The Legal Implications of Public Support Policies Targeting Research, Development and Innovation in the European Union

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Abstract: The research problem of this article focuses on how the public support system in Estonia can help small and medium-sized enterprises (SMEs) to acquire and commercialise their intellectual property rights (IPR) in a sustainable and legally permissible manner. The study aims to analyse and determine which specific public support measures are needed by SMEs for acquiring and commercialising IPR and how to design such public support within the legal boundaries set under European Union (EU) laws. The theoretical framework used in this study is built around the social system as defined by Parsons. The 4S Model (based on scope, scale, skill and social networking) derived by researchers from the said social system is considered. Further, 19 key attributes were devised by the authors in conjunction with the role of motivation to form a revised framework. The analysis employs qualitative research methods. To apply the framework of social systems theory, the authors used semi-structured interviews as a method to study the public support measures required by Estonian stakeholders. This was also analysed in the framework of EU State aid law, which poses both restrictions and exemptions. This research presents several desired support measures. Although the public support systems for acquiring and commercialising IPR by SMEs are restrained by legal frameworks within the EU, the analysis of the relevant laws and cases shows that State aid for RDI purposes is legally permissible within the EU, depending on the state's willingness and availability of funds.

Keywords: *IPR, management innovation, RDI, social systems, State aid*

1. Introduction

The questions of how to encourage and manage innovation have different features and reach across disciplines. The area increases in importance as the pace of innovation accelerates. The study of innovation management has been influenced by researchers such as Parsons, Tidd, Bessant, Groen and others. The description of innovation and the entrepreneurial mindset is coloured by the social systems theory approach by Parsons (1964) and the multi-dimensional approach towards innovation space as proposed by Tidd and Bessant (2009). In this regard, the study of entrepreneurial motivation also draws upon both cognitive and affect-based motivations.

The notion that inventors should be rewarded for their technological inventions is generally non-disputable even though there is a lack of consensus regarding how this reward system should work, especially with regard to newer technologies. Intellectual property rights (IPR) are usually considered as one form of highly effective mechanisms. The social, legal and economic aspects of IPR are, by now, well documented (Landes & Posner, 2003). The role of IPR laws is to protect novel inventions, furnish rewards for their inventors and innovators, and help society to comply with sustainable development goals. Research, Development and Innovation (RDI) and the government policies related thereto go hand in hand with IPR and productivity. By commercialising newly developed technologies with the help of IPR, knowledge- and innovation-based enterprises can benefit from their RDI activities, grow sustainably and contribute to the society's wellbeing. IPR may be commercialised by means of a licence, assignment or use of spin-offs (Kelli *et al.*, 2016, p. 8; Groen, Wakkee & De Weerd-Nederhof, 2008, p. 62).

The correct management of RDI poses a vital challenge for developed economies and competition in RDI is seen as the key. The factors that affect successful RDI, leading to IPR and its commercialisation, are many and varied, and an important element is public support (in the form of State aid) for RDI activities (Nyman-Metcalf, Dutt & Chochia, 2014). As stated by Dutt *et al.* (2018; 2019) several EU countries such as Germany, Finland and Estonia promote entrepreneurship actively with aid programmes and

start-up subsidies. Clearly, the existence of laws that give firms tools for protection as well as laws that restrict what State aid they can receive form only part of the picture. Other important factors (and especially the relationship between the diverse factors) need to be taken into account.

In this article, the main research questions are as follows: (1) What support measures are needed by Estonian small and medium-sized enterprises (SMEs) from the public support system to acquire and commercialise their IPR?¹ (2) How to design public support measures for SMEs to acquire and commercialise their IPR while meeting the requirements of the relevant European Union (EU) legislation?

The authors examined the issue of management innovation based on the social systems theory of Parsons (1964) and the 4S Model derived therefrom by Groen *et al.* (2002, p. 4). They have contributed to the above theory and model by identifying 19 key attributes with respect to the cultural, economic, social and strategic capitals. The authors have also proposed an improved framework, based on which they have conducted semi-structured interviews to examine its scope within an empirical setting. Finally, the authors have examined the legal implications of public support policies targeting RDI in the EU.

In this article, the methodology for the qualitative analysis is as follows. The relevant theoretical literature and articles published in reputed international journals were analysed, using their peer-review function and the requirements of high quality research as a form of quality assurance. The authors chose the studied works based on their experience and the relevance of the journals as suggested by Paré *et al.* (2015, p. 184). Semi-structured interviews with Estonian stakeholders (experts and entrepreneurs) were also carried out. Purposeful sampling, as stated in Palinkas *et al.* (2015, p. 2), was utilised. Select individuals and groups were identified based on the assumption that these are both knowledgeable and experienced about the phenomenon which was being researched. The stakeholders were selected from different hierarchical levels and certain specialised industrial sectors, while attention was paid to the consistency of patterns which emerge therein (Ben-Menahem *et al.*, 2016, p. 1313). The detailed research instruments/questionnaires were available from the authors upon request. Furthermore, the relationship between IPR and competition law was analysed by using legal research means. As stated in McConville and Chui (2017, pp. 3–7), legal research is conducted in three broad fields: doctrinal research (“black

¹ Here Estonia represents the Member States which joined the European Union after 2003.

letter” law research), socio-legal studies and international and comparative legal research.

2. Theoretical background

2.1 The social system as defined by Parsons and the 4S Model

Parsons states that

a social system consists in a plurality of individual actors interacting with each other in a situation which has at least a physical or environmental aspect, actors who are motivated in terms of a tendency to the “optimisation of gratification” and whose relation to their situations, including each other, is defined and mediated in terms of culturally structured and shared symbols. (Parsons, 1964, pp. 5–6)

Figure 1. Entrepreneurship in Networks Model where the various elements of (and factors affecting) the 4S Model are described

Source: Kirwan, Van der Sijde & Groen, 2007

Taking this further, Groen *et al.* (2002, pp. 3–4) have emphasised the role of scope, scale, skill and social networking (the 4S Model) within the confines of the social system to bring out the possibility of RDI conducted by enterprises and sanctioned by state policies, which enable development in cultural,

economic, social and strategic terms. When looked upon from the social systems perspective, it is apparent that knowledge- and innovation-based enterprises can accumulate knowledge within the confines of a multilevel and multi-dimensional span of the social system, thereby enabling effective networking by the multitudes of embedded actors (Groen, 2005, p. 78). Here, opportunities are respectively recognised, prepared and exploited thereby creating value, while proper development of the four capitals makes the social system sustainable.

2.2 Identification of key attributes

In continuation of the above line of thought, Dutt, Nyman-Metcalf and Kerikmäe (2021, p. 105) have identified 19 key attributes with respect to the four capitals. Some capitals share identical attributes.

Table 1. The various capitals and respective attributes

Capital	Attributes
Culture	Creation of IPR (UN Sustainable Development Goal (SDG) 9; Groen, 2002, p. 10; 2005, p. 84; Griliches, 1958; 1979; Gaining and maintaining knowledge (SDG 4; European Commission, 2015a, p. 278 (cost-benefit analysis); de Rassenfosse & van Pottelsberghe de la Potterie, 2009, p. 781); Finding required resources—human and organisational (SDG 11; Leloux & Groen, 2009, pp. 12, 15); Socio-psychological including mindsets, Soviet legacy, etc. (SDG 10; Ferraro, Dutt & Kerikmäe, 2017; Mets, Kaarna & Kelli, 2010, pp. 387–388, 393); School education on advanced IPR issues (SDG 4; Groen, 2005, p. 75); Perceived value of IPR (SDG 10; Mets, Kaarna & Kelli, 2010, pp. 387–388, 393; Värvi <i>et al.</i> , 2010, pp. 318, 322–324; Schwartz, 2012); Specific IPR staff (SDG 9; Groen, 2002, p. 8).
Economic	State aid (SDG 9; Nyman-Metcalf, Dutt & Chochia, 2014; Zollner, Fritsch & Wyrwich, 2016, pp. 29–30); Identification and mobilisation of financial resources (SDG 12; Leloux & Groen, 2009, p. 15; Zollner, Fritsch & Wyrwich, 2016); Financial incentives such as tax breaks, grants, subsidised loans, loan guarantees, etc. (SDG 12; Groen, 2005, pp. 75, 84).

Social	<p>EU membership (SDG 17; Europe 2020 Strategy; Sanso-Navarro & Vera-Cabello, 2018, pp. 620, 630; Dutt <i>et al.</i>, 2019, p. 226, where the Unitary Patent is examined; Creation of a support system (SDG 9; Czarnitzki, Ebersberger & Fier, 2007, p. 1350); Strategic alliances in the form of licensing, subcontracting and joint RDI activities, etc. (SDG 17; Groen, 2005, p. 84); Role models in society (SDG 10; Groen, 2005, p. 84).</p>
Strategic	<p>EU membership (<i>supra</i>); Strategy to develop knowledge (SDG 9); Use of IPR licensing (SDG 17; Groen, 2002, p. 8); Focus on domestic/international markets (SDG 17; Blind <i>et al.</i>, 2006, pp. 655–672; Van der Veen & Wakkee, 2004, p. 129; Czarnitzki <i>et al.</i>, 2007, p. 1359); Use of international IPR instruments (SDG 10; Basberg, 1987, p. 136; de Rassenfosse & Van Pottelsberghe de la Potterie, 2009, p. 782); Focus on key sectors (SDG 12; Nikulainen, 2008, p. 1); Creation of IPR (<i>supra</i>); State aid (<i>supra</i>); Strategic alliances in the form of licensing, subcontracting and joint RDI activities, etc. (<i>supra</i>).</p>

Source: Dutt *et al.*, 2021, pp. 103–104

2.3 The role of motivation

Motivation is referred to by Parsons (1964) in his definition of the social system. As a concept within psychological literature, the role of motivation can be traced back to the early works of Freud, while modern studies of entrepreneurial motivation draw upon both cognitive and affect-based motivations (Yitshaki & Kropp, 2018, p. 2). Some researchers suggest that the entrepreneurial mindset is a combination of motives (passion, need to achieve, independence and preference for limited structures), skills and thought processes. The above factors help to distinguish entrepreneurs from non-entrepreneurs and hopefully also explain the phenomenon of entrepreneurial success (Davis, Hall & Mayer, 2016, pp. 2, 24). Shane, Locke and Collins (2003) have listed some important motivational concepts such as need for achievement, risk taking, tolerance for ambiguity, locus of control, self-efficacy, goal setting, independence, drive and egoistic passion. The motivation for forming cooperative relationships could arise due to resource interdependence, seeking access to new markets or the need to reduce time for innovation processes (Ferreira *et al.*, 2015, pp. 2, 3). Another cultural oddity with regard to motivation is the relevance of the stigma of

failure. Landier (2005, p. 24) has suggested that the perception by society of failure as a form of incompetence (and similar negative terms) discourages individual employees from taking entrepreneurial risks and vice versa.

Some researchers state that recognising, preparing and exploiting of opportunities works best when the entrepreneur and the employees are motivated (Van der Veen & Wakkee, 2004, p. 118). As Schumpeter stipulates, RDI investment by a firm is proportional to its asset portfolio (Aghion & Tirole, 1994, p. 1197). Studies have also shown that some of the factors driving innovation are employee awareness of the importance of innovation for the firm's overall competitiveness and employee understanding of the correlation enjoyed between competences and competitiveness (Ferreira *et al.*, 2015, p. 6).

The following three factors appear to be relevant:

a) Internal/external RDI

When examining the motivation for external RDI partners versus the firm's own employees one of the factors is whether the RDI is likely to result in creation of a one-off IPR or a series of IPR, compiled into a commercially marketable yet diverse bouquet to cater to different markets (by drawing an analogy to what is stated in Grossman and Hart, 1986, p. 711 regarding insurance client lists). Integration of external and internal RDI efforts can be both costly and beneficial for the firm. Ex-ante investments are often over-complicated and are based on non-verifiable decisions made by the firm's management. These are contrasted with ex-post efficiency (or surplus) which the owner is entitled to under normal circumstances (Grossman & Hart, 1986, pp. 696–697).

b) Ownership of IPR

The legal culture is also relevant since some jurisdictions allow firms to own all the IPR generated by their employees. Other jurisdictions are more employee friendly and may dictate that private contracting cannot force employees to sign away IPR rights or enter restrictive noncompete agreements (Hellmann, 2007, p. 922). Gilson (1999, p. 578) argues that such a labour law background helps to explain the high rates of entrepreneurship (and employee mobility) witnessed in Silicon Valley.

c) Moral hazard

Issues such as collusion among agents and the problems associated with monitoring of hierarchies still need to be addressed to tackle moral

hazard issues. Peer averages and incentive packages based on inter-firm comparisons within industries are some of the means to acquire correct information (Holmstrom, 1982, p. 325).

Therefore, it is important to also examine the contribution of motivation towards in-house RDI efforts compared to outsourcing of RDI, the role of motivating RDI personnel, the support for their activities by their employers and the perceived value within the firm of their RDI output. This can play a significant role in understanding issues such as employee disenchantment, brain drain and creation of rival start-ups by ex-employees. In view of the above, the authors propose a revised framework as outlined below.

Figure 2. The cumulative effect of social systems and motivation on a knowledge- and innovation-based enterprise while processing an idea towards value creation through the intermediaries, namely opportunity recognition (OR*), opportunity preparation (OP*) and opportunity exploitation (OE*)

Source: Authors' own

3. Empirical studies

The theoretical model of Groen *et al.* (2002, pp. 3–4), the 19 key attributes (Dutt *et al.*, 2021, p. 105) and the revised framework were used to design interview questions for our empirical study. The purpose of the interviews was to collect information about IPR and to get an impression of the feelings and thoughts of entrepreneurs and experts and also to see if the theoretical understanding of the issue is matched by the day-to-day approach.

3.1 Structure of the interviews

Semi-structured interviews with Estonian stakeholders (experts and entrepreneurs) were conducted during 2018–2019. Four Estonian experts were interviewed in order to get a bird's-eye-view of the policies in place and the views and aspirations of the policymakers or people who make decisions at the national and institutional levels. The experts range from highly skilled individuals at leadership positions at institutional and government levels, and also professionals with a global experience in this field. The experts interviewed were a Member of Parliament (MP), who is on several IPR and RDI related committees, the institutional head of RDI research in a public university, a professional in the RDI department of a public university, and a professional (lawyer-auditor) in a private consultancy firm. The posed questions, to which the experts were invited to add their own comments in free form, deal with the value of IPR in Estonia, appropriate support measures for RDI and IPR, and the main barriers which exist in Estonia to improve the development of IPR in Estonian enterprises.

In the following, 50 SMEs in several sectors were approached for interviews. Of these, 24 replied (with a response rate of 48%) during 2018–2019. These are already running businesses in three broad sectors: ten in the field of information technology (IT), eight in the services sector (security, translation, dental sales, wholesale, etc.) and six in other sectors (musical instruments, scientific, chemistry, and anonymous). The open-ended questions were directed to the owners/chief executive officers and were grouped in four sections: enterprise data; queries about IPR owned by their respective enterprises and their personal views about IPR; the state of IPR affairs in Estonia in general terms and their personal views regarding barriers to development of IPR in Estonia; and their personal data (with assurances about anonymity).

3.2 Results of the empirical studies

3.2.1 The experts

The Estonian experts generally stated that IPR are not highly valued in Estonia. The main support measures required are adequate funding and increasing IPR awareness. The main barrier to improve IPR development is lack of funding. Of the four Estonian experts, the MP reiterated that GDP spending on RDI in Estonia should be comparable to that of Finland and Israel. References were made to a Stanford study which recommends that at least 2% of the GDP should be spent by the state on RDI. Appropriate measures for state intervention would be in the form of tax incentives, support structures, improved evaluation processes for RDI project applications, the setting up of applied research centres (as in Finland), the need to scout globally for talented researchers and scientists while also saving local talent from leaving Estonia and the resultant brain drain. The MP lamented the lack of IP culture in Estonia and the oversized focus by Estonian companies on subcontracting.

The institutional head stated that, at the university level, IP awareness is dismal and there is an acute lack of IP culture. Knowledge of the economics of RDI is lacking. The activities of professors and researchers require greater attention from the universities. RDI needs to be professor-driven with increasing public support for RDI matters. Educating young students about IPR matters is also considered to be of great importance.

While the two interviewed professionals agreed that lack of funding (especially by the state) is a huge impediment, they sharply disagreed in one area—namely the role of the Estonian Patent Office. The lawyer-auditor was of the opinion that Enterprise Estonia (EAS) has better business skills to deal with the role of coordination of the IP support ecosystem. She also preferred the idea of tax deductions as being helpful for SMEs.

All the experts agreed that the lack of funding for IPR in RDI is a huge drawback for Estonia. At the level of ministry and high bureaucracy there is an aversion to increased public spending on grants, loans and refunds due to austerity measures. They all agreed that EU support would be helpful in this regard. The experts were of the opinion that increasing the GDP spent by Estonia on RDI, offering tax incentives, setting up of support structures and increasing university level awareness of IPR and its economic aspects would be very helpful in this matter.

3.2.2 The SMEs

Regarding the 24 SMEs which were interviewed, when asked about which IP method is the most important, the most preferred answer was lead time². Confidentiality agreements and secrecy were seen as the second most popular IP method. Trademarks and copyrights came third and were evenly rated as the most important and not relevant. Patents were seen as the least relevant, especially by the IT and services sectors. Regarding ownership of IPR, 42% of the enterprises did not own any IPR. Trademarks were the most commonly owned forms of IPR, being owned by 33% of enterprises in all three sectors. Among owners of IP, the most popular were complexity of design, trademarks, lead times and secrecy. In cases where IP was not owned, belief in open innovation was named as the most popular reason. The least relevant reasons were: lack of knowledge of specific laws of target market countries; not knowing who to ask (specialised lawyers, trade associations, etc.); and lack of institutional support systems. Respondents had knowledge of IPR but no resources to spend on them. Estonia's Soviet legacy was seen as being mostly irrelevant.

It was found that the enterprises do not have any special employees managing IPR, being trained in IPR or offered any incentives to obtain IPR. Northern Europe, Finland and Latvia were seen as future focus areas. Only two of the enterprises had received any public financial support. One enterprise had been involved in a trademark dispute in China. Some of the respondents replied that they intend to focus on being subcontractors for the near future but most respondents skipped that question (which could be taken as a sign of uncertainty regarding the future). As far as the value of IPR in Estonia is concerned, 64% (14 out of 22) of respondents—four from the IT field, six from the services field and four from other sectors—stated that IPR are not highly valued. Of those who said that IPR are valued in Estonia, EU membership was seen as highly important. There were ambivalent attitudes towards Estonian society valuing inventors and IP being good for business. Good role models were seen as being medium to low in relevance. The comments were that IPR are not relevant for IT and translation companies, IPR are too expensive for small companies, and lack of knowledge.

In terms of how to improve IPR in Estonia, 45% of the respondents said that compulsory education is highly important. Government support in the form of tax credits was most popular (chosen by 73% of the respondents as being highly relevant). Grants were seen by 45% as highly important. There was some ambivalence regarding easy loans (as 40% of the respondents saw

² Defined as the time between designing a product and its actual production (*Cambridge Dictionary*, n.d.)

them as highly important but 40% saw them as of low importance and 20% said they were not relevant). This could be implied to show an aversion to taking loan liability. Loan guarantees were seen by 40% of the respondents as being highly important. The refund of official filing fees for IPRs was seen by 50% as being highly important. Setting up of a support infrastructure found widespread support with all participants agreeing it is of high to medium importance.

Figure 3. The importance of measures to improve development of IPRs in Estonia, as perceived by the enterprises

Source: Authors' own

As far as the main barriers existing in Estonia to improve the development of IPR in Estonian enterprises are concerned, the keywords taken from the comments are costs (money), IPR not being effective, a desire for an open society without monopolies, lack of knowledge, absence of income tax deductions, the mindset of the Estonian society and a lack of cooperation from the Estonian state.³

³ It should be noted that a modified questionnaire (with similar questions) was also sent to a random selection of 210 recipients in Estonia (students of two public universities and one private business school who were interested in becoming future entrepreneurs). Although the responses were not fully analysed, it could be mentioned that while most of the student group viewed grants and IPR fee refunds as bearing high significance to help improve IPR in Estonia, tax credits, subsidised loans and loan guarantees were viewed very favorably by the SME participants. Thus, the expectation of students and would-be entrepreneurs seems to be for increased handouts from the Estonian government, while established entrepreneurs understand that government funding cannot last forever and taxation and easy loan financing options are key to their long-term success. These differences could be an

3.2.3 Other sources of information

Research on Estonia shows that the lack of awareness of IPR with related specialised issues persists. Estonian companies prefer trade secrets over robust IPR policies as a quick workaround for complex and costly IPR (Värv *et al.*, 2010, p. 318). It should be noted that the latest *Research and Innovation Observatory Country Report* on Estonia (Kattel & Stamenov, 2018) confirms most of the above observations. It is relevant that despite some exceptions, most Estonian exports and value additions are a result of contract manufacturing of products which are relatively complex. Due to this contract manufacturing outlook, there is restricted RDI activity within Estonian manufacturing companies (both in terms of in-house RDI activities and networks), resulting in a decline in total productivity over the last several years. The limited scope for RDI results in less cooperation with local universities. Organisations which could create and solidify networks and linkages between the various RDI actors are not well developed in Estonia. In this report it was also surmised that due to the contract manufacturing model adopted by Estonian SMEs, there is low demand for public support for long-term RDI purposes, although there is interest for state support in acquisition of machinery and improvement of infrastructure (Kattel & Stamenov, 2018). Funding for technologically innovative entrepreneurship in Estonia is mainly through (insufficient) public funding with limited inputs from private funds such as private equity funds, business angels and venture capital firms (Andrijevskaia, Varblane & Mets, 2010, pp. 27–28).

From the above survey (and the negligible number of patents held by Estonian companies in the fields related to information and communication technologies (ICT)), it appears that patents in the field of internet and ICT are perceived in Estonia as cumbersome, expensive or ineffective. This is unfortunate since the Fourth Industrial Revolution is driven by ICT which allow the creation of objects connected to each other, the related or complementary enabling technologies (e.g., artificial intelligence and user interfaces) and application domains for the above technologies (e.g., vehicles, enterprises and home). This is of particular relevance given the importance of the ICT sector in the Estonian economy.

interesting subject for future research purposes.

4. Legal implications of public support policies targeting RDI in the EU

4.1 State aid and the promotion of RDI

The authors then looked into how public support measures for SMEs to acquire and commercialise their IPR can be designed. Although it is not possible to draw firm conclusions from the interviews and the survey regarding what measures would most effectively promote innovation, any public support policy needs to pass the test of being in accordance with relevant legal norms, primarily found in EU law. As stated by Nyman-Metcalf, Dutt and Chochia (2014), EU law ensures that trading conditions are free and fair within the EU common market. Thus, free movement and competition law in the EU ensure that no barriers to movement of goods or services exist within the EU. Competition law also ensures that the barriers that are removed for the public sector are not re-introduced by companies. However, it is also important to make certain that EU-based companies remain competitive against companies from USA, Japan, South Korea, China, etc. In many countries outside the EU, individual companies are given benefits by their respective governments in the form of tax savings, easy financing, restriction free licensing and outsourcing, etc. This can have implications for companies in the EU. Hence the EU State aid law is designed to provide uniformity and also to shape social, strategic, cultural and economic issues within the EU by helping local companies (especially SMEs) on the basis of specific RDI needs, special market conditions or extraneous regional requirements.

Dragos and Racolta (2017, pp. 1–2) claim that by promoting RDI, the EU supports competitiveness, economic growth and sustainable development. They suggest that such state intervention is designed to eliminate inefficiency and market failures in public markets. It is very important that public support measures for SMEs to allow them to acquire and commercialise their IPR should be designed in such a manner that they meet the requirements of the relevant EU legislation. When a national public authority confers any form of advantage on a selective basis to an undertaking resulting in competition being distorted or likely to be distorted, then such an advantage is defined as State aid (European Commission, n.d.). It could be in the form of funding, loans or guarantees. It could be direct pecuniary advantages (for example, grants, tax measures, etc.) or repayable advances or aid on the basis of debt or equity instruments. If the financial markets are unwilling to finance a RDI project due to high risk and a long period for return on investment, then the Commission may allow State aid (in the form of repayable advance/

loan involving state resources) in order to promote RDI activities in view of positive externalities (spreading technological knowledge in the supply chain, being environmentally friendly, improving safety, etc.), provided that the RDI aid is proportional (being limited to the minimum requirement) and is unlikely to distort competition contrary to the common interest (Decision SA.45185 (2017/N)).

It should also be remembered that A Sustainable Europe by 2030 strategy aims for a circular economy, food sustainability, with a focus on energy efficiency and a socially fair transition. Education, science, technology, research, innovation and digitalisation are seen as the key for sustainable transition along with economics, social responsibility, an open trade rules system and good governance (European Commission, 2019b).

Dragos and Racolta (2017, p. 9) have compared State aid with public procurement for innovation. Both of the above methods stress upon allocation of IPR. They suggest that State aid for RDI encourages companies to undertake more RDI than market conditions would normally allow and it has been a favored instrument of the European Commission since the 1980s. As per their research, while the EU aims to spend 3% of its gross domestic product (GDP) on RDI activities, public procurement covers almost 16% of the EU's GDP.

4.2 The specific EU legal provisions concerning State aid and RDI

As far as State aid for RDI purposes within the EU is concerned, there are certain key documents that need to be studied. The Treaty on the Functioning of the EU (TFEU), the Europe 2020 Strategy, the Proposal for A Sustainable Europe by 2030, RDI Framework 2014/C 198/01 and the General Block Exemption Regulation 651/2014 (GBER) are the most significant in this regard.⁴ State aid is classified as aid requiring notification, aid exempted from notification and de minimis aid. Aid that complies with the GBER is compatible with the internal market rules and does not require notification (Dragos & Racolta, 2017, p. 7). Interestingly, the Fitness Check Report (2020, p. 66) states that RDI State aid expenditure has increased from 10.5 billion euros (in 2014) to 11.27 billion euros (in 2018), and 96% of all RDI measures have been distributed under the GBER. These have enabled recipient companies to be competitive through effective RDI investments

⁴ See Commission Regulation (EU) 2020/972 of 2 July 2020 amending Regulation (EU) no. 1407/2013 as regards its prolongation and amending Regulation (EU) no. 651/2014 as regards its prolongation and relevant adjustments.

and enhanced collaboration between undertakings, research organisations, etc. The report states that no material negative impact on competition law has been noticed and neither have private investments been crowded out.

Articles 107–109 of the TFEU deal with issues relating to aids granted by Member States. Usually, State aid is seen as something which causes (or threatens to cause) distortion in competition due to favouring of some entities in contrast to others and is therefore deemed to be incompatible with the concept of the internal market. However, certain exemptions are carved out within Article 107 which allow State aid for the purposes of economic development of certain poor areas, specific economic activities and to promote culture, common European interests, etc. Such aid is subject to constant review by the Commission and Council as outlined in Article 108. The State aid must of course be appropriate in nature. It should be designed to help choose the best of the available alternatives and should be the least distortive in nature.

As outlined in the RDI Framework (2014), the main aim of State aid rules is to prevent distortion of competition within the internal market due to subsidisation by the state. Nonetheless, Article 179 of the TFEU provides that an important Union objective is the promotion of RDI by achieving a European research area to enable the scientific and technological bases to be strengthened. Therefore, the Union is specifically mandated to encourage SMEs, research centres and universities to develop their high-quality RDI skills and to cooperate with each other. In this connection, the Union is authorised to remove obstacles of legal or fiscal nature.

The RDI Framework specifically covers State aid for innovation activities in Section 1.2. The GBER also provides for thresholds and specifically refers to aid for SMEs in the form of investment aid, aid for access to finance for SMEs and aid for RDI. In the context of SMEs, such innovation aid can be given to them for the purpose of obtaining IPR including patents and this extends to their obtaining, validation and future defence as well. It should be noted that targeted state aid is globally recognised as an effective instrument for enhancing business activities of enterprises (especially SMEs) as outlined by the report by Bird & Bird Brussels (European Commission, 2015b) where State aid support schemes for RDI both within the EU and with its international competitors are studied in great detail.

From the Commission's viewpoint, the key to the whole State aid question is to assess whether the aid is designed in such a way as to make sure that the

positive aspect of the aid (concerning the objective of achieving a common interest) exceeds the potential for negative impact on trade and competition within the EU. Decisions are taken on the basis of an evaluation plan (GBER, Art. 2(16)) of the aid scheme, comprising of objectives, evaluation questions, result indicators, evaluation methodology, data collection requirements, time schedules, independence of the evaluating body and publicity measures to promote transparency.⁵

Article 4 of the GBER prescribes notification thresholds. If aid is below such thresholds, it is considered to be compatible with respect to Articles 107 and 108 of the TFEU. Investment aid to SMEs up to 7.5 million euros per undertaking per investment project is allowed. Under Article 17 of GBER, eligible costs in this regard include investment costs in intangible assets (IPR). The aid intensity shall not exceed 20% of eligible costs for small enterprises and 10% of eligible costs for medium sized enterprises. Aid for start-ups in the form of loans, guarantees and grants is provided for in millions under Article 22. For aid for R&D, aid in the sum of up to 40 million euros (for fundamental research), 20 million euros (for industrial research) and 15 million euros (for experimental development) is allowed, subject to specified aid intensities under Article 25. Under Article 28, innovation aid for SMEs includes eligible costs for obtaining, validating and defending IPR, subject to aid intensity of 50% of the eligible costs. The maximum aid intensities are also outlined in Annex II of the RDI Framework. In order to avoid any confusion, paragraph 119 of the RDI Framework provides that individual aid below 500,000 euros is exempt from being notified.

4.3 Challenging the legal status of State aid

Catalán, Clayton and Nowak (2019, p. 212) state that under the TFEU, State aid control procedures are bilateral in character with the Member State being the granting authority and the European Commission playing the role of the surveillance body.⁶ As stated in the Study on the Enforcement of State Aid Rules and Decisions by National Courts (European Commission, 2019a, pp. 7, 9, 10, 14–19), legal processes in this regard can sometimes be

⁵ See decisions SA.49781 (2019/EV) – Italy Evaluation plan for large R&D&I aid scheme under the Fund for Sustainable Growth, and SA.56245 (2020/EV) – Germany Evaluation plan for the block-exempted R&D tax incentive scheme “Forschungszulagengesetz” for a detailed overview of the evaluation process.

⁶ Catalán, Clayton and Nowak (2019) suggest that the role of third parties are based on State Aid Procedural Regulation (Council Regulation (EU) 2015/1589), case law and the Code of Best Practices for the conduct of State aid control procedures (C(2018) 4412).

complicated due to the various screening mechanisms of the aid measures adopted by Member States. These include ex-ante measures (the national authority anticipates the likely assessment by the Commission) or ex-post (the national authority monitors the compatibility of aid measures with EU law) (*Eesti Pagar AS v. Ettevõtluse Arendamise Sihtasutus* [2019]). Furthermore, State aid rules can be enforced both through public and private means. Public enforcement arises when the Commission adopts a decision to recover the State aid and the concerned Member State must act to recover the aid granted to the beneficiary. Such a decision may be challenged before the national court, besides which the issues related with quantification of the recoverable State aid and identification of the beneficiary are also the responsibility of the national court. National courts cannot review the legality of the Commission's decision (*TWD Textilwerke Deggendorf GmbH v. Bundesrepublik Deutschland* [1994]), and a challenge of this decision before the General Court of the EU and the Court of Justice of the EU (CJEU) cannot suspend it either (TFEU, Art. 278). However, a national court may, under exceptional circumstances, order a suspension of the recovery decision in case of serious doubts regarding its validity, urgency, interest of the EU and in case there is a conflict with prior CJEU case-law (*Atlanta Fruchthandelsgesellschaft mbH and others v. Bundesamt für Ernährung und Forstwirtschaft* [1991] and *Zuckerfabrik Süderdithmarschen AG v. Hauptzollamt Itzehoe and Zuckerfabrik Soest GmbH v. Hauptzollamt Paderborn* [1991]). Commission decisions can also be challenged by Member States (being privileged actors) (TFEU, Art. 263(4)), the aid beneficiary (due to peculiar circumstances) (*Plaumann & Co. v. Commission* [1963]) and sometimes even by the competitors (*Scuola Elementare Montessori v. Commission* [2018]). Interestingly, any affected party can also privately request a national court to recover unlawful State aid (*Syndicat français de l'Express international (SFEI) and Others v. La Poste and Others* [1996]). It should be noted that in 32% of public enforcement and 66% of private enforcement cases, the claims have been rejected by the national courts.

5. Conclusion

With reference to research question 1, regarding which support measures are needed by Estonian SMEs from the public support system to acquire and commercialise their IPR, the answer of the representative sample would be improved IPR education, government support in the form of tax credits,

special IPR grants, loan guarantees and refund of official filing fees for IPR applications. The experts are of the opinion that increasing the GDP spent by Estonia on RDI, offering tax incentives, setting up of support structures and increasing university level awareness of IPR and its economic aspects would be very helpful in this matter.

With regard to research question 2, before suggesting how to design public support measures for SMEs to acquire and commercialise their IPR, it is essential to establish the relevant requirements of EU legislation. By undertaking a qualitative analysis of the relevant legal literature, the situation in the EU has been examined and it is apparent that the public support systems for acquiring and commercialising IPR by SMEs are restrained by legal frameworks within the EU. From the above analysis it is also clear that State aid for RDI purposes is legally permissible within the EU. The exempted amounts are very generous. What is required is that the Member State should be willing and, of course, able to afford such funding. It should be noted that, as stated in the Fitness Check Report (2020, p. 20), the State aid modernisation program incorporates certain principles—namely, the objective of common interest, need for intervention, appropriateness, incentive effect, proportionality, transparency, and avoidance of undue negative effects. To ensure the above, the Commission exercises ex-ante scrutiny on cases which can impact the internal market. There is further scope for simplification of procedural matters and cost calculations, definitions and clarity to enable faster access to State aid. Also of relevance is the need to take into account new strategic priorities such as the Green Deal, the digital and industrial strategies, etc. (Fitness Check Report, 2020, pp. 96, 124).

If one examines the principles of State aid in the EU through the prism of the social system and the 4S Model proposed by Groen *et al.* (2002), then it is easy to see the close similarities. The “existing patterns of behaviour” mentioned by Groen *et al.* (2002) and the resultant four-dimensional space so created lead to accrual of the cultural, economic, social and strategic capitals by the entrepreneur (Leloux & Groen, 2009, pp. 10–11). RDI aid is assessed on the basis of the following principles:

In order to answer research question 2, the strategic, social, economic, cultural and motivational aspects should be taken into account. From a strategic viewpoint, it is important that the RDI aid should contribute to a well-defined objective which is of common interest to the EU (as required under Article 107(3) of the TFEU). Thus, the general objective should be

to promote RDI in the EU thereby enabling the EU to grow in a smart, sustainable and inclusive manner. There should be a clear need for state intervention, for example, when there exists a market failure which needs to be remedied. Market failures can lead to inefficient outcomes and occur because there may exist an unattractive rate of return to RDI investment from a private viewpoint as far as profit-seeking enterprises are concerned, even though it is beneficial for society. Remedying such market failures through RDI at upstream levels is of strategic importance since it can help to exploit not only what is already available but also to create new and/or improved products and services. Furthermore, RDI often creates spillover benefits for the society. This strengthens the economy of the EU and is in the interest of the consumer.

The State aid should be appropriate and must help to choose the best from among the alternatives available. Very often, similar results can be reached through a smart use of instruments which are less distortive in nature. This is important from a social viewpoint, for example, when reduction of market barriers is considered to be more appropriate than State aid in the form of funding to enable a new entrant enterprise to appropriate RDI results. Similarly, from a cultural perspective it is advisable for the Member State to invest in good-quality education within its territory instead of funding the importation of qualified personnel from outside as a stopgap measure. When one looks at economic efficiency, clearly direct pecuniary advantages (for example, grants, tax measures, etc.) are deemed to be more distortive than repayable advances or aid on the basis of debt or equity instruments. Thus loans or guarantees (being liquidity support) are found to be favourable to direct grants when the cause of the perceived market failure is lack of access to external debt financing due to “asymmetric” information (as explained in para. 49 of RDI Framework). On the same lines, repayable advances are preferable as State aid when risk sharing is sought to be involved. Repayable advances become payable depending on the level of successful outcomes.

It is strategically, culturally and motivationally imperative that the RDI aid should incentivise change in the behaviour of the enterprise so that it carries out additional RDI activity. From an economic viewpoint, all RDI aid should be proportionate and should be limited to the bare minimum required. As outlined in the annexes to the RDI Framework, innovation aid for SMEs includes costs for obtaining, validating and defending IPR, including patents. The maximum aid intensities for innovation aid for SMEs are 50%. Finally, from a social, economic and strategic viewpoint, all RDI aid which is disbursed should be transparent.

Conversely, Ferri (2020, p. 20) suggests that although State aid law plays a very important role during economic downturns caused by financial crises or pandemics, if State aid rules and clearing measures are relaxed then economic inequalities among Member States may be exacerbated. Hence there is a need for a more EU-wide approach in this matter, especially in the post-COVID scenario.

The authors have thus been able to show that it is possible to apply the theoretical approach as outlined in social systems theory, primarily the 4S Model as specified by the authors into 19 attributes, to the results received from the interviews and the conducted survey. This is the case even if the answers did not fit directly into the identified categories. It was nevertheless possible to specify the various factors mentioned so that they correspond to the attributes. The remaining question after such an analysis is whether the desired means are legally possible. This was analysed in the framework of EU State aid law, which poses restrictions but also opens for exemptions that greatly lessen the restrictive nature of the rules.

One of the limitations of the current study is that the sample size of experts and SMEs is small and it is based on purposeful sampling, thereby limiting its representativeness (in the context of Estonia and the studied sectors). Hence, for the purposes of further research, the authors recommend that empirical studies should be conducted by interviewing a wider group of experts, SMEs and would-be entrepreneurs (within Estonia and in other EU Member States) based on random sampling, in order to test the suitability of the abovementioned theoretical approach and the revised framework (in Fig. 2) for gauging public support policies targeting RDI in the EU.

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