been made available to potential users (as a product) or brought into use by the entity (as a process) [38]. The CIS is designed to provide information on the innovativeness of business economy sectors. It analyzes innovation outcomes which depend on enterprises' business strategies. Innovation activity is measured by inputs and outputs.

3. Business Strategy and Innovation—Input and Output towards Creating Sustainable Competitive Advantage

Strategy is a key element in a company's long-term competitive advantage. Andrews [40] was one of the first theorists who showed the differences between a business strategy and a corporate strategy, stressing that a strategy should be seen as a conscientious plan to align the enterprise with opportunities and threats posed by its environment. Business strategy is a wide and diverse field. It can be traditional or innovative [41]. It is the outcome of decisions with respect to an enterprise's environment, structure, and processes [42]. While there are a lot of papers concerning the relationship between innovation and strategy in efforts to create a sustainable competitive advantage [43][44][45][46][47][48], there are still few works exploring how enterprises with different strategic orientations create product and process innovation [43][49] or how firms with different strategic orientations manage innovative practices [50]. The study of Zahra and Covin [51] emphasizes the importance of companies' performance. Ritter and Gemünden [52] draw attention to technological and network competence in innovation. Considering business models, business strategies, and innovation, Teece [53] concludes that a business strategy is a narrower concept than a business model. This means that an analysis of the link between a strategy and business model is needed to protect a sustainable competitive advantage. Most often, non-innovative

enterprises do not make significant changes in the business model ^[54]. Badiru ^[55] analyzes innovation and innovative activity in the form of a chosen strategy as strategies for managing, allocating, and synchronizing the organization's technological tools, manpower resources, and work processes to achieve a given result in an efficient and targeted manner.

As for innovation activity in manufacturing, inputs are related to a favorable innovation environment and outputs are defined as the results. The results mean innovation. A strategy is the input, and innovation is the output (**Figure 1**). The input for innovation activity in manufacturing is the innovation strategy, and the output is the product and process innovation—as the effect of one of ten innovation strategies ^{[37][38]}: improving existing goods or services (1), introducing entirely new goods or services (2), reaching out to new customer groups (3), customer-specific solutions (4), low-price strategies (5), high-quality strategies (6), a broad range of goods and services (7), key goods and services (8), satisfying established customer groups (9), standardized goods or services (10).

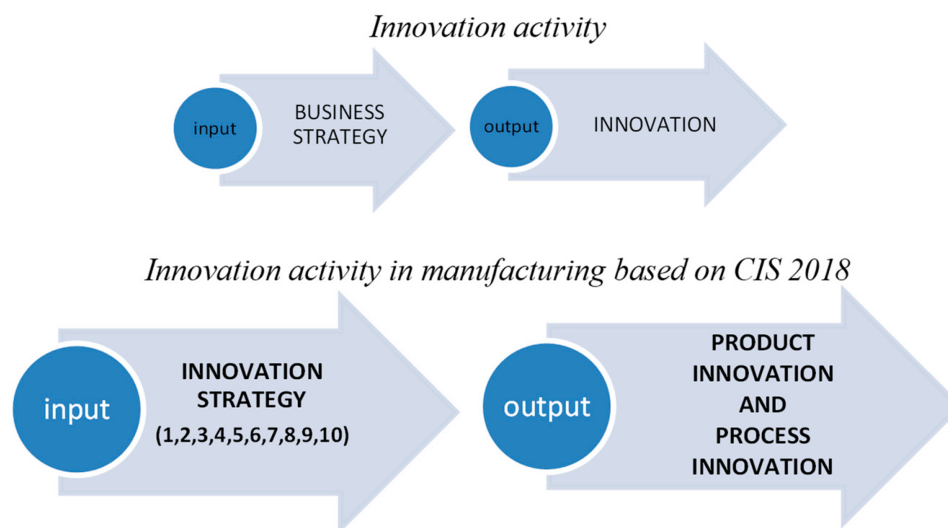


Figure 1. Innovation activity in manufacturing—from strategy to innovation. Source: own elaboration based on ^[38].

The input business strategy is given by the enterprise's evaluation of its cost of production compared to that of its competitors. However, innovation also requires a human resource strategy, financial strategy, etc. ^[56]. Nowadays, all economic processes are closely related to innovations, and a new breed of innovation—open innovation—has become a managerial imperative. Open innovations may allow for the creation not only of new products and processes, but also of new complementary links in the value chain ^[41]. Open innovation is a collaborative model that enhances innovation. Considering that the innovation ecosystem is characterized by numerous interactions between its various components, it should be emphasized that the innovation input has a significant and positive impact on countries' innovation output ^[57]. Researchers who focus on innovation ecosystems and sustainability point out that participating in an innovation ecosystem brings benefits to the entities involved ^[58]. Including R&D and innovation activities is particularly important for small- and medium-sized enterprises, as these strategies are crucial for increasing the company's productivity, competitiveness, and ultimately survival ^[59].

The multifaceted nature and complexity of innovativeness and innovative activity as a result of many social, economic, and spatial processes and phenomena mean that research in terms of the importance of innovation for the development of enterprises is a complex problem. Among theoreticians and practitioners dealing with this subject, there is an agreement that innovation cannot be measured with one or more indicators, thus the important research problem is the selection of methods and measures for assessing innovation. This applies to both analyses on a global scale and analyses limited by territory, e.g., to the area of the European Union. Moreover, as the authors of this research wish to point out, the measurement and evaluation of the operation of innovative strategies are an extremely difficult process to grasp and study. Additionally, it is presumed that, according to the authors' best knowledge, the process of the impact of innovative strategies on the activities of enterprises has not been examined before.

References

1. Rowe, L.A.; Boise, W.B. Organizational Innovation: Current Research and Evolving Concepts. *Public Adm. Rev.* 1974, 34, 284–293.

2. Dewar, R.D.; Dutton, J.E. The Adoption of Radical and Incremental Innovations: An Empirical Analysis. *Manag. Sci.* 1986, 32, 1422–1433.
3. Rogers, E.M. *Diffusion of Innovations*, 5th ed.; Free Press: New York, NY, USA, 2003.
4. Utterback, J.M.; Afuah, A.N. The Dynamic 'Diamond': A Technological Innovation Perspective. *Econ. Innov. New Technology*. 1998, 6, 183–199.
5. Afuah, A.N.; Utterback, J.M. Responding to structural industry changes: A technological evolution perspective. *Ind. Corp. Change* 1997, 6, 183–202.
6. Fischer, M.M. Innovation, knowledge creation and systems of innovation. *Ann. Reg. Sci.* 2001, 35, 199–216.
7. Garcia, R.; Calantone, R. A critical look at technological innovation typology and innovativeness terminology: A literature review. *J. Prod. Innov. Manag.* 2002, 19, 110–132.
8. McDermott, C.M.; O'Connor, G.C. Managing radical innovation: An overview of emergent strategy issues. *J. Prod. Innov. Manag.* 2002, 19, 424–438.
9. Pederson, C.R.; Dalum, B. Incremental versus radical change—The case of the Digital North Denmark program. In *Proceedings of the Systems of Innovation, Growth and Development the DRUID Summer Conference 2004*, Milano, Italy, 9–12 June 2004; pp. 1–26.
10. OECD. *Main Definitions and Conventions for the Measurement of Research and Experimental Development (R&D)*. A Summary of the Frascati Manual; OECD Publishing: Paris, France, 2004.
11. Urabe, K. Innovation and the Japanese Management System. In *Innovation and Management: International Comparisons*; Urabe, K., Child, J., Kagono, T., Eds.; De Gruyter: Berlin, Germany; Boston, MA, USA, 1988; pp. 3–26.
12. Kogabayev, T.; Maziliauskas, A. The definition and classification of innovation. *Holistica J. Bus. Public Adm.* 2017, 8, 59–72.
13. Schumpeter, J.A. *The Theory of Economic Development*, 1st ed.; Routledge: Oxfordshire, UK, 2021.
14. Twiss, B.; Goodridge, M. *Managing Technology for Competitive Advantage: Integrating Technological and Organisational Development: From Strategy to Action*; Trans-Atlantic Pubns: Philadelphia, PA, USA, 1998.
15. Li, L.X. An analysis of sources of competitiveness and performance of Chinese manufacturers. *Int. J. Oper. Prod. Manag.* 2000, 20, 299–315.
16. Elenkov, D.S.; Manev, I.M. Senior expatriate leadership's effects on innovation and the role of cultural intelligence. *J. World Bus.* 2009, 41, 357–369.
17. West, M.A.; Borrill, C.S.; Dawson, J.F.; Brodbeck, F.; Shapiro, D.A.; Haward, B. Leadership clarity and team innovation in health care. *Leadersh. Q.* 2003, 14, 393–410.
18. Akgün, A.E.; Keskin, H.; Byrne, J. Organizational emotional capability, product and process innovation, and firm performance: An empirical analysis. *J. Eng. Technol. Manag.* 2009, 26, 103–130.
19. Czarnitzki, D.; Kraft, K. Innovation indicators and corporate credit ratings: Evidence from German firms. *Econ. Lett.* 2004, 82, 377–384.
20. Jung, D.D.; Wu, A.; Chow, C.W. Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *Leadersh. Q.* 2008, 19, 582–594.
21. Zahra, S.A.; Nielsen, A.P. Sources of capabilities, integration and technology commercialization. *Strateg. Manag. J.* 2002, 23, 377–398.
22. Makri, M.; Scandura, T.A. Exploring the effects of creative CEO leadership on innovation in high-technology firms. *Leadersh. Q.* 2010, 21, 75–88.
23. Cooper, R.G. New products: What distinguishes the winners? *Res. Technol. Manag.* 1990, 33, 27–31. Available online: <http://www.jstor.org/stable/24125059> (accessed on 28 March 2023).
24. Cooper, R.G.; Kleinschmidt, E.J. An investigation into the new product process: Steps, deficiencies, and impact. *J. Prod. Innov. Manag.* 1986, 3, 71–85.
25. Boston Consulting Group. "Innovation 2006". 2006. Available online: http://www.bcg.com/publications/files/2006_Innovation_Survey_report.pdf (accessed on 28 March 2023).
26. Chapman, R.L.; O'Mara, C.E.; Ronchi, S.; Corso, M. Continuous product innovation. *Meas. Bus. Excell.* 2001, 5, 16–23.
27. Cooper, R. Benchmarking new product performance: Results of the best practices study. *Eur. Manag. J.* 1998, 16, 1–17.

28. Cooper, R.G.; Edgett, S.J. Critical Success Factors for New Financial Services. *Mark. Manag.* 1996, 5, 26–37. Available online: <http://search.ebscohost.com.proxy-ub.rug.nl/login.aspx?direct=true&db=buh&AN=9701230524&site=ehost-live&scope=site> (accessed on 28 March 2023).
29. Ju, T.L.; Li, C.; Lee, T. A contingency model for knowledge management capability and innovation. *Ind. Manag. Data Syst.* 2006, 106, 855–877.
30. De Weerd-Nederhof, P.C.; Pacitti, B.J.; da Silva Gomes, J.F.; Pearson, A.W. Tools for the improvement of organizational learning processes in innovation. *J. Work. Learn.* 2002, 14, 320–331.
31. Subramaniam, M. Integrating Cross-Border Knowledge for Transnational New Product Development. *J. Prod. Innov. Manag.* 2006, 23, 541–555.
32. Johnston, S.; Paladino, A. Knowledge Management and Involvement in Innovations in MNC Subsidiaries. *MIR Manag. Int. Rev.* 2007, 47, 281–302. Available online: <http://www.jstor.org/stable/40658173> (accessed on 28 March 2023).
33. Mei, S.; Nie, M. Relationship between Knowledge Sharing, Knowledge Characteristics, Absorptive Capacity and Innovation: An Empirical Study of Wuhan Optoelectronic Cluster. *Bus. Rev. J.* 2007, 7(2), 154–161.
34. Roberts, E.B. Managing Invention and Innovation. *Res. Technol. Manag.* 2007, 50, 35–54. Available online: <http://www.jstor.org/stable/24135043> (accessed on 28 March 2023).
35. Mohanty, R.P.; Deshmukh, S.G. Evaluating manufacturing strategy for a learning organization: A case. *Int. J. Oper. Prod. Manag.* 1999, 19, 308–328.
36. Tarafdar, M.; Gordon, S.R. Understanding the influence of information systems competencies on process innovation: A resource-based view. *J. Strateg. Inf. Syst.* 2007, 16, 353–392.
37. OECD; Eurostat. Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation. The Measurement of Scientific, Technological and Innovation Activities, 4th ed.; OECD Publishing: Paris, France; Luxembourg, 2018.
38. Eurostat. Community Innovation Survey 2018. CIS2018; European Commission: Luxembourg, 2018.
39. Eurostat. Community Innovation Survey—New features. In *Statistics Explained*; European Commission: Luxembourg, 2022; Available online: <https://ec.europa.eu/> (accessed on 28 March 2023).
40. Andrews, K.R. *The Concept of Corporate Strategy*, 3rd ed.; Richard D. Irwin: Homewood, IL, USA, 1987.
41. Chesbrough, H.W.; Appleyard, M.M. Open Innovation and Strategy. *Calif. Manag. Rev.* 2007, 50, 57–76.
42. Kalkan, A.; Bozkurt, Ö.Ç. Business Strategies of SMEs, Innovation Types and Factors Influencing Their Innovation: Burdur Model. *Ege Acad. Rev.* 2014, 14, 189.
43. Ettlie, J.E.; Bridges, W.P.; O’Keefe, R.D. Organization Strategy and Structural Differences for Radical versus Incremental Innovation. *Manag. Sci.* 1984, 30, 682–695.
44. Cahill, D.J. Organizational decline and innovation: Are entrepreneurs a special case?: Commentary. *Acad. Manag. Rev.* 1998, 23, 387–388.
45. Mone, M.A.; McKinley, W.; Barker, V.L. Organizational Decline and Innovation: A Contingency Framework. *Acad. Manag. Rev.* 1998, 23, 115–132.
46. Ireland, R.D.; Hitt, M.A.; Camp, S.M.; Sexton, D.L. Integrating Entrepreneurship and Strategic Management Actions to Create Firm Wealth. *Acad. Manag. Exec.* 2001, 15, 49–63.
47. Knott, A.M. Persistent Heterogeneity and Sustainable Innovation. *Strateg. Manag. J.* 2003, 24, 687–705.
48. O’Brien, J.P. The capital structure implications of pursuing a strategy of innovation. *Strateg. Manag. J.* 2003, 24, 415–431.
49. Wolfe, R.A. Organizational Innovation: Review, Critique and Suggested Research Directions. *J. Manag. Stud.* 1994, 31, 405–431.
50. Blumentritt, T.; Danis, W.M. Business Strategy Types and Innovative Practice. *J. Manag. Issues* 2006, 18, 274–291.
51. Zahra, S.A.; Covin, J.G. The financial implications of fit between competitive strategy and innovation types and sources. *J. High Technol. Manag. Res.* 1994, 5, 183–211.
52. Ritter, T.; Gemünden, H.G. The impact of a company’s business strategy on its technological competence, network competence and innovation success. *J. Bus. Res.* 2004, 57, 548–556.
53. Teece, D.J. Business models, business strategy and innovation. *Long Range Plann.* 2010, 43, 172–194.
54. Wierzbicki, M. Model biznesowy a innowacyjność. *Business Model Vs. Innovation. Pr. Nauk. Uniw. Ekon. we Wrocławiu* 2017, Nr 472, 471–484.

55. Badiru, A.B. *Innovation. A Systems Approach*, 1st ed.; CRC Press: Boca Raton, FL, USA, 2020.
56. Baldwin, J.R.; Johnson, J. Business strategies in more- and less-innovative firms in Canada. *Res. Policy* 1996, 25, 785–804.
57. Reis, B.A.; De Moura, F.R.; De Aragão, I.M. The Linkage between Input and Output in the Innovation Ecosystem. *Global J. Human-Social Sci.* 2021, 21, 31–41. Available online: <https://socialscienceresearch.org/index.php/GJHSS/article/view/3587> (accessed on 28 March 2023).
58. Abreu, A. Innovation ecosystems: A sustainability perspective. *Sustainability* 2021, 13, 1675.
59. Farida, I.; Setiawan, D. Business Strategies and Competitive Advantage: The Role of Performance and Innovation. *J. Open Innov. Technol. Mark. Complex.* 2022, 8, 163.

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