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INTELLECTUAL PROPERTY PROTECTION AS THE NON-FINANCIAL ASSET OF A FAMILY BUSINESS IN THE CZECH REPUBLIC

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Abstract: Long-term experience, surveys, and statistics show that family businesses mostly lack strategies of protecting their intellectual property. Tradition, experience, family recipes, the name, and the brand of a family business are the basic prerequisite for its sustainability in future generations. The objective of this paper is to evaluate whether the existence of patents, trademarks, and other forms of intellectual property is dependent on the length of time family businesses have been active on the market. The paper also addresses the question of whether there is a relationship between the existence of different forms of intellectual property and the amount of government support drawn down. The uniqueness of this paper lies in the compilation and statistical evaluation of a unique intellectual property database of 740 registered family businesses in the Czech Republic and is the first academic paper on this topic in the country.

Keywords: family business, intellectual property protection, patent, family brand, Czech Republic.

JEL Classification: M20

INTRODUCTION

Family businesses represent the most common form of entrepreneurship in the world economy. They are predominant among sole proprietors and small and medium-sized enterprises, but are also represented among large companies (Zellweger, 2017). They contribute significantly to both GDP and employment in the individual countries. According to research by European Family Businesses (2021), family businesses account for around 50% of European GDP, with around 14 million family businesses in Europe offering employment to more than 60 million people. It is generally accepted that family businesses think in terms of quarter-century rather than quarterly financial results. The importance of a long-term view is embedded in the transmission of family know-how from one generation to the next and is one of the many specific features of family businesses. Family businesses have the ability to weather difficult periods through greater stability, unique know-how, multi-generational tradition, and recognized brands. They help to strengthen the overall stability of a country's economy (Machek, 2018). According to Alonso-Dos-Santos et al. (2019), conveying and promoting the family identity positively influences the intention of potential customers to buy, and potential brand suppliers (of machinery, products, or services) to work with the company.

We assume that a company will be exposed to increasing competitive pressure during the different stages of its life cycle and thus an increasing need for adaptability. Family businesses will need to respond quickly to new unexpected threats if they want to maintain their prosperity and existence (Mikušova et al., 2020). One of these dangers may be the loss or misuse of family know-how, business secrets, innovations, etc. Family businesses still tend to determine the value of their company predominantly on the basis of such assets as buildings, land, machinery and technological equipment, cars, computers, etc. (Srbová & Režňáková, 2021). They often invent considerable funds to protect these assets. However, they too frequently do not realize how often the great value lies in their intangible assets such as SEW including e.g. goodwill, trademarks, results of RD&I, know-how, trade secrets, product and service labeling rights, and copyrights or designations of the origin of their products or the geographical areas where their

products are produced. Research in the area of socioemotional wealth (SEW) is one of the most influential areas of research, which has given rise to the specifics of family enterprise. It was first introduced in 2007, when authors referenced it as "non-financial aspects of companies that fulfill the emotional needs of families" (Gómez-Mejía et al., 2007, p. 106) and the supply of values associated with family influence on the operation of a business (Vasa, 2002; Berrone et al., 2010). Various areas of SEW research share a common conviction that family goals and emotional subtext influence various aspects of the organizational structure of families and companies. In this respect, socioemotional wealth exists within members of the family and motivates the family toward unique decisions and specific behavior of the family business in the interior and exterior market environment. These factors capture the essence of what differentiates the family business phenomenon from other organizational forms (Cennamo et al., 2012; Gomez-Mejia et al., 2011; Mura, 2019; Todorovic et al., 2019, Naďová Krošláková, 2020, Jurásek et al., 2021)

Investments in research and development in relation to competitor activity and new opportunities are pragmatic reasons why entrepreneurs today should consider IP management a priority (Tomášková, Šmietaňsky, 2021). Family businesses often postpone investments in protecting their intellectual property or do not make them at all (Karabec, 2019). Yet all of these, combined with original skills, can be easily transformed by family businesses into registered rights such as patents, trademarks, or industrial designs and can thus achieve significant legal protection from unauthorized use by third parties. Moreover, all these rights can also serve as a significant source of income for the family business in the form of licenses granted or franchise agreements concluded. In this context, we can also talk about the possibilities of so-called open innovation. The open innovation paradigm can be interpreted as going beyond the use of internal and external sources of innovation, which are employees, family know-how, customers, competing companies and academic institutions. A firm can manage change through the acquisition, transfer and use of intellectual property acquired through technical and research activities (Locatelli et al., 2021).

1. THEORETICAL BACKGROUND

The issues related to intellectual property protection in family businesses have attracted the attention of many research institutions in the last decade. Lizama et al. (2021) analyzed 56 articles on the reputation, identity, image, and brand of family businesses. They came to the realization that the space for publications on this topic is mainly provided by the journals *Family Business Review and Journal of Family Business Strategy*. The analysis of the selected articles made it possible to group the papers into several major themes (these include sources of the benefits of a good reputation and their influence on strategic decision-making, impacts on shareholders and the financial market, influence on customer response, influence on overall performance of the family business, etc.). A family business brand allows family businesses to leverage a unique, valuable resource: the family nature of the company, its tradition and know-how (Binz Astrachan et al., 2018).

Using a sample of 4,198 small and medium-sized family businesses, Chirico et al. (2018) examined their willingness to protect intellectual property through patents. They argue that the desire of family businesses to avoid losses of current socioemotional wealth (SEW) limits their propensity to patent up. Guan et al. (2019) concluded that when successors take over the family business, they realize the importance of protecting intellectual property and technology patents. They attach great importance to the acquisition of intellectual property rights. Where a strong and stable family brand is concerned, the protection of business identity with the option and potential to generate profits and increase the prestige of the company in the eyes not only of its business partners, but also of its employees, suppliers, and the wider public (Western Mail, 2018).

Economists, sociologists, and lawyers debate the various factors that affect the success of a family business after generational change in the market (Morris et al., 1996, Šouša & Kubů, 2017, Mozhdeh, et al., 2017, Abid et al., 2021). They agree in principle that ownership is essential. Intellectual property

enables its owner (manufacturing company, but also a service provider) to control the illegal copying of its innovations and protects it from the misuse of its own know-how by unauthorized business entities (Haveman & Kluttz, 2018). Intellectual property law enforces the promise of property or profit as a reward for providing new technology or innovative products. Obtaining legal protection, a patent, recognition in the field of science and research, protection of trade secrets in knowledge and technology transfer, etc. contribute to a positive emotional experience and are a powerful stimulant of social capital formation (Ford, 2017). Manu (2017), like others, considers the question of the functioning of patents as a government policy instrument to guarantee industrial growth. According to Osman (2020), the economic attribute of intangible assets is of undeniable importance in the contemporary world. Accordingly, intellectual property rights represent the most value-laden and sophisticated element of intangible capital.

1.1 Know-how and protection of the family brand as non-financial asset of the company and a source of competitive advantage

Ensuring the protection of empirical knowledge is a major challenge in businesses (Flämig, 2018). Knowledge is a changing system with interactions among experience, skills, facts, relations, values, thinking processes and meanings. Literature differentiates between the two dimensions of knowledge, explicit and tacit. Explicit knowledge can be expressed in formal and systematic language and can be shared in the form of data. ICT makes this process easy these days. Tacit knowledge is highly personal and difficult to share (Mládková, 2012). Know-how is undoubtedly one of the most important intellectual property assets belonging to a family business. The identity of the family business, presented through the brand and the intergenerational transfer of know-how, is presented by experts as one of the perspectives that explains how family involvement can lead to a source of differentiation and competitive advantage for the entrepreneurial family (Botero et al., 2013). However, a source of competitive advantage can also be the fact that the family business establishes cooperation with manufacturers or suppliers of branded products/services, adopts their know-how, is certified by them. In the eyes of its customers, it then gains recognition and admiration for its ability to communicate and cooperate with representatives of globally recognized brands.

In the countries of the former socialist bloc, a new phenomenon has been addressed in recent years – succession in family businesses. Founders, whether fathers or mothers, who started their businesses in the 1990s are faced with the question of what to do next with the businesses they have spent years building. Many of them started as sole proprietors, gradually transforming the company into an s.r.o. (limited liability company), a.s. (joint-stock company), or holding company as it grew and expanded. The business, the brand, the family know-how, as well as the relationships with customers, suppliers, and employees is intertwined with their own lives; it has not only economic but also emotional value for them. In the case of passing on a family business, it is an intergenerational transfer of information, of lifelong business know-how (Petru, 2020). Interviews with owners of family businesses in the framework of round tables, qualitative investigations revealed that this may be a family recipe (e.g. in the Czech Republic, the companies Ja,Ja Pardubice – gingerbread production, Štrůdelník Kolín – a grandmother's secret recipe, Řeznictví a uzenářství u Dolejších – tlačenka, a family recipe over 100 years old, Mýdlárna Rubens – a grandmother's recipe for natural herbal soap, the Velart family company PHYTOS – traditional recipes for the production of essential and fragrant oils, etc.), but also in production technology, e.g. within family crafts (Josef Fryzelka – traditional cooperage, Princ Parquet – wooden floor production, Augustýn Krystyník – wheelwright, Ateliery Bárta, s.r.o. - art restoration, etc.). Semerák, Bohmann (1977) argues that the craft tradition has a unique hallmark of handicraft and know-how passed down over generations and is itself a competitive advantage. However, none of above mentioned companies has yet patented these recipes or production processes, although some hold trademarks in the company's name. With respect to the procedures used for them for a long time, these craftsmen try to cultivate an aesthetic taste and cultivate an artistic sense with their own independence of thought. The demands of precise workmanship are linked to the traditional and acknowledged craftsmanship of Czech manufacturing.

However, the registration or patenting of a brand also depends on the size and field of business of family companies. According to Pantea, Purdel (2014), for example, businesses operating in the pharmaceutical sector make extensive use of legal instruments to protect intellectual property rights.
The protection of trade secrets is also very close to the issue of know-how. According to Amina, Piper (2019), the central argument for increased protection of property rights is the role they play in promoting economic transactions, investment, creative invention and innovation, and economic growth. Cho, Kim (2017) demonstrated a positive relationship and impact on the successful internationalization of companies in a sample of 204 U.S. firms that registered their patents with the Patent and Trademark Office to ensure protection of intellectual property rights, trade secrets, and technological innovation. Amoroso, Link (2021) consider IP protection mechanisms to be essential for promoting science, technology, and innovation. They conclude that company size, R&D intensity, the composition of innovation teams (gender, age, education), etc. significantly influence the choice of a company's IP protection strategy. However, the question arises whether too strong a trademark does not hinder further innovation.
The resilience of family businesses increases with their long history. The time and social priorities of companies with longer histories manifest themselves in the accumulation of financial, reputational, and adaptive resources (Breton-Miller & Miller, 2022). Resilience factors have also been studied by Conz et al. (2020), De Massis, Rondi (2020). They concluded that competence and the ability to apply ingenuity, creativity, or innovation and then present these will facilitate success in the future.

2. METHODOLOGY AND DATA

2.1 Sample

Data was searched from publicly available sources. The database of 740 family businesses analyzed was acguired from the publicly available register of family businesses at Businessinfo.cz. (2020). By registering in the register of family business corporations or family trades (sole proprietorships), the companies have demonstrated compliance with the requirements of the Definition of a Family Business (pursuant to Government Resolution No. 330 of 13 May 2019). In the register of Ministry of Finance of the Czech Republic (2021), ARES public register of business entities, the RES (Register of Economic Entities) link for each company was searched for business form (sole proprietorship, limited liability company, etc.), year of establishment, assigned economic activity classification according to CZ-NACE, and size category according to number of employees. Data was then processed from the Financial Administration database IS CEDR III and the total amount of state aid released to a given recipient was recorded.
The publicly available Search Form for the Comprehensive Search for Industrial Rights with Effects in the Czech Republic (Industrial Property Office, https://upv.gov.cz/) was used to record ownership of a patent (PV), trademark (OZ), industrial design (PVZ), utility model (PUV). The individual websites of the analyzed family businesses were searched for information on traditions (they follow e.g. the First Republic tradition of their ancestors, tradition in the region, etc., the history of the establishment of the business after 1989 – most often found in the “About Us” section), information on collaborations and partnerships with suppliers of branded products/services (mostly found in the “References”, “Partners” sections), certificates and awards received in various competitions (e.g. regional food, finalist in the xy competition, etc.).

2.2 Method

Table 1 summarizes the properties of the original 18 variables from the unique intellectual property database of registered family businesses as well as the auxiliary variables created for quantitative processing.

Table 1: Properties of the variables

Variable	Description	Type of variable	Note
Registration	Serial number of registration in the database of registered family businesses	quantitative	
Format	Legal form of the family business	Qualitative, nominal	1 = limited liability company, 2 = joint-stock company, 3 = sole proprietorship, 4 = other
Year	Year family business established	Quantitative	1990-2021
CZ NACE	Categorization of the company according to the classification of economic activities	Qualitative, nominal	Classification by subgroups 01-99
Employees	Company size by number of employees	Quantitative, interval	MICRO-ENTERPRISES - less than 10 people, annual turnover does not exceed EUR 2 million. SMALL ENTERPRISES - less than 50 persons, annual turnover does not exceed EUR 10 million. MEDIUM-SIZED ENTERPRISES - less than 250 employees, annual turnover does not exceed EUR 50 million BIG ENTERPRISES
Aid disbursement in CZK	Direct state subsidies and subsidies according to the CEDR database	quantitative	0-246 459 753 CZK
Patent	Number of current and expired patent	Quantitative	
Trademark	Number of current and expired trademarks	Quantitative	
PVZ	Number of current and expired industrial designs	Quantitative	
PUV	Number of current and expired industrial utility models	Quantitative	
Regional brand	Type of regional brand	Quantitative/ qualitative	A specific brand is defined
Mention of tradition on the website	Subscribing to tradition	qualitative	
Certification	Branded products	qualitative	
Certification and awards in competitions	Visibility of know-how	qualitative	
Company ID No.	Company ID No.	Nominal	
Website	Company Website	Nominal	

Source: author analysis, 2022

In addition to these 18 variables, we created a matrix of new variables. We approximated company age as OLD= 2021-year. It was not possible to use a more precise determination of company age

as the business register entry may not coincide with the actual start of the business, but for the purposes of our analysis this approximation is sufficient.
A series was then created of artificial binary dummy variables that take the value of 1 if the i-th family business in question is affected and the value of 0 if it is not. The variables are summarized in Table 2.

Table 2: Series of artificial binary dummy variables

	Value of artificial variable 1
SUBSIDY	The company receives government support
Patent	The company has or has had at least one patent in the past
Trademark	The company has or has had at least one trademark in the past
PVZy	The company has or has had at least one industrial design in the past
PUVy	The company has or has had at least one industrial utility model in the past
REG	The company has or has had at least one regional brand in the past
Tradition	The company mentions tradition on its website
CertificationY	The company meets the conditions of certification
AWARD	The company is an award winner
WEB_Y	The company operates its own website

Source: author analysis, 2022

Table 3: Modification of qualitative variables related to intellectual property and tradition

Type of outcome	Modification of scores for the purpose of processing research outputs
P – Patent	400
Trademark	100
Industrial design	200
Industrial utility model	40
Regional brand	10
Tradition	10
Representation/certification	10
Award	5
Website	1

Source: author analysis. 2022

A total of 82% of companies received at least one point in this evaluation, with an average score of 115.7 in our dataset.

In addition to the standard descriptive indicators of mathematical statistics (position indicators – modus, median, arithmetic mean, variability characteristics, absolute and relative frequencies, and Pearson correlation coefficient), a one-way Analysis of Variance (ANOVA) was used to analyze the dataset (Sebera, 2012). The normality of the data is determined by the considerable size of the data set. The test of the null hypothesis of agreement of variances was performed using Levene's test at a 5% significance level.

$$H_0: \sigma_{<HS} = \sigma_{HS-JC} = \sigma_{BA} = \sigma_{GRA} \quad (1)$$

The requirement of agreement of variances was violated in a few cases, yet analysis of variance was performed due to the robustness of the method with comparable group sizes. In general, ANOVA is robust to heterogeneity of variances if

$$n_{MAX} \leq 1{,}5 n_{MIN} \quad (2)$$

Where n_{MIN} is the range of the smallest subset of the data and n_{MAX} is the range of the largest subset of the data. The test of the null hypothesis of agreement of means was conducted at the 5% significance level

$$H_0: \mu_{<HS} = \mu_{HS-JC} = \mu_{BA} = \mu_{GRA} \quad (3)$$

Post-hoc analysis was performed using Scheffé test of goodness of fit for each pair of subsets of the underlying data set (Hindls, et al., 2007).

3. RESULTS

The first set of hypotheses concerns the relationship between the age of the family business and the existence of different forms of ownership. Consistent with existing theory, it is hypothesized that **the existence of patents, trademarks, and other forms of intellectual property will be associated predominantly with companies that have been active on the market longer.** The specific feature of Czech family firms - compared to foreign firms with an unbroken business tradition - is their short life cycle, i.e. that most of them do not have a modern business history longer than about 30 years. Their relatively lower average lifetime is determined by the transition from the non-market environment of the Soviet-style centrally-planned economy between 1948-1989 to a market environment or, after 2009 and the adoption of the Lisbon Treaty, a social-market environment with a specific return to private ownership of the means of production.

We then formulate theoretical hypotheses concerning the problem of the relationship between the existence of intellectual property and the duration of the family business's market presence as follows – see Table 4:

Table 4: Formulation of hypotheses concerning the relationship between the existence of intellectual property and the duration of the family business's market presence

Formulation of the theoretical hypothesis	Formulation of the null statistical hypothesis
H1: Family businesses owning a patent are older than family businesses without a patent	H01: the age of companies does not differ between the group of companies that own a patent and the group of companies that do not own a patent
H2: Family businesses owning a trademark are older than family businesses without a trademark	H02: the age of companies does not differ between the group of companies that own a trademark and the group of companies that do not own a trademark
H3: Family businesses owning an industrial model are older than family businesses without an industrial model	H03: the age of companies does not differ between the group of companies owning an industrial design and the group of companies not owning an industrial design
H4: Family businesses owning an industrial utility model are older than family businesses without an industrial utility model	H04: the age of companies does not differ between the group of companies owning an industrial utility model and the group of companies not owning an industrial utility model
H5: Family businesses owning a regional brand are older than family businesses without a regional brand	H05: the age of companies does not differ between the group of companies owning a regional brand and the group of companies that do not own a regional brand
H6: Family businesses subscribing to a company tradition are older than family businesses that do not reference a company tradition	H06: the age of companies does not differ between the group of companies subscribing to a company tradition and the group of companies not subscribing to a company tradition
H7: Family businesses with certification are older than family businesses without certification	H07: the age of companies does not differ between the group of companies holding certification and the group of companies not holding certification
H8: Family businesses that have received an award are older than family businesses that have not received an award	H08: the age of companies does not differ between the group of companies with an award and the group of companies without an award

Source: author analysis, 2022

Hypotheses and subsequent statements were related to the examined sample of 740 family firms voluntarily registered in the RF register. The authors are aware of the fact that the statement may not be relevant for all entrepreneurial family businesses, all fields of business.

Table 5: Evaluation of the compared parameters

Theoretical hypothesis	Correspondence of variances (p-value)	Agreement of means (p-value)	Interpretation of the result	Validation of the hypothesis
H1	< 0.01	< 0.001	In average, companies owning a patent are **eight years older** than companies without a patent. However, the result must be interpreted with a considerable degree of caution due to the violation of the homogeneity of variances condition. The heterogeneity is also determined by the low number of companies owning a patent.	The null hypothesis is rejected in favor of the alternative at a 1% significance level.
H2	0.0536	< 0.001	Companies owning a trademark are on average **four and a half years older** than companies without a trademark.	The null hypothesis is rejected in favor of the alternative at a 1% significance level.
H3	0.509	0.086	Although companies owning an industrial design are on average **three years older** than companies without an industrial design, this difference is not statistically significant due to the significant standard deviation (see Figure XX H3)	The null hypothesis is rejected in favor of the alternative at a 10 % significance level.
H4	< 0.01	< 0.001	Companies owning an industrial design are on average **6 years older** than other companies, but the result must be interpreted with a considerable degree of caution due to the violation of the homogeneity of variances condition. The heterogeneity is also determined by the low number of companies owning a patent.	The null hypothesis is rejected in favor of the alternative at a 1% significance level.
H5	0.36	0.35.	Companies with a regional brand are on average **three and a half years younger** than companies without a regional brand. However, this difference is not statistically significant due to the significant standard deviation.	The null hypothesis is not rejected at the 1% significance level.
H6	< 0.01	0.91	The age of companies does **not differ** between the group of companies subscribing to a company tradition and the group of companies that do not reference a company tradition.	The null hypothesis is not rejected at the 1% significance level.
H7	0.357	< 0.01	Family businesses with representation or certification are on average **three years older** than other family businesses. This result is statistically significant and sufficiently robust. 8	The null hypothesis is rejected in favor of the alternative at a 1 % significance level.
H8	0.413	< 0.01	Family businesses that have received some awards are on average **two and a half years older** than other businesses. This result is statistically significant and sufficiently robust.	The null hypothesis is rejected in favor of the alternative at a 1 % significance level.

Source: author analysis, 2022

The second set of hypotheses concerns the relationship between the existence of different forms of intellectual property and government support. The theoretical hypotheses were formulated based on the assumption that the existence of patents, trademarks, and other forms of intellectual property would be associated with companies that draw higher amounts of subsidies.

Table 6: Formulation of hypotheses concerning the relationship between the existence of different forms of intellectual property and state support

Formulation of the theoretical hypothesis	Formulation of the null statistical hypothesis
H9: Family businesses owning a patent received more government support than family businesses without a patent	H09: the amount of government financial support does not differ between the group of companies owning a patent and the group of companies not owning a patent
H10: Family businesses owning a trademark received more state support than family businesses without a trademark	H010: the amount of state financial support does not differ between the group of companies owning a trademark and the group of companies not owning a trademark
H11: Family businesses owning an industrial design received more state support than family businesses without an industrial design	H011: the amount of state financial support does not differ between the group of companies owning an industrial design and the group of companies not owning an industrial design
H12: Family firms owning an industrial design received more state support than family firms without an industrial utility model	H012: the amount of state financial support does not differ between the group of companies owning an industrial utility model and the group of companies not owning an industrial utility model

Source: author analysis, 2022

Table 7: Evaluation of parameters

Theoretical hypothesis	**Correspondence of variances (p-value)**	**Agreement of means (p-value)**	**Interpretation of the result**	**Hypothesis validation**
H9	< 0.01	< 0.01	Family businesses **with patents received about 9.5 times more** government financial support than other businesses. However, the result must be interpreted with a considerable degree of caution due to the violation of the homogeneity of variances condition. The heterogeneity is also determined by the low number of companies owning a patent.	The H0 is rejected in favor of the alternative at a 1% significance level.
H10	< 0.001	< 0.001	Family businesses **with a trademark received roughly 2.5 times more** financial government support than other companies. However, the result must be interpreted with a considerable degree of caution due to the violation of the homogeneity of variances condition. The heterogeneity is also determined by the low number of companies owning a trademark.	The H0 is rejected in favor of the alternative at a 1 % significance level.
H11	< 0.001	< 0.001	Family businesses **with an industrial design** received about 5 times higher financial government support than other businesses. However, the result must be interpreted with a considerable degree of caution due to the violation of the homogeneity of variances condition. The heterogeneity is also determined by the low number of companies owning an industrial design.	The H0 is rejected in favor of the alternative at a 1 % significance level.
H12	< 0.001	< 0.001	Family businesses with **an industrial utility model received about 6 times more** financial government support than other companies. However, the result must be interpreted with a considerable degree of caution due to the violation of the homogeneity of variances condition. The heterogeneity is also determined by the low number of companies owning an industrial utility model.	The H0 is rejected in favor of the alternative at a 1 % significance level.

Source: author analysis, 2022

4. DISCUSSION AND IMPLICATIONS

This study contributes to the literature on family business, specifically related to non-financial assets such as SEW, know-how, trade secrets, patent, and brand, and to the discussion on the possibilities or advantages of their legal protection.

We concur with the findings of Flamini et al. (2022). 65% of the family businesses we analyzed were founded between 1990 and 2010; in these businesses, succession strategies are implemented and family know-how is transferred. Currently, there are no statistically verified data on how many % of family businesses in the Czech Republic have been successfully handed over to a generation of successors from among family members, in what % of family businesses have non-family top management been involved in the management and family members in the ownership structure as part of the succession, how many family businesses was sold or how many of them ceased their activities. Owners and successors apply the perspective of SEW as a non-financial asset of the family business; they consider it the most important feature and essence of family business sustainability. Our findings are also in line with the findings of Lohe, Calabrò (2017) regarding awareness of Czech family businesses in relation to the need to build a positive reputation through an appeal to tradition and family know-how – which was demonstrated by family businesses subscribing to a tradition and presenting this in their communication activities.

According to Breton-Miller, Miller (2022), the resilience of family businesses increases with the length of their business history. It was found that patent-holding companies are on average eight years older than non-patent-holding companies and trademark-holding companies are on average four and a half years older than non-trademark-holding companies. Companies owning an industrial design are on average three years older than companies without an industrial design; companies owning a protected industrial design are on average six years older than other companies. Family businesses with certification (ISO, VBG, RINGFEDER, CEBIA, etc.) are on average three years older than other family businesses. Family businesses that have won some awards (Equabank Family Business of the Year xy, National Award for Quality in Family Business, etc.) are on average two and a half years older than other businesses. In the Czech Republic, it is not yet possible to assess and compare the length of family businesses lifetime in terms of the number of intergenerational transfers, because the modern history of family businesses has only begun to be written since 1989 (Petrů et al., 2020), but the above findings also confirm that the company's ability to transfer technology, knowledge, and other IP protection tools increases with the length of the company history.

Family businesses with patents received about 9.5 times more financial government support than other firms, family businesses with a trademark received about 2.5 times more financial government support than other businesses, family businesses with an industrial design received about 5 times more financial government support than other businesses, and family businesses with industrial utility model received about 6 times more financial government support than other businesses. This finding is consistent with Machek (2018); Lin,Liu (2020) also reported that government policy is an important means to promote technology innovation, Vozárová et al. (2020) appeal to the fact that sustainability is an important and crucial factor in the formulation and analysis of subsidy policy. According to the authors, in an effectively functioning system of subsidies and subvention, the industrial policy of the state should aim at picking winners and thus support those microeconomic entities that, thanks to their innovations, subsequently contribute to the maximum extent to the development of the macroeconomic characteristics of the state, in particular to an increase in gross domestic product and employment. The policy of picking winners historically had good effects, especially at the beginning of its implementation (for example, in the post-war period of the so-called Japanese miracle), but its results are more mixed in the medium and long term. The downside of the system of subsidies and subventions is mainly the distortion of the market and the emerging space by corrupt practices

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

The objective of this paper was to evaluate whether the existence of patents, trademarks, and other forms of intellectual property is dependent on the length of time family businesses have been active on the market. This objective was fully met. It has been shown that family businesses with longer market presence have better protection of their intellectual property in the form of patents, trademarks, etc.

There are many other topics for future research. One of these is whether IP protection has a long-term effect on the financial viability of family businesses – family businesses can also be compared with non-family businesses. Another topic is whether the potential protection of intellectual property is sufficiently visible in marketing activities by family and non-family businesses as a competitive advantage. The authors also find it appropriate to investigate the impact of IP protection on the resilience of family businesses to crises. Last but not least, it is possible to address questions related to the perception of intellectual property (know-how, family recipes, etc.) by owners of family businesses or their customers, suppliers, or employees, as to whether they consider it a non-financial asset of the family business. Furthermore, there is an opportunity to collaborate with foreign universities and compare the approach to the protection of intellectual property as a non-financial asset of family business in the Czech Republic, in the V4 countries, and in the former socialist countries compared to family businesses operating in developed economies with a continuous tradition of family business.

The paper also addressed issues of the existence of a relationship between ownership of the different forms of intellectual property and the amount of government support drawn down. This relationship has also been demonstrated. The research gives a clear answer that enterprises that actively promote investment in intellectual property receive more state support for their development. However, one potential source of further research concerns a set of hypotheses examining whether these companies, compared to those that do not have such intellectual property, are actually delivering more value added and thus returning to the state the investment it made in them.

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