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## The Impact of Innovation and Knowledge Management on Enterprises' Revenues in Serbia

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**Abstract:**

**Purpose:** The purpose of this paper is to show the importance of knowledge management and innovation for the performance of enterprises in Serbia, and especially for increasing their revenues.

**Design/Methodology/Approach:** In order to determine the extent to which innovations are present in companies in Serbia and whether they are important for the performance of companies (and especially for their revenues) secondary data sources from various national and international bodies and organizations have been used. For that purpose, first the number and size of enterprises in Serbia, then the share of innovative enterprises in the total number of enterprises, and finally the share of innovation revenues in the total revenues of innovative enterprises are determined.

**Findings:** Innovation and knowledge management are of great importance for the revenues of companies in Serbia, regardless of their size and activity. Recognizing that importance, companies in Serbia in recent few years have increased their innovative activity. That progress can be seen from the data of the European Innovation Scoreboard - EIS.

**Practical Implications:** This paper has proved the importance of innovation and knowledge management for corporate performance and can positively influence companies to increase their innovative activities in order to achieve greater performance and thus contribute to economic development in the country in which they operate.

**Originality/Value:** This paper has proved the importance of innovation and knowledge management for the performance of companies in Serbia (and especially for increasing their revenues).

**Keywords:** Innovation, Knowledge Management, Performance, Enterprises, Revenues, Serbia.

**JEL code:** O30, O32.

**Paper Type:** A research study.

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## **1. Introduction**

The knowledge is a key value and the main driver for the organizational survival and success of the enterprises of any size and industry. It is not the sole element for an organization's survival, but it is the most important one because it supports all others elements. For this reason, the managers of the enterprises are very deeply involved in understanding knowledge, and developing knowledge management processes and systems in order to exploit opportunities that it offers to the competitive advantage and performances of their companies.

## **2. Literature Review**

### **2.1 Defining Knowledge Management**

In the last decade of the twentieth century, knowledge management has evolved from the practice of consultancy to academic science. Like other branch sciences, it has become a specialized field of management through knowledge, skills and abilities. Knowledge management is a relatively young discipline that has its roots in numerous disciplines. In the literature, there are many different definitions for the concept of knowledge management given from academics, practitioners, governments, profits and not profits sectors. However, the most common words appearing in knowledge management definitions are, knowledge, organization, process, information, use, share, create, and manage.

Some of these definitions are as following:

According to Davenport and Prusak (2000), the knowledge management "is managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value." Knowledge management is the creation, transfer, and exchange of organizational knowledge to achieve a (competitive) advantage (John Girard and JoAnn Girard). Knowledge management is the process through which organizations generate value from their intellectual and knowledge-based assets. (Meridith Levinson). The process of connecting people to people and people to information to create a competitive advantage (Jae K. Shim, Joel G. Siegel). The facilitation and support of processes for creating, sustaining, sharing, and renewing of organizational knowledge in order to generate economic wealth, create value, or improve performance (Verna Allee).

KM is an integrated systematic approach. which when applied to an organization, enables the optimal use of timely, accurate and relevant information, it also facilitates knowledge discovery and innovation, fosters the development of a learning organization and enhances understanding by integrating all sources of information, as well as individual and collective knowledge and experience.

(Canadian Department of National Defence). The knowledge management is a mechanism through which innovation complexity can be addressed (Cavusgil *et al.*, 2003).

## 2.2 Defining Innovation

Many authors consider that the innovation is the principal driver of competitiveness as well as a key factor for any business survival especially when the enterprises are operating in a changing and competitive environment. It encompasses a wide research field that analysis multiple aspects. There are different terms to refer to it and to explain the complexity of the concept.

The origin of the word “innovation” comes from the Latin words “innovatio” or “innovo.” Both words mean to “renew or to make something new” (Norrman 2008). The term “innovation” was used for the first time by Schumpeter at the beginning of the 20th century. Schumpeter defined innovations as “product, process and organizational changes that do not necessarily originate from new scientific discoveries, but may arise from a combination of already existing technologies and their application in a new context” (Urbancova, 2013).

Innovation is defined as “the implementation of a new or significantly improved product (goods or services) or process, new marketing methods, or a new organizational method in business practices, workplace organization, or external relations” (U.S. Census Bureau, 2006). “Innovation is a complex process that brings ideas to market in the form of new or improved products or services. This process consists of two parts, which are not necessarily sequential to each other, although they are linked paths between them in a back and forth direction. One part is specialized on the known-how and the other part is devoted primarily to the application as a process, a product or a service. In both parts, they incorporate new advantages to the market” (Castro and Fernandez de Lucio, 2001).

The process of innovation comes from different sources and it can be classified according to a range of criteria. Referring to product innovation, it can be applied to a good or service, it involves changes in working methods or production functions. Innovation is not limited only to the product or its manufacturing process, but it involves many other aspects that affect the company decision-making. Table 1, presents the multifaceted concept depending on the direction applied.

**Table 1.** *Innovation as a multifaceted concept*

Depending on the object	Depending of their relevance
- Product	- Incremental
- Process	- Radical
Depending on the field	Depending on their origin
- Technology	- R&D
- Organizational	- Incorporation

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- Marketing	- Imitation
	- Experience

*Source: Rojas et al., pp.76.*

The literature is full of attempts to categorize different levels and types of innovation. Some of the types of innovation are following. Marketing innovation is concerned with improving the mix of target markets and how chosen markets are best served. Its purpose is to identify better (new) potential markets and better (new) ways to serve target markets. Organizational innovation means innovation of business models, management techniques and strategies, and organizational structures.

A process innovation is the implementation of a new or significantly improved production process, distribution method, or support activity for goods or services. Thus a pure process innovation simply changes the way in which a product is made, without changing the product itself. The literature has identified a variety of different forms of process innovation: organizational innovation, supply chain innovation, marketing innovation and business model innovation.

Product innovation is defined as: goods or services which is either new or significantly improved with respect to its fundamental characteristics, technical specifications, incorporated software or other immaterial components, intended uses or user friendliness. A pure product innovation creates a new or improved product for sale without any change in the production process.

Radical innovation mean significantly different changes to product, services or process – “do what we do differently”. Radical innovation describes improvements that fundamentally alter the character of a product or process. This type of innovation establishes a new dominant design and hence, a new set of core design concepts embodied in components that are linked together in a new architecture. Radical innovation creates unmistakable challenges for established firms, since it destroys the usefulness of their existing capabilities.

Incremental innovation is known as small improvements to existing products, services or process – “doing what we do but better”. Incremental innovation describes the steady stream of improvements to a particular product or process which do not change the character of that product or process in any fundamental way. This type of innovation refines and extends an established design. Improvement occurs in individual components, but the underlying core design concepts and the linkage between them. This tends to reinforce the competitive positions of established firms since it builds on their core competencies.

Discontinuous innovation – radical innovations which change the “rules of the game” and open up a new game in which new players are often at an advantage.

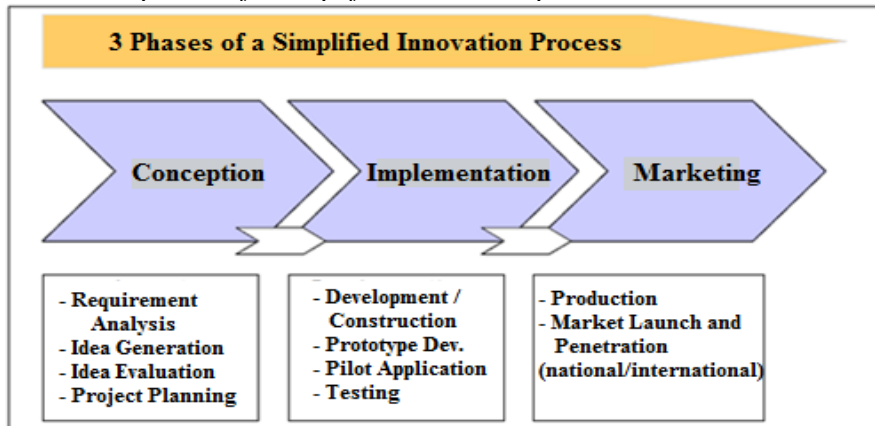
Modular innovation changes the core design of one or more components but does not change the overall product architecture. This type of innovation will require new knowledge for one or more components, but the architectural knowledge remains the same. This is a competence destroying innovation since new knowledge of a new component has to be acquired and the knowledge of the replaced component is no longer a valuable asset.

Component innovation – changes at the level of components in a bigger system.

Architecture innovation – changes in the whole system. The essence of an architectural innovation is the reconfiguration of an established system to link together components in a new way. Architectural innovation does not mean that components remain unchanged, but they are changed in such a way that it opens up for new ways of linkage between the components. This change is so small that the core concept behind the changed component is the same and the associated scientific and engineering knowledge remain the same. Position innovation mean changes in the context in which the product/services are introduced. Paradigm innovation mean changes in the underlying mental models which frame that the organization does.

According to Verworn *et al.* (2007) a simplified innovation process has several systematic steps such as requirement analysis, idea generation, idea evaluation, project planning, product development, product testing, and product marketing which may overlap each other (Figure 1).

**Figure 1.** Three phases of a simplified innovation process



*Source: Tiwari and Buse, 2007, pp. 5.*

Various factors encourage an organization to innovate. These factors can be summarized as follows (Sullivan, 2008):

- Emerging technologies,
- Competitor actions,
- New ideas from customers, strategic partners, and employees,

- Emerging changes in the external environment.

Innovative products will help firms to strength their competitive position in home as well as international markets. This necessitates innovation efforts to bring new and/or better products into the market enable more efficient and cost-effective production, distribution and after-sales services.

### **2.3 The Importance of Knowledge Management of Innovation**

The importance of knowledge management and its relationship to innovation is widely acknowledged. Many scholars have explored the relationship between knowledge management and innovation (Carneiro, Abraham, Darroch, Akram, Lopez-Nicolas, Pyka, Shani, Merono-Cerdan, Cavusgil, etc.). For example, Carneiro (2000) investigates the relationship between knowledge management, levels of innovation and levels of competitiveness in organizations and suggests that the knowledge management positively influences innovation and competitiveness. Abraham (2008) highlight that the major goal of knowledge management is innovation.

Gloet and Terziovski (2004) have concluded that there is a significant and positive relationship between knowledge management practices and innovation performance of organizations. According to them, organizations should strive for an integrated approach towards knowledge management, which assists in building a corporate culture, in order to maximize innovation performance leading to competitive advantage.

Cavusgil *et al.* (2003) declare that the knowledge management is a mechanism through which innovation complexity can be addressed. According to Du Plessis (2007), the knowledge management has a crucial importance in the innovation process for the following reasons:

- Knowledge management assists in creating tools, platforms and processes for tacit knowledge creation, sharing and leverage in the organization, which plays an important role in the innovation process;
- Knowledge management assists in converting tacit knowledge to explicit knowledge;
- Knowledge management facilitates collaboration in the innovation process;
- Knowledge management ensures the availability and accessibility of both tacit and explicit knowledge used in the innovation process, using knowledge organization and retrieval skills and tools such as taxonomies;
- Knowledge management ensures the flow of knowledge used in the innovation process;

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- Knowledge management provides platforms, tools and processes to ensure integration of an organization's knowledge base;
  - Knowledge management assists in identifying gaps in the knowledge base and provides processes to fill in the gaps in order to aid innovation;
  - Knowledge management assists in building competencies required in the innovation process;
  - Knowledge management provides organizational context to the body of knowledge in the organization;
  - Knowledge management assists in steady growth of the knowledge base through gathering and capturing of explicit and tacit knowledge;
  - Knowledge management provides a knowledge-driven culture within which innovation can be incubated.

#### **2.4 The Role of Innovations on the Enterprises Competitiveness**

Globalization of the markets and increasing international competition force enterprises to search for new, innovative, flexible and imaginative ways to survive. Therefore, the above statement provides a relationship between innovation and enterprises survival.

According to Tushman and Nadler (Urbancova, 2013) “organizations can gain competitive advantage only by managing effectively for today while simultaneously creating innovation for tomorrow”. They suggested that “there is perhaps no more pressing managerial problem than the sustained management of innovation”. According to them, visionary leadership and also people, structures and values are important factors that affect whether an organization realizes benefits from innovation. Innovation is still seen as a critical drive of economic performance. In the World Bank report (2009) innovation has been viewed as vital in ensuring competitive advantage by organization and long term loyalty.

An important issue facing enterprises worldwide is continuous improvement. In today's markets the inputs of customers and their fast changing needs are imperative for enterprises forcing them to continuously improvement of their business. Enterprises need to consider continuously improving production costs, delivery schedules, manufacturing skills, supplier relationship and productivity in all practices. They constantly experience shortages in capital to employee skills to improve production capacity, which makes it necessary to continuously improve their production strategies with customized products and process-focused operations.

Moreover enterprise operations function should embrace competitive priorities of low production costs, fast on-time deliveries, high quality products and customer services. Enterprises that have adapted their production systems to be flexible and their costs and prices competitive will be able to compete and capture increased market share. This signifies the importance of innovation in enhancing loyalty and

long term customer value. The innovation output is determined by the innovative input, i.e., the transformation of input into output. The innovative output is related to the firm performance. Innovative output, via firm performance, would affect the innovation expenditures. The overall economic performance of a firm would affect all three stages of the innovation process of a firm. The growth of total sales would be higher for innovating firms than for non-innovating firms, etc. Innovation boosted competitiveness of enterprises.

Innovations enable enterprises to bring new and / or improved products and services in the market and thus to meet customers' needs better and fully, to gain loyal customers, to increase sales of products and services, to substitute outdated products, to increase their income, to improve their market share, to increase their competitive advantage, to conquer new market segments and new markets, to improve their performance, and as a result positively affect to the economic development of the country in which they operate.

### 3. Research Methodology

In order to determine the extent to which innovations are present in companies in Serbia and whether they are important for the performance of companies (and especially for their revenues), in this paper are used secondary data sources from various national and international bodies and organizations. For that purpose, first the number and size of enterprises in Serbia is determined, then the share of innovative enterprises in the total number of enterprises, and finally the share of innovation revenues in the total revenues of innovative enterprises.

### 4. Results

In 2018 in Serbia were registered 376,382 enterprises of which 362 106 micro enterprises, 11 219 small enterprises, 2 517 medium enterprises and 540 large enterprises (Tables 2, 3 and 4).

*Table 2. Number of enterprises, by size classes in Serbia, 2018*

Enterprises by size	Number of enterprises	%
Micro (0-9)	362 106	96,2
Small (10-49)	11 219	3,0
Medium (50-249)	2 517	0,7
Large (250 or more)	540	0,1
<b>Total</b>	<b>376 382</b>	<b>100</b>

Source: OECD.org.

*Table 3. Descriptive Statistics*

Min	540
Max	362 106



Range	R= 361 566
Size	n=4
Sum	376 382
Mean	94 095.5
Median	6 868
Mode	2 517.540
Standard Deviation	178 733.876
Coefficient of Variation	1.89949441

*Source: Own study.*

**Table 4.** Frequency table

Value	Frequency	Frequency %
540	1	25,00
2 517	1	25,00
11 219	1	25,00
362 106	1	25,00

*Source: Own study.*

The number of innovative enterprises in Serbia is continuously increasing over time. For example, in 2012, 44.60% of the enterprises in Serbia were innovative, and in 2018 their share increased to 50.21%. In 2018, 47.65% of the total number of small enterprises, 61.83% of medium enterprises, 69.10% of large enterprises, 56.64% of manufacturing enterprises and 47.90% of service enterprises are innovative in Serbia. The biggest innovators are large enterprises, followed by medium-sized enterprises and small enterprises (Table 5).

**Table 5.** Innovative enterprises (%)

	2012	2014	2016	2018
Innovative enterprises – total	44,60	40,50	41,20	50,21
Small enterprises (%)	40,80	37,40	38,20	47,65
Medium enterprises (%)	55,00	52,70	54,40	61,83
Large enterprises (%)	66,20	68,10	66,30	69,10
Productive enterprises (%)	48,70	40,60	47,30	56,64
Service enterprises (%)	42,40	40,40	38,90	47,90

*Source: stat.gov.rs*

The largest percentage of the total number of innovative enterprises in Serbia in 2016 (33.4%) are technological innovators, and the remaining percentage of innovative enterprises are non-technological enterprises. In large enterprises, 56.8% of the total number of innovators were technological innovators (innovators of products and processes), and 56.1% were non-technological innovators (innovators of organization and marketing). Of the total number of medium-sized innovative enterprises, 43.8% were technological innovators, and 42.4% were non-technological innovators. The situation is the same with small innovative enterprises

(30.9% of them are technological innovators, and 27.3% are non-technological innovators) (Table 6).

**Table 6.** Structure of the type of innovation in the total innovative activities of innovator companies (%)

Enterprises by size	Innovator enterprises	Technological innovators (products and processes)	Non-technological innovators (organization and marketing)	Enterprises - technological and non-technological innovators	Enterprises without innovation
Total	41,2	33,4	30,2	22,4	58,8
Small	38,2	30,9	27,3	20,0	61,8
Medium	54,4	43,8	42,4	31,9	45,6
Large	66,3	56,8	56,1	46,6	33,6

Source: stat.gov.rs.

The most common type of innovation in innovative companies in 2016 are innovations in products and services (26.9%), followed by: innovations in the organization of the enterprise (24.2%), marketing innovations (22.3%) and process innovations (21.0%). Abandoned innovations or innovations that are still in progress, represent 14.3% of the total number of innovations.

Analyzed by territorial distribution, the largest percentage of innovations in products and services (28,4%), process innovations (25,0%) and marketing innovations (25,0%) are represented in the region of Sumadija and western Serbia, and innovations in the organization of enterprises (25,0%) in the region of Belgrade (Table 7).

**Table 7.** Representation of the types of innovations in the enterprises innovators by territory (%)

Territory	Type of innovation					
	Product / service innovation	Process innovation	Abandoned innovation or still in progress	Innovations in the organization of the company	Marketing innovations	non-innovators
Republic of Serbia	26,9	21,0	14,3	24,2	22,3	58,8
Serbia-north	26,4	19,7	14,9	24,9	21,7	58,7
Belgrade region	27,2	21,0	16,1	25,0	22,0	58,7
Region of Vojvodina	25,1	17,4	12,8	24,9	21,3	58,8
Serbia – south	28,0	24,2	13,1	22,6	23,4	58,9
Sumadija region and western Serbia	28,4	25,0	13,6	22,7	25,0	57,6
Region of Southern and Eastern Serbia	27,4	22,8	12,3	22,3	20,9	61,1

Source: stat.gov.rs.

The share of revenues from product / service innovations that were new to the market is 5.8%, and those that were new to the business entity 9.3%, in relation to the total revenue of innovator enterprises. The share of revenues from innovation of products / services that are new for the market and new for the enterprise, in the total revenues of the innovating enterprises (according to their size), are shown in Table 8.

**Table 8.** Share of product / service innovation revenue in total revenue of innovator companies (in %)

Type of product innovation				
	Total	Small	Medium	Large
Total	100,0	100,0	100,0	100,0
Innovations in products / services new for the market	5,8	6,8	2,7	6,4
Innovations in products / services new for the company	9,3	8,4	6,5	10,1
From unproven products / services	84,9	84,8	90,8	83,5

**Source:** *stat.gov.rs.*

Recognizing the enormous importance of innovation for enterprises performance, companies in Serbia in recent few years have sought to increase their innovative activity. That progress can be seen from the data of the European Innovation Scoreboard - EIS. According to the data of the European Innovation Scoreboard 2021, Serbia is an emerging innovator. Over time, performance in Serbia relative to the EU has increased. Structural differences with the EU are shown in the Table 9 including, compared to the European Innovation Scoreboard 2020, new information on different types of (innovating) enterprises (Innovation profiles). According to those data, Serbia has above average shares of in-house product innovators without market novelties, innovators that do not develop innovations themselves, in-house product innovators with market novelties and non-innovators with potential to innovate (Table 9).

**Table 9.** Differences between EU and Serbia among innovation profiles of the enterprises 2020

Innovation profiles	Serbia	EU
In-house product innovators with market novelties	11.5	10.7
In-house product innovators without market novelties	16.5	12.3
In-house business process innovators	6.7	11.0
Innovators that do not develop innovations themselves	18.9	11.6
Innovation active non-innovators	0.1	3.3
Non-innovators with potential to innovate	21.6	19.9
Non-innovators without disposition to innovate	24.7	31.3

**Source:** *European Innovation Scoreboard 2021.*

According to this Scoreboard, Serbia's strengths are in innovators, firm investments and employment impacts. The top-3 indicators include Non-R&D innovation expenditures, product innovators, and employment in innovative enterprises. The improvement in innovation performance in the last two years is the result of improved performance for broadband penetration, venture capital, product and business process innovators, design applications, and employment in innovative enterprises.

## **5. Conclusions**

The knowledge is a key value and the main driver for the organizational survival and success of the enterprises of any size and industry. For this reason, the managers of the enterprises are very deeply involved in understanding knowledge, and developing knowledge management processes and systems in order to exploit opportunities that it offers to the competitive advantage and performances of their companies. In the last decade of the twentieth century, knowledge management has evolved from the practice of consultancy to academic science.

There is a significant and positive relationship between knowledge management and innovation of enterprises. In other hand, innovations enable enterprises to bring new and / or improved products and services in the market and thus to meet customers' needs better and fully, to gain loyal customers, to increase sales of products and services, to substitute outdated products, to increase their income, to improve their market share, to increase their competitive advantage, to conquer new market segments and new markets, to improve their performance, and as a result positively affect to the economic development of the country in which they operate.

Recognizing the enormous importance of innovation for enterprises performance and economic development of the country, companies in Serbia in recent few years have sought to increase their innovative activity. That progress can be seen from the data of the European Innovation Scoreboard - EIS.

According to the data of the European Innovation Scoreboard 2021, Serbia is an emerging innovator. Over time, performance in Serbia relative to the EU has increased.

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