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Abstract:

In the contemporary economy, intellectual resources are the main driving force of economic, social and technological development of an organisation. This issue is particularly significant for development of organisations in Poland. The article presents a preliminary research carried out among a group of 32 managers from Polish companies belonging to the sector of small and medium enterprises by participants at "Polish-American School of Business – the Executive MBA Programme organised by the Wroclaw University of Science and Technology. The applied research method consisted in the managers answering 27 multiple choice questions. The vast majority of the questions concerned the respondents' understanding of the notion of intellectual resources, the methods of their protection, the procedures used to protect them, as well as the persons responsible for their management in the organisation. The content of the survey and the findings are presented in the form of response maps. An analysis of the obtained survey results indicates low interest of the issues of intellectual resources management.

Keywords: intellectual property, organization, protection, resources

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1. Introduction

The resource-based view (RBV) can be identified as a unique reservoir of ideas, which enable effective management in a contemporary organisation. The beginnings of this approach can be found in the works of G. Hamel and C. K. Prahalad (Hamel, Prahalad, 1990; Hamel, Prahlad, 1994). The essence of their considerations lays in the assumption that an organisation is a set of valuable resources and skills.

Resources are what the organisation has (available resources) or may have (potential resources) as a result of the conducted economic operations. Examples of tangible resources of the organisation include buildings, locations, machines, tools, and real estate. The organisation can purchase these resources or sell them on the market. They have a price, and information about them is relatively well-known and available. Some resources, especially intangible ones, have specific properties – it is difficult to purchase them and sell them on the market, imitate or replace them. Such resources include know-how of employees, trademarks, copyrights, trade secrets, contracts and licenses, software, databases, personal and organisational networks, reputation of the organisation and its products, as well as organisational culture, cumulated knowledge (Hall, 1993).

Apart from resources, the organisation also possesses capabilities with the nature of processes. They are linked to activities, thanks to which organisations can gather, use and renew their resources. The higher the capabilities of the organisation, the more actively and cleverly it can accumulate, exploit and renew all its resources. It can acquire new streams of resources in response to the situation prevailing on the market, e.g. emergence of new market opportunities, convergence or division of the existing market segments, growth or disappearance of market demand (Eisenhardt, Martin, 2000).

The resource-based view in organisation management is the starting point for presenting the issues of intellectual resource management in the present article. The purpose of the paper is to present the process of creation and development of intellectual resources in the organisation.

2. Characteristics of resources – literature overview

In the praxeological perspective, resources are items used to achieve an objective: people, materials, tools (equipment), electric energy, etc. In the extended definition, resources also include time and space. Before commencing action, the resources allocated on achievement of a given objective are usually calculated, leaving some provisions (reserve) to be used in the future.

Review of the subject literature allows for ascertaining that the way the organisation's resources are perceived, especially by economic sciences, has evolved from the neoclassical perspective, which analysed their two basic, homogenous types - capital and labour - to their contemporary perception as a complex and diverse, due to its numerous features, set of tangible and intangible assets under the control of the organisation.

According to another classification, the economic perception makes a distinction into tangible, human and intangible resources. Tangible resources are natural resources, constituting a gift of nature, as well as capital resources in the form of physical and financial resources. Human resources are the characteristics and competences of employees. Intangible resources, on the one hand, are realised by people – their competences and, on the other hand, by the company itself – in the form of e.g. licenses, patents, know-how. Due to the fuzzy adopted classification, some authors combine the notion of human resources with the notion of creations of the human mind, such as inventions, works, industrial designs, etc., and define them as intellectual and human resources (Dollinger, 2008). It may seem that such a point of

view was based on the belief that the human intellect (mind) is a man's immanent feature that allows him for perform any work.

M. J. Dollinger discusses the six basic kinds of resources in the organisation: physical, reputational, organisational, financial, intellectual and human, as well as technological (Dollinger, 2008). The classification of resources presented thereby contains the term "intellectual resources". Dollinger includes in intellectual and human resources: management knowledge, trainings, experience, questioning, observing, creativity, vision, intelligence of individual employees and their social competences (Dollinger, 2008).

On the basis of the review of various literature works, C. Camelo-Ordaz, F. Martin-Alcazar, R. Valle-Cabrera suggested a division of strategic resources into: tangible and intangible resources. Intangible resources are (Camelo-Ordaz et al. 2003):

- assets protected by law: intellectual property rights; patents, copyrights; trade secrets;
- assets not protected by law: reputation; databases;
- capacities of the employees understood individually: experience of an employee, training level of an employee; knowledge of people cooperating with the organisation (suppliers, distributors);
- capabilities held by the organisation; managerial skills and styles; adaptability, change management capability, innovation capability; organisational culture; teamwork (Camelo-Ordaz et al., 2003).

The above division should be verified, since reputation (company image) and databases, classified by the authors to unprotected resources, have been already legally protected for a long time in EU Member States, including Poland.

Australian scientists J. Galbreath and P. Galvin carried out research concerning analysis of resources of companies, mostly in the perspective of their categorisation into tangible and intangible resources, as well as the effect of particular groups of resources on the

economic and financial results of the examined companies. They divided the company's resources into three groups, paying attention to their different impact on the company's results (Galbreath J., Galvin, 2005):

- tangible resources, which include physical and financial resources,
- intangible resources: intellectual property, organisational resources, reputational resources, and capabilities.

A cognitively interesting proposal for classification of intangible resources was proposed by K. Lähtinen, who divided them into (Lähtinen, 2009):

- human resources: experience of employees, know-how of employees, external relations;
- organisational resources: databases, organisational routines, organisational culture, cooperation agreements, standards and procedures;
- technological resources: technological secrets, patents and trademarks, utility models and industrial designs, geographic indications, copyrights;
- relational resources: operational reputation, product reputation, brands, long-term relations, get-ups.

The classification of intangible resources proposed by P. Doyl includes five groups (Doyl, 2008):

1. technological assets – they cover own technologies in the form of patents, copyrights and trade secrets, or specialised knowledge with regard to the use of technological solutions;
2. strategic assets - they cover licenses, naturally obtained monopolistic position and other privileges limiting the competitive struggle of other entities;
3. opinion-forming assets – they cover the company’s name and its brand, which are the carriers of opinion about the products and services, as well as proper relationships with customers, suppliers, government agencies, and the society;
4. human assets – skills and adaptive capabilities of the personnel;

5. organisation and culture – these resources include social values and standards functioning within the organisation, which shape commitment and loyalty of the personnel.

Each of the aforementioned taxometries of resources possessed by the organisation indicates intangible resources as critical for the functioning of a contemporary company. These are the resources we have adopted as the fundamental resources in the classification we propose, which covers distinction into: organic (primary) intellectual resources and acquisitive (secondary) intellectual resources (Dereń, Skonieczny, 2016). On the figure 1 showed hierarchy the resources in an organization proposed by authors.

Figure 1.

Organic (primary) intellectual resources include: knowledge and experience of the founders, market contacts, talent and cognitive and behavioural skills of employees, trademark (logo, name), commercial mark, patents, trade secret, and organisational culture.

The aforementioned resources are the primary and main assets, which enable establishment of an organisation and commencement of its operations. These are the resources that may be used simultaneously in many places. They do not get devalued during their use, quite the contrary - usually they are enriched and strengthened in the process of the organisation's development. The discussed resources are the foundation for organisation and coordination of any processes in the company, in accordance with the vision or mission adopted by the founders.

On the other hand, acquisitive (secondary) intellectual resources are the resources created as a result of the organisation's operations in the process of transformation of primary resources into specific results, assuming the form of, e.g.: works (copyrights), performances (related rights), inventions (patents), utility models, industrial designs, trademarks, geographic indications, new varieties of plants, mask works, databases, and non-disclosed information (trade secrets, know-how, recipes, processes, technologies, organisational techniques, etc.).

These forms, as products of the human mind of intangible nature, constitute components of intellectual resources, determining the organisation's potential and its competitive power.

It should be emphasised that inventions and trademarks take up a special position in the set of intellectual resources. These resources may appear both at the stage of creating the organisation, as well as in the course of its operation. An invention patent may be the direct decisive factor for establishment of business operations, or it may be a result of these operations. Therefore, innovativeness can be considered an intellectual resource of dual nature, i.e. as a both organic and acquisitive resource. Tab. 1 presents and defines organic and acquisitive intellectual resources in an organisation.

Table I.

In our opinion, the classification of intellectual resources in an organisation presented in such a way is of practical importance, since it allows for comprehensive identification and analysis of resources owned by the organisation. Identification of intellectual resources requires familiarity with the characteristics of intellectual resources. These characteristics influence selection of relevant activities in the process of transformation of an intellectual resource into commercial intellectual products of the organisation.

3. Characteristics of intellectual resources

Intellectual resources, as resources closely related to the creative entity in the sense that they are generated by a human and are being developed in human minds, have several significant characteristics displaying their special nature and diversity. The first characteristic is their non-appropriability. An idea or a new solution resulting from creative human activity remains hidden until its manifestation. Therefore, the creator does not appropriate his work, like it is the case for, e.g., a land owner, who prohibits access thereto. The creator ensures his

right to control the way his creative work is used. In particular, he seeks to prevent disposal of such work in an uncontrolled way, e.g. selling it or profiting from it. The creator cannot in any way prevent imitation of his idea. By purchasing a product – a result of creative work - we gain detailed reconstructive knowledge about the product, its structure and functions. This causes formation of the practice of imitation (Clayton, Christensen, et al., 2015). In practice, a new idea, a new piece of information or a new solution may constitute the beginning of an innovative process, giving birth to a number of subsequent innovations, which are even more difficult to appropriate or control.

The second characteristic allowing for stressing the originality of ownership of ideas, concepts or solutions is their uncountability. We are actually dealing with "a world of ideas", and this uncountability shows the creative capabilities of people and organisations, which are practically limitless.

The third characteristic is non-divisibility. It is difficult to divide, e.g. sell only a part of an idea, or only the right to use it. This characteristic is thus the basis for the economic problem of profitability of investments in innovations. K. Arrow demonstrated this by stating that the most economically rational solution would be to make information fully available to all participants in the "market game". At the same time, such availability would exclude profitability of investments in innovations, as a premise for competition (Arrow, 1951). Today, the last issue is recognised differently, especially with regard to information technologies. Organisations that made their new solutions available through open innovation networks are also the beneficiaries and the winners in the market competition.

Intellectual resources cannot be used up and are characterised by excellent fluidity, which means that they can be converted into any tangible resource (for example copyrights can be transformed into a source of financing).

The fifth characteristic of intellectual resources is their commercialisation capacity. It is the ability to shape resources into the form of a finished solution (product) fit for market sale and competition. This ability is dynamic, variable and depends on numerous factors. It is focused on transferring intellectual knowledge and creative skills to the production process, in order to successfully market them in the form of a product/products. G. Dosi, P. Lleren and M. S. Labini define commercialisation as "*spreading of innovation within economies and industry sectors*" (Dosi, Lleren et al., 2006).

Another characteristic feature of intellectual property as a resource is its usability. The social mechanism in sale of intellectual property is different than in the case of the classic tangible property. The latter has no place for "non-owners", so that the owner would have freedom in exercising control over his property. Intellectual property, from the resource perspective, does not require such exclusion. If someone is a user of solutions being in the public domain, it does not reduce the possibility for others to use these solutions. Therefore, the social usability of these resources is preserved. Moreover, the more people use them, the greater the general benefit conventionally is.

In the light of the conducted analysis, the catalogue of resource characteristics of intellectual property should be supplemented by the protection capability (Dereń, 2014). In the area of this characteristic, three aspects of protection of intellectual property as a resource can be distinguished. Firstly, they include the legal framework of market processes of exchange of goods and services for the area of intellectual property, determined by the state, which establish the legal order defined as the intellectual property law. It is a set of legislative forms of intellectual property along with their jurisdictional forms, shaped by rulings and development of the law. The important elements of these legal regulations include: the patent law, the industrial designs law, the utility models law, the trademarks law, and the copyright law.

4. The process of converting intellectual resources into commercial intellectual products

Human mental capacity, experience and knowledge condition the formation of intellectual resources in the organisation. Through conversion, these resources - combined with time, funds, real capital, and the current state of technology - enable formation of intellectual products, intellectual property products and commercial intellectual property products (Figure. 2).

Figure 2.

The notion of intellectual products covers different forms of human creativity. For example, the authors distinguish: mental products (idea, concept, vision, plan, scientific discovery, model, pattern) and objective products (design, prototype, template, strategy) (Dereń, Skonieczny, 2016). Intellectual resources being at the disposal of the organisation must be identified and assessed from the point of view of their value and their further conversion.

Another action is protection of intellectual products. In the literature, the term is often equated to selecting a form of protection specified in legal regulations, protecting intellectual products against unwanted use by unauthorised persons or organisations. However, it is not justified in practice, especially due to effective organisation management. Protection includes: identification and registration of intellectual products; measurement and assessment of their value; evaluation of the possibility of their utilisation by the organisation and identification of the status of the creators' and the organisation's ownership.

Actions focused on protecting intellectual resources in the organisation are the key aspect in organisation management, in particular in management of its intellectual resources. The proposed holistic approach to the problem of protection of intellectual resources in the

organisation allows for maximising various forms of intellectual property rights. The multitude of patents or protective rights being at the disposal of the organisation proves its market strength, resulting from the process of intellectualisation of resources. An example of a company that builds its market position on the basis of intellectual resources is IBM. In 2016, this company obtained the greatest number patents - 8088, which gives 22 patents per day. The second-place company is Samsung with 5518 patents (15 per day). The subsequent places are taken, accordingly, by Canon (3665 patents), Qualcomm (2897) and Google (2835) **(**IFI CLAIMS Announces Top Recipients of U.S. Patents in 2016).

The last action in the process of conversion of intellectual resources in the organisation is the market sale of intellectual property products. This sale covers various forms of commercial sharing of these products: purchase, sale of licenses and pooling of intellectual resources.

A contract of sale is a universal tool, since, on the one hand, it enables purchase of intellectual resources necessary for the organisation, while on the other hand, it is an instrument enabling sale of unnecessary (due to the adopted objective, competitive advantage and further development of the organisation) intellectual resources. In practice, this contract allows the organisation to supplement and enrich the possessed intellectual resources with new resources, and sometimes it is a form of optimisation and disposal of inefficient or excess resources.

On the other hand, a license agreement is a tool for transfer of intellectual property, both when the organisation makes its intellectual property available, as well as when it wants to acquire intellectual property in technology or its components. Acquisition of intellectual property and utilisation of solutions already existing on the market is sometimes more beneficial than conduct of own works and research on a new product. In such a case, it is possible by obtaining a license authorising to use protected solutions in exchange for a

suitable remuneration. Licensing has many advantages. It can ensure effective return on investment in development and research by entering new markets, to which the owner of the intellectual property would not have access otherwise; establishment of new relations leading to cooperation in the scope of development and research; or it can ensure control measures and direct access to development of new technologies.

Sharing of intellectual resources is also a strategic action and covers numerous different forms and tools, e.g. licenses, leasing, crowdsourcing, crowdfunding, crowdcasting, and franchising.

5. Intellectual resources in Polish SMEs in the light of the research

As part of the classes conducted in March 2017 at the Polish-American School of Business (34th Edition) – the Executive MBA Programme at the Wroclaw University of Science and Technology, the legal and organisational module covered the issues of intellectual resources management, in particular their conversion into intellectual products, protection of these resources and their trade. A group of 33 managers, participants in the study programme representing Polish SMEs, were subjected to surveys. The applied research method consisted in the managers answering 27 multiple choice questions. The vast majority of the questions concerned the respondents' understanding of the notion of intellectual resources, the methods of their protection, the procedures used to protect them, as well as the persons responsible for their management in the organisation. The questionnaire was supplemented by questions concerning the type of organisation, its size, as well as the scope and area of business activity. The survey was a pilot study, and the obtained results, in spite of their diversity, allow for formulating conclusions concerning the way Polish SMEs managers perceive intellectual resources and their management.

The majority of the surveyed managers (75 %) represented limited liability companies.

The business operations mainly focused on: production (28.12 %), services (31.25 %), trade (15.63 %), multi-sector operations (25 %). The majority of respondents represented organisations employing over 10 employees.

The essence of the research issues is presented in the form of a map constituting Fig. 3.

The survey was supposed to diagnose the managers' knowledge of the types of intellectual resources, as well as knowledge of their specific characteristics, strategies of intellectual property management in organisations, and the forms of protection and security of intellectual resources used in market operations that are applied by these organisations.

Figure 3.

The obtained results are also illustrated in the form of a map constituting Fig. 4. The respondents' answers are grouped according to the preferences adopted thereby – beginning with the values most representative for them. The respondents could choose more than one answer. The obtained results juxtaposed with the content of Figure 3 (suggested terms and their understanding) have not been confirmed in the conducted study.

Figure 4.

In the opinion of the survey's authors, managers of Polish SMEs have low and incomplete knowledge concerning intellectual resources and their management. Usually, the surveyed managers generally define intellectual resources as general knowledge, without a division into diverse categories, trademark and innovative projects. According to the survey's authors, such limited understanding of intellectual resources as a basis for organisational development results from lack of education in this respect. Polish management and engineering study programmes have only for several years been teaching subjects covering

intellectual property, its management and its protection. The authors of the article conduct such classes for students at the Wroclaw University of Technology and often encounter the environment's opinions that these issues should be limited only to legal protection of intellectual resources. In our opinion, such a narrow approach should be rejected, since these issues, apart from significant legal themes, should include the broadly understood management of these resources, as factors enabling building of competitive advantage, preparation of an innovative strategy and further development of the organisation.

The narrow understanding of the notion of intellectual resources by the surveyed managers is reflected in their answers to the other survey questions. The authors present these conclusions below.

When identifying types of intellectual resources, the respondents, next to technology, indicated trademarks and inventions as intellectual resources dominant in their organisations. The preference for trademark does not raise any doubts and means that Polish managers understand the significance of this category for the process of building the brand and the market image of the organisation. However, the lack of interest in inventions as an intellectual resource that may be used in the company is alarming.

The respondents emphasise lack of activity regarding protection and security of intellectual resources. In our opinion, the reasons for such a state of affairs may be found, among others, in the lack of patenting tradition in the group of SMEs and the low level of awareness among managers with regard to the benefits of application of industrial property protection instruments.

The answers to the question concerning intellectual resources should be regarded as fairly accidental and based on association. Managers, from many proposals of the intellectual resources, have chosen the following features: the ability to protect, the ability to commercialize, indestructibility and non-divisibility. An indication the feature the ability to protect as the

first, we can interpret as a result of their own experiences in the filed of trade mark protection, as well as the result of the participation in training meetings on which the widely discussed issues the protection of intellectual property. Similarly, we can interpret the indication by managers the next feature like characteristics of commercialization. However, the indication the characteristics like invulnerability as the next, due to the simple statement of the concept of tangible and intangible resources. Out of the many proposed characteristics of intellectual resources, managers selected only three characteristics: indestructibility, non-divisibility and protection capability. Indication of indestructibility as the leading feature probably resulted directly from a straightforward juxtaposition of the notions of tangible and intangible resources. The former are commonly perceived as destructible resources, used up during their utilisation.

As for protection or security of intellectual resources, the respondents indicated protection rights for trademarks and patents as a form of this protection.

With regard to management of intellectual resources, the surveyed managers present a standpoint that can be identified as focused on actions inside the organisation (protection of resources; source of income), rather than as a set of external actions focused on obtaining competitive advantage or an element of market competition of the organisation.

Considering such an understanding of management of intellectual resources in an organisation, it is not surprising that practically the only strategy indicated by the respondents was the reactive strategy, namely the strategy of protecting intellectual resources while sustaining low costs.

6. Conclusion

The presented conclusions from the pilot study conducted on a group of 33 managers employed in Polish SMEs constitute the basis for further research and analyses of the issues of intellectual resource management in organisations. According to the article's authors, this subject matter is of essential importance for the process of teaching managerial staff. Assuming that intellectual resources are the basis for development strategies of contemporary organisations, it is necessary to prepare managers to effectively manage those resources. In our opinion, effectiveness should be understood as the process of identification of intellectual property, planning of its development and protection, which would enable commercialisation. Let the tagline of our article be a quote from the book written by D. Senor and S. Singer entitled "*Start-up Nation: The Story of Israel's Economic Miracle*": *"Luckily, while innovation is scare, it is also a renewable resource. Unlike finite natural resources, ideas can spread and benefit which ever countries are best positioned to take advantage of them, regard less of where they were invented". G.B. Show wrote "If you have an apple and I you have an apple and we exchange apples, then you and I will still each have one have one apples. But if you have an idea and you have an idea and we will exchange these ideas then each of us will have two ideas* >>(pp. 232-233).

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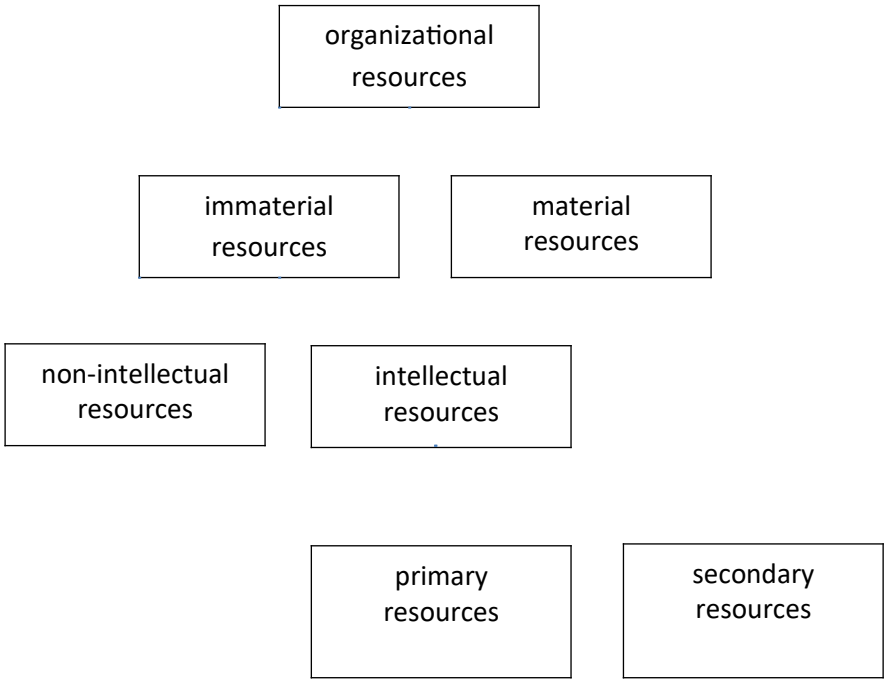

Figure 1. Typology of resources in organization
Source: prepared by authors.

Table I. Organic and acquired intellectual resources in the company

Organic (primary) intellectual resources	Acquired (secondary) intellectual resources	Primary and acquired (dual) resources
- founders' knowledge and experience, - market contacts, - talent and behavioral skills of employees, - brand names (logo, name)*, - trademark, - website, - patents*, - corporate culture	- new knowledge, - copyright, - ancillary rights, - inventions (patents)*, - utility models, - industrial models, - brand names (logo, names)*, - geographical indications, - rights to new plant varieties, - mask works, - databases, - non-disclosed information (trade secrets, know-how, recipes, processes, technologies, organizational techniques, etc., trade secrets), - license agreements, - cooperation networks	- patents* - brand names (logo, name)*,

Depending on the business development stage, patents and brand names are either organic (primary) resource or acquired (secondary) resource.

Source: prepared by the authors.

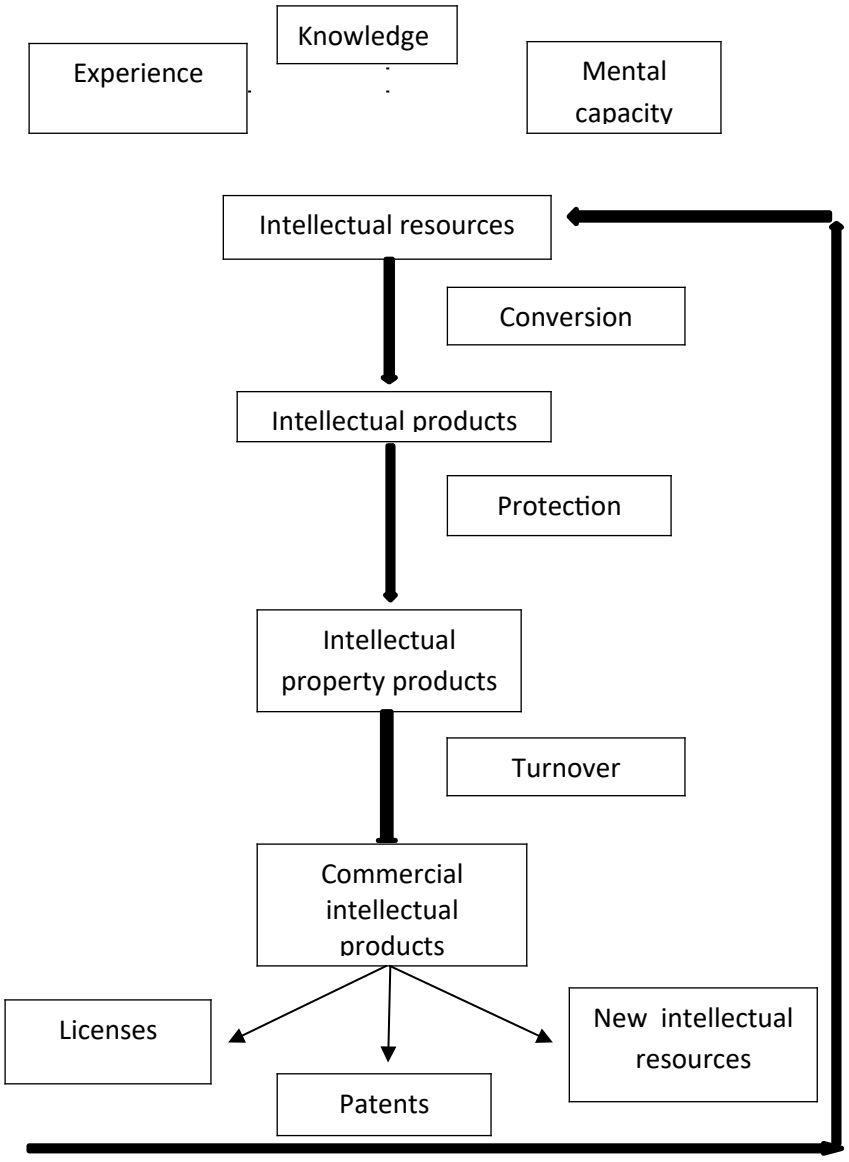

Figure 2. Conversion of intellectual resources in organization.

Source: prepared by authors.

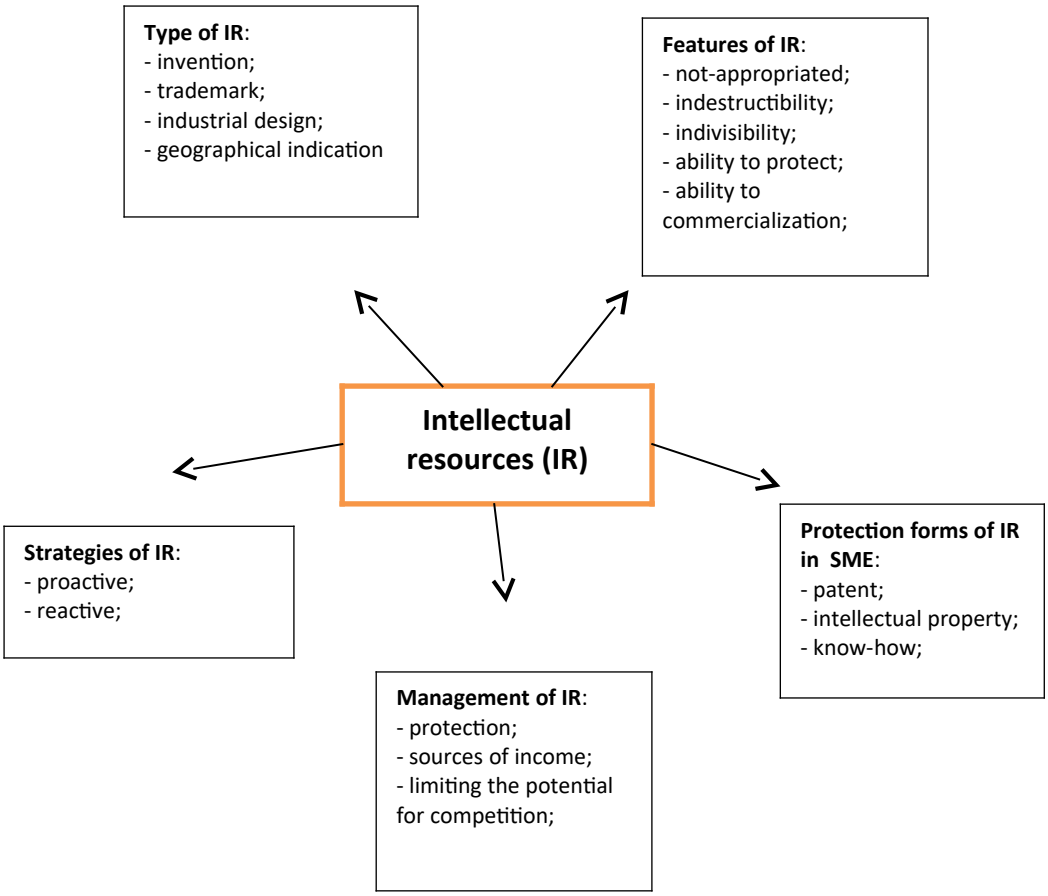

Figure 3. Map of research problems.

Source: prepared by authors.

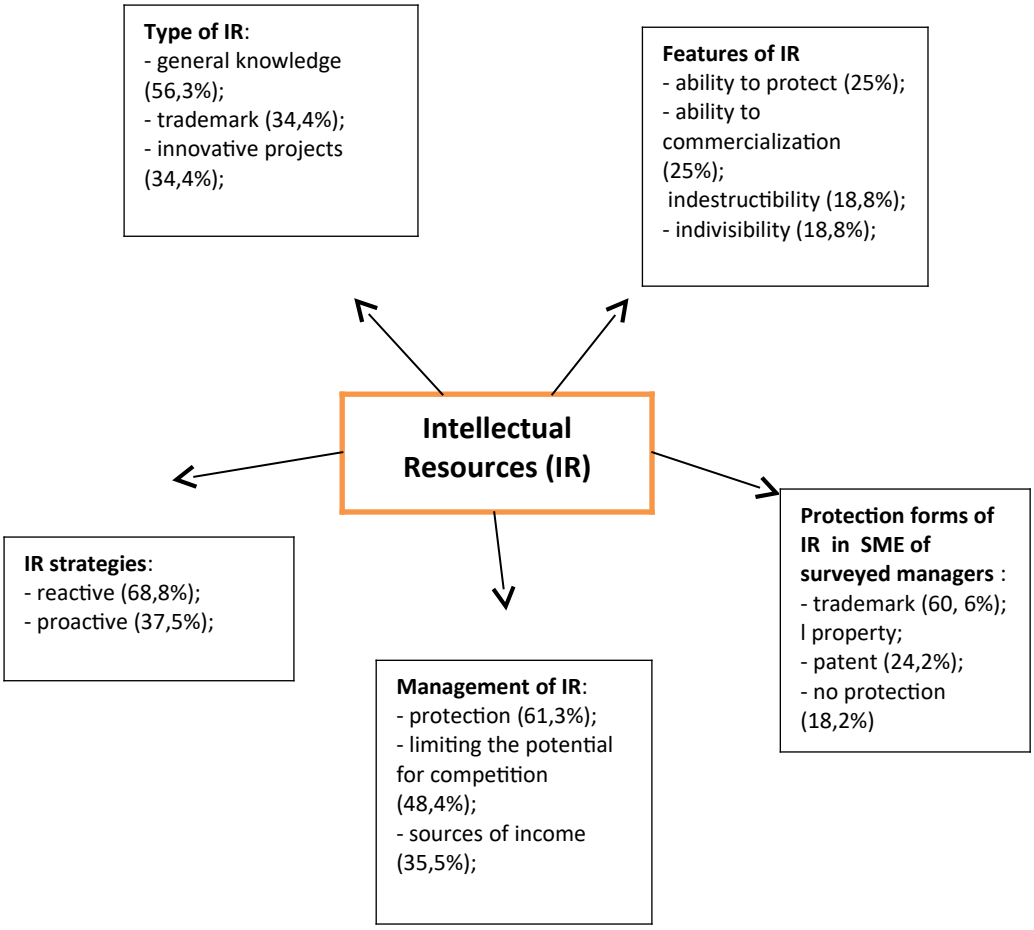

Figure 4. Map of results.

Source: prepared by authors.