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The Importance of Resource-based View Related Abilities and Financial Performance of SMEs for Their Sustainable Practices *

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Abstract

Financial performance has always been a major concern of Small and Medium-sized Enterprises (SMEs) for their survival and sustainability practices. However, SMEs' innovation and technological capabilities included in Resource-Based View (RBV), might stimulate their financial outcomes. Hence, this research aims to investigate the effects of innovation and technological capabilities on the financial performance of SMEs. The researcher applies a stratified random sampling method to create the research sample. Then 479 firm executives have fulfilled this survey. Furthermore, the researcher has performed Ordinal Logistic Regression tests for analysis purposes. The results confirm the negative impact of technological (patent-trademark ownership) and innovation capabilities (R&D alliances, investments and subsidies) on financial performance. R&D financing options of policy-makers, innovation and technology-related educational, and training activities of governments, universities, and certification institutions, and firms' selection of innovative partners can stimulate firms' innovative, technological, and financial performance and make them become more sustainable.

Keywords: *Small and Medium-sized Enterprises, Financial Performance, Sustainability, R&D Investments, Patent Ownership, Innovation, Technology, Resource-based View*

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1. INTRODUCTION

Entrepreneurship is a crucial factor that increases income and job opportunities (Gil-Soto et al., 2022). According to the World Bank (2023a), around 90% of businesses are SMEs, and they not only provide the majority of employment but also make substantial contributions to the GDP of emerging countries in the world. However, SMEs lack assets and face fierce competition in various markets, therefore, they are more likely to fall behind their larger-sized rivals in competition. Due to having such a disadvantage, their financial performance becomes their primary concern in their survival. To cope with this issue, SMEs can use their innovation and technological capabilities based on Resource-based View (RBV). In this regard, this paper analyzes the impacts of innovation and technological capabilities on financial performance of SMEs. Therefore, the research questions can be set as follows: "What are the effects of technological capabilities on SMEs' financial performance?" and "What are the effects of innovation capabilities on SMEs' financial performance?"

According to Barney who is the founder of RBV, firms' valuable, rare, difficult to imitate and unique resources provide competitive advantages for them (Barney, 1991). This theory also highlights the importance of firms' tangible and intangible resources, and capabilities that improve their sustainability and performance (Zhang et al., 2022). While innovation capability is an example of firms' intangible resources, technological capability belongs to a tangible resource of RBV.

To measure technological and innovation abilities of SMEs, this paper considers gained patents and trademarks, obtained R&D subsidies, alliances, and R&D investments. Patent (Son & Zo, 2023; Yuan & Hou, 2023), and trademark ownerships belong to the technological and tangible capability or resources that are based on Resource-based View (RBV) (Peng, 2009). Moreover, R&D subsidies, investments (Chung, 2022), and alliances (Martinez-Noya & Narula, 2018) are included in an intangible capability of RBV, namely, innovation.

Various researchers have been also used gained patents and trademarks, R&D subsidies, alliances, and investments when measuring firms' innovation performance. These researchers have also already confirmed the positive association between some of these variables and innovation (Hsu et al., 2022; Block et al., 2023; Chen et al., 2018), innovation performance, (Martinez-Noya & Narula, 2018; Kraus et al., 2021), firm productivity (Soriano & Huarng, 2013), and growth (Le et al., 2024). Firms having innovation and technological capabilities can also effectively use their finite resources for greater financial and production outcomes, therefore, they can make effective activities for the sustainability of their businesses and the satisfaction of their primary and secondary stakeholders' interests. Thus, the demands of their customers, workers, and shareholders can be fulfilled by firms having these substantial abilities. By doing so firms can also achieve the sustainability goals of the United Nations, including "the usage of affordable and clean energy", making contributions for "decent work and economic growth", and supporting "innovation, industry and infrastructure".

Le et al. (2024) also elucidate that the usage of technology provides easier credit access for SMEs. Gained patents, trademarks, R&D subsidies, investments and alliances of enterprises are also crucial for business survival and growth. Financial performance is also crucial for enterprises since increases in financial outcomes such as revenues, income, and profits decrease the financial risk concerns of these businesses (Kölbel et al., 2017). Some researchers also emphasize the importance of increases in profits when evaluating financial performance of enterprises (Dai et al., 2019; Yuan & Hou, 2023; Son & Zo, 2023).

Firms' innovation abilities not only improve their productivity, revenues (Brown et al., 2022), profits (Usman, 2016), and income (Yankson et al., 2022), but also provide a cost advantage for them. Moreover, these abilities increase financial (Singh et al., 2019; Dzomonda, 2022; Le & Ikram, 2022) and operational performance of enterprises (Aboelmaged, 2014). Firms having innovation capability also create new products and services that make them differ from their rivals (Usman, 2016). These facts not only improve their competencies to compete with their rivals (Mochkabadi et al., 2024) but also increase their access to external financial sources (Le et al., 2024), therefore, they can survive in the long term (Cucculelli & Peruzzi, 2020). Innovation activities also improve the technological capabilities of enterprises and increase firms' earnings and their market position (Zhang et al., 2022). Firms' usage of information and communication technologies also develops their technological capabilities that increase their productivity, performance, and credit access (Mushtaq et al., 2022).

1.1. Research Gap

Although the studies mentioned above investigate the impacts of technological and innovation capabilities on financial performance, they separately analyze the impacts of tangible and intangible capabilities. On the other hand, some studies examine the relationship between innovativeness and financial performance, risk management, and bankruptcy (Singh et al., 2019, Markus & Rideg, 2020; Le & Ikram, 2022; Yankson et al., 2022). However, these studies do not include R&D subsidies, investments, and alliances when measuring firms' innovation capabilities. Even though some studies analyze the financial performance of enterprises, they mainly focus on sales income, operating income, or sales growth (Sircar et al., 2015; Lee & Wu, 2016; Son & Zo, 2023). Unlike these researchers, this paper evaluates the last 5-year profitability of businesses from the perspective of firms' executives.

Therefore, this paper becomes unique and makes various theoretical and practical contributions. First, this paper brings a tangible capability (technology) and an intangible capability (innovation) of businesses based on RBV. This paper also conceptualizes various R&D activities such as R&D subsidies, investments, and alliances into intangible resources of RBV. This research also broadens opportunities for SMEs to increase their financial performance. Since the research data includes SMEs from Türkiye where most of firms are in the SME segment, the results of this paper might also draw the attention of academicians, policy-makers, SMEs, and financing institutions.

The remaining sections are as follows: The research hypotheses will be set in the Literature Review and Hypotheses Development section by mentioning empirical arguments of related studies. Then, the methodological methods, the details regarding research models, data, and the research sample will be mentioned in the Methodology section. While the empirical findings will be explained in the Results section, the results will be compared with other research in Discussion section with Policy Recommendations. Finally, the author will provide the crucial points of this paper and explain some limitations and recommendations for new studies in the Conclusion.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

A patent secures firms' inventions (Hsu et al., 2022) and provides legal protection for those inventions. It also stimulates the success of enterprises in innovation and R&D activities (Zhang et al., 2022). A patent has also been a quality signal that enables firms to represent their quality and innovativeness to lenders when receiving credit access (Di Novo et al., 2022) since it minimizes information asymmetry problems between creditors and loanees (Lv et al., 2018). Patent ownership also allows enterprises to become more competitive and continue their activities in the long term (Ahlers et al., 2015). Moreover, Yuan and Hou (2023) examine some firms from the telecommunication industry and confirm the positive impact of patent propensity on the financial performance of firms. This is because firms taking actions for patent ownership apply new technologies and create new products that increase their profits. Furthermore, Zhang et al. (2022) emphasize the importance of patents for firms' profitability and sustainable environmental and economic performance by analyzing firms in SME segment. Rahko (2016) investigates patent applications from the European Patent Office and highlights the impact of patents on economic values. For these reasons, first research hypothesis can be as follows:

H1: Patent ownership positively affects the financial performance of SMEs.

Similar to patents, trademarks signal firms' quality and reduce information asymmetries between lenders and borrowers when firms apply for external financing (Li et al., 2019). As patents, trademarks are used as collaterals to receive credit (Nikitenko et al., 2017). While firms gain patents in the earlier stage of innovation, trademarks are received by firms at the end of the innovation process. This is because while a patent signals firms' inventions, a trademark is a brand enabling firms to gain legal protection that secures their images, symbols, and marks against their competitors or imitators. Trademarks also make businesses to differentiate themselves from their rivals, therefore, it increases the competitiveness of enterprises (Hsu et al., 2022). By analyzing some firms from Russia, Nikitenko et al. (2017) corroborate the positive effect of trademark ownership on the revenues of businesses. Faurel et al. (2019) investigate 1500 firms from S&P and verify that trademarks positively affect firms' future sales, future cash flows and return on assets. Hsu et al. (2022) examine firms in US and substantiate the positive impact of trademark registrations on firm profitability and firm value. The results of these studies make this study set another hypothesis as presented below:

H2: Trademark ownership positively affects the financial performance of SMEs.

R&D alliances enable businesses to set innovation-related relationships with two or more partners. Firms having these alliances can use each other's resources to achieve their mutual goals. These alliances can be formed in different types or names including R&D contracts, technology sharing, licensing, joint-development agreements, cooperative R&D, strategic technology partnering, technological cooperative agreements, or vertical R&D collaborations. Vertical R&D collaborations occur when firms in the same industries operating for the same value chain activities have agreements with each other (Martinez-Noya & Narula, 2018). In this regard, this paper focuses on vertical R&D collaborations since the survey question that evaluates R&D alliances considers this type of agreement. R&D alliances are also innovation capabilities of enterprises (Son & Zo, 2023), and they include various actions such as performing mutual and interrelated tasks and improving relationships and knowledge sharing between partners (Martinez-Noya & Narula, 2018). (Zhang et al., 2022). Technological collaborations of businesses are also related to their innovation capacity that stimulates their R&D activities including applications of information and communication technologies by firms (Jin & Lee, 2020).

R&D activities can be perceived as costly processes for businesses, thus, they can also collaborate with other businesses to share the cost of R&D activities. Firms agreeing with larger enterprises can also have a better market value (Lv et al., 2018), and become able to enter various markets that their partners operate (Wasiuzzaman et al., 2020). When having alliances with leading firms in the same industry, firms can send a strong signal to the lenders and increase their probability of receiving credits (Wasiuzzaman et al., 2020; Ahlers et al., 2015). This is because such a potent signal enables firms to overcome information asymmetry issues that are the main problem of credit obstacles (Courtney et al., 2016).

Moreover, R&D alliances provide some other advantages for businesses such as accessing complementary resources and capabilities of partners (Son & Zo, 2023) to improve products and services, access to various markets, grow in existing markets, reduce risks and costs of R&D (Zhu et al., 2021; Zhang et al., 2022), and internationalization operations, increase labor productivity, productivity performance (Martinez-Noya & Narula, 2018). Firms also become able to learn from their partners, thus, they transfer some knowledge and innovative and technological capabilities for their purposes and business operations (Howard et al., 2016; Martinez-Noya & Narula, 2018; Son & Zo, 2023).

Due to these advantages, R&D alliances increase sales, the performance of businesses (Martinez-Noya & Narula, 2018), and firms' growth (Aristei et al., 2016; Zhang et al., 2022). R&D alliances and cooperation with other businesses enable them to overcome their resource constraints and improve their intangible investments, so their performance (Chung, 2022). Moreover, R&D

collaborations have positive effects on innovation (Garcia Martinez et al. 2014) and financial performance (Son & Zo, 2023). In this regard, the third hypothesis can be shown as indicated below:

H3: R&D alliances positively affect the financial performance of SMEs.

R&D investment is another indicator that determines firm innovativeness (Yuan & Hou, 2023), and increases firms' usage or application of new technologies (Hoffmann & Kleimeier, 2021). R&D investments are also financial resources for enterprises to use for R&D activities (Son & Zo, 2023). Firms making R&D investments can also send signals regarding their quality to policymakers and financing institutions to receive R&D incentives and external credits (Pereira & Suárez, 2018). Thus, firms making R&D investments can reduce credit obstacles (Ughetto, 2008). Regarding the effect of R&D investments on financial performance, many researchers state the positive impact (Caldas et al., 2019; Chung, 2022; Son & Zo, 2023).

According to Zhang et al. (2022), firms making investments for R&D activities become informed about current technologies and new knowledge, therefore, they can use new and unique resources to increase their profitability and economic performance. Similar to Zhang et al. (2022), Son and Zo (2023) also emphasize the importance of R&D investments for technological purposes that positively affect the performance of enterprises. Niño-Amézquita et al. (2017) also declare the fact that firms making effective R&D investments, can not only increase their sales but also increase their income that provides benefits for their growth and survival (Niño-Amézquita et al., 2017). Since R&D investments also include technology investments, firms using new technologies can create new products or develop their existing goods that increase their income (Ughetto, 2008; Pang & Gai, 2022). Leung and Sharma (2021) also observe Chinese firms and report that R&D investments positively affect innovation. These researchers corroborate that innovation performance mediates in the association between R&D intensity and financial performance. For these reasons, the researcher sets a new hypothesis as follows:

H4: R&D investments positively affect the financial performance of SMEs.

R&D subsidies are substantial sources for policymakers to stimulate innovation activities and strategies of enterprises. (Meuleman & De Maeseneire, 2012; Son & Zo, 2023). R&D subsidies can also be identified as a financial resource (Plank & Doblinger, 2018). Firms receiving R&D subsidies can indicate good quality since governments provide these opportunities for businesses that have the potential to make effective innovation activities (Egger & Keuschnigg, 2015). This fact can also increase firms' probability of receiving credits (Guo et al., 2022) since R&D subsidies can be perceived as quality signals minimizing information asymmetry problems among borrowers and lenders (Li et al., 2019). Thus, firms gained R&D subsidies encounter reduced financing obstacles (Takalo & Tanayama, 2010). R&D grants and funds can also be categorized under R&D subsidies. This is because these options are also indicators of governments' support to increase innovative activities of businesses. For instance,

when firms receive R&D funds, they can hire more qualified R&D workers, build new R&D laboratories with quality equipment and increase the quality of their products, and services. In this regard, firms can increase their reputation and they become more likely to cooperate with quality suppliers, competitors, and research centers (Plank & Doblinger, 2018). For these reasons, businesses indicate better financial performance (Son & Zo, 2023), and long-term success (Clancy & Moschini, 2013; Plank & Doblinger, 2018). Moreover, governments provide R&D grants that increase the growth of enterprises (Meuleman & De Maeseneire, 2012). All these R&D sources positively affect firm growth (Nason & Wiklund, 2018) and financial performance (Chen et al., 2020; Son & Zo, 2023). The positive effect of R&D subsidies on sales and profitability of Korean SMEs has been also confirmed by Oh and Hwang (2024). Furthermore, Plank and Doblinger (2018) verify the positive relationship between R&D funding and performance. Due to these arguments, this paper sets another hypothesis that is presented below:

H5: Gained subsidies by SMEs positively affect their financial performance.

3. METHODOLOGY

This paper aims to investigate the impacts of innovative and technological capabilities of SMEs on their financial performance. To achieve this research goal, the researchers generated an internet mediated questionnaire and sent it to the respondents. The researcher used this random sampling method by considering the geographical regions in which SMEs operate. Thus, the researcher applied the stratified random sampling method. Before applying the random sampling method, the researcher gained e-mail addresses of SMEs from several Chambers of Commerce in Türkiye. Then the authors specified the prospective respondents of the questionnaire when directing the e-mails. In this regard, the researcher implied a purposive sampling method too. Finally, 479 owners or managers of Turkish SMEs fulfilled the survey. The survey includes different survey questions asking firms' and survey participants' characteristics, financial performance, entrepreneurial abilities, and firms' financing approaches.

Regarding the sample profile, while 29.9% (143 firms) of the entire sample consists of microenterprises, the remaining 336 firms (70.1% of the sample) are small and medium-sized enterprises. Moreover, most of these enterprises (337 SMEs, 70.4% of the sample) have been operating for more than 10 years while other firms have less than 10 years of operating experience (142 SMEs, 29.6% of the entire sample). Moreover, most of the analyzed firms operate in the manufacturing industry, while other firms operate in various sectors including, trade, service, transportation, construction, real estate and financial services. Concerning the respondents' characteristics, the majority of survey respondents (375 firm executives) are well educated, and having a minimum bachelor's degree. Furthermore, most of the survey respondents (284 respondents) are younger than 46 years old.

The researcher evaluates financial performance by asking the following question: "Please evaluate the net profit of your business over the last 5 years?" The responses of the survey participants were scaled by a Five-point Likert Scale as follows: "1-Declined significantly" to "5-Improved

significantly" Thus, lower values from this question's replies indicate lower financial performance of SMEs.

The independent variables of the 1st, 2nd, 3rd, 4th, and 5th research models are patent ownership, trademark ownership, R&D alliances, investments, and subsidies, respectively. All these variables are measured by a dichotomous question (Yes, No). In this regard, the researcher has asked whether the firms that the executives work for have received any patents, trademarks, R&D subsidies, have made any R&D investments, and have had any R&D alliances with leading firms in their sectors. "No" response to these questions indicates the nonexistence of gained patents, trademarks, subsidies, R&D investments, and R&D alliances and vice versa.

The researcher applies Ordinal Logistic Regression Test to achieve the research targets and for analysis purposes. This is because the dependent variable of the research models, namely, financial performance is measured by a Five-point scale and it includes ordinal data. The researcher used logit function when performing regression analyses. The basic research model is presented as follows:

"Logit $(P(Y \leq j)) = \beta j_0 + \beta j_1 X_1$ "

Y= dependent variable (financial performance)

j= categories

X_1 – Independent variable (patent ownership for 1st research model, trademark ownership for 2nd research model, R&D alliances for 3rd research model, R&D investments for 4th research model and R&D subsidies for 5th research model)

"β_1 – Regression coefficients"

"β_0 – Constant or intercept term."

"P- predictor"

Concerning the hypotheses testing, the researcher uses a 5% significance level. Thus, p-values values lower than the level of significance enables the researcher to support research hypotheses. Moreover, null hypotheses assume the nonexistence of the effects of the independent variables on financial performance of SMEs.

4. RESULTS

Before explaining the results, it is crucial to explain some details regarding Ordinal Logistic Regression analyses. The algorithm of ordinal regression measures a continuous latent variable (Harrell, 2015). Since the dependent variable of this paper, namely, financial performance is measured by a Five-points Likert, it has four cut-offs (levels). This algorithm represents the changes in four levels of financial performance. In this regard, while "Financial Performance = 1" represents the cut-off value between the replies of "Completely disagree" to "Disagree", "Financial Performance=4" explains the

cut-off value between the responses of "Agree" to "Completely agree". As stated in the Methodology section, while the volume of independent variables (gained patent, trademark and subsidies and R&D alliances, and investments) is zero, it means the firms that do not have gained patents, trademarks, subsidies and, R&D alliances, and investments.

Corresponding to the results of this paper, Table 1 depicts the findings regarding 1st and 2nd research models. According to Table 1, p-values for all the cut-off values for the dependent (Financial Performance=1,2,3,4) and the independent variables (gained patents and trademarks) are less than a 5% significance level, thus, they are significant. However, since all coefficients ("Estimate" in the table) are negative in the table, lower values from independent variables are associated with an increase in the dependent variable. Thus, lower scores from independent variables are more likely to indicate greater volumes in the dependent variable.

Table 1. The Findings of 1st and 2nd Models

Variable	Estimate	S.E.	Wald	df	P- values	95% CI [Lower Upper]
			MODEL-1			
Fin. Perform. = 1	-2.544	0.177	205.930	1	0.000	[-2.891 -2.196]
Fin. Perform. = 2	-1.596	0.132	146.346	1	0.000	[-1.855 -1.338]
Fin. Perform. = 3	-1.120	0.119	88.950	1	0.000	[-1.353 -0.887]
Fin. Perform. = 4	-0.285	0.107	7.100	1	0.008	[-0.494 -0.075]
Patent own.=0	-0.451	0.183	6.066	1	0.014	[-0.809 -0.092]
Patent own.=1	0*			0		
			MODEL-2			
Fin. Perform. = 1	-2.607	0.180	208.834	1	0.000	[-2.960 -2.253]
Fin. Perform. = 2	-1.655	0.136	149.122	1	0.000	[-1.920 -1.389]
Fin. Perform. = 3	-1.174	0.122	92.311	1	0.000	[-1.414 -0.935]
Fin. Perform. = 4	-0.239	0.109	4.815	1	0.028	[-0.453 -0.026]
Trademark own=0	-0.558	0.178	9.839	1	0.002	[-0.907 -0.209]
Trademark own=1	0*			0		

Source: Own Processing. Note: * This parameter is set to zero because it is redundant.

In case of having a-unit decrease on the independent variables, namely patent and trademark ownerships, there will be predicted rises of 0.451 (The coefficient estimate of patent ownership) and 0.558 (the coefficient estimate of trademark ownership) in the log-odds of being greater level in financial performance. For these reasons, since firms that have not gained patents or trademarks have lower score from these independent variables, they are more likely to indicate greater financial performance. In other words, SMEs that gained patent and trademarks become less likely to have higher financial performance level than their counterparts having no patents and trademarks. This fact makes this paper fail to support the H1 and H2 hypotheses that assume the positive effects of patents and trademark ownerships on the financial performance of SMEs, respectively.

When it comes to the results for the 3rd, 4th, and 5th research models, Table 2 is presented below. As already stated, while financial performance is the dependent variable of these models, the independent variables of the 3rd, 4th, and 5th models are R&D alliance, investments, and subsidies,

respectively. This table shows that all financial performance scores and the independent variables scores except for the cut-off "Financial Performance=4", are significant. This is because of having p-values that are lower than a 5% significance level. However, similar to the results of gained patents, and trademarks, the coefficients for R&D alliances, R&D investments, and R&D subsidies are negative. A negative estimate means that greater volumes in financial performance occur when the volumes of the independent variables are lower.

When there is a unit decrease in R&D alliances, investments, and subsidies, their ordered log odds of having greater financial performance rise by 0.447, 0.760, and 0.626, respectively. This is because the coefficient values ("Estimate" in the table) are -0.447, -0.760, and -0.626 for these independent variables. Thus, SMEs having lower values from R&D investment, subsidies, and alliances are more likely to indicate better financial performance. For this reason, this paper confirms the negative effects of R&D alliances, investments and subsidies on the financial performance of SMEs and this fact makes this research fail to support the H3, H4, and H5 hypotheses assuming the opposite effects.

Table 2. The Findings of 3rd, 4th and 5th Models

Variable	Estimate	S.E.	Wald	df	P-values	95% CI [Lower Upper]
			MODEL-3			
Fin. Perform. = 1	-2.719	0.213	163.451	1	0.000	[-3.136 -2.302]
Fin. Perform. = 2	-1.771	0.176	101.242	1	0.000	[-2.115 -1.426]
Fin. Perform. = 3	-1.294	0.166	60.978	1	0.000	[-1.619 -0.969]
Fin. Perform. = 4	0.109	0.154	0.500	1	0.480	[-0.193 0.411]
R&D Alliances=0	-0.447	0.182	6.050	1	0.014	[-0.804 -0.091]
R&D Alliances=1	0*			0		
			MODEL-4			
Fin. Perform. = 1	-2.724	0.185	217.123	1	0.000	[-3.087 -2.362]
Fin. Perform. = 2	-1.766	0.140	158.805	1	0.000	[-2.041 -1.492]
Fin. Perform. = 3	-1.280	0.126	102.441	1	0.000	[-1.538 -1.032]
Fin. Perform. = 4	0.158	0.111	2.025	1	0.155	[-0.059 0.374]
R&D Invest.=0	-0.760	0.176	18.559	1	0.000	[-1.106 -0.414]
R&D Invest.=1	0*			0		
			MODEL-5			
Fin. Perform. = 1	-2.853	0.216	174.414	1	0.000	[-3.277 -2.430]
Fin. Perform. = 2	-1.900	0.180	111.803	1	0.000	[-2.252 -1.547]
Fin. Perform. = 3	-1.420	0.169	70.418	1	0.000	[-1.752 -1.088]
Fin. Perform. = 4	-0.006	0.156	0.002	1	0.969	[-0.311 0.299]
R&D subsidies=0	-0.626	0.184	11.578	1	0.001	[-0.986 -0.265]
R&D subsidies=1	0*			0		

Source: Own Processing.

5. DISCUSSION

This paper observes the negative impacts of the gained patent, trademark, and R&D subsidies and R&D alliances and R&D investments on the financial performance of SMEs. Thus, unlike other studies that emphasize the positive impacts of gained patents (Rahko, 2016; Zhang et al., 2022; Yuan & Hou, 2023), gained trademarks (Faurel et al., 2019; Hsu et al., 2022), gained subsidies (Plank &

Doblinger, 2018; Chen et al., 2020; Oh & Hwang, 2024; Son & Zo, 2023), R&D alliances (Garcia Martinez et al. 2014; Chung, 2022; Son & Zo, 2023). and R&D investments (Niño-Amézquita et al., 2017; Leung & Sharma, 2021; Pang & Gai, 2022) on financial performance of businesses.

On the other hand, this paper finds compatible results with the arguments of Artz et al. (2010), Sohn et al. (2010), Duran et al. (2016), Entezarkheir (2019), Brown et al. (2022), Yuan and Hou (2023), since these researchers also substantiate the negative impact of patent thickets (Entezarkheir, 2019; Yuan & Hou, 2023), patent ownership (Sohn et al., 2010), R&D investments (Duran et al., 2016), and innovative actions (Brown et al., 2022) on firms' innovativeness, economic or financial performance.

The reasons for the results that this paper verifies might be related to firm-level, executive level, and country-level characteristics. Concerning the firm-level characteristics firm size can be a strong argument. This is because patent and trademark ownerships require costly and long procedures (Zhang et al., 2022). Innovation activities are also costly and risky processes since they require adequate financial investments (Lee & Brown, 2017; Brown et al., 2022). Although large firms make costly R&D investments this fact can be negatively perceived by financing institutions when making credit decisions (Belas et al., 2017). Firms having fluctuating returns from innovative activities can also discourage prospective investors from providing some financial options for them (Lee & Brown, 2017). Since larger firms have greater financial power, they can invest more money in R&D actions that can cause negative outcomes from financial indicators. The majority of the respondents from the research data of this study are from larger firms while 30% of the entire sample consists of smaller firms such as microenterprises. In this regard, microenterprises in the research data might not have invested a greater amount of money in R&D, they could have saved their resources for more effective investments that improve their financial performance.

Moreover, R&D cooperation is a complex and risky activity since a partner firm might use another partner's resources, and create common goals. Partners might not only share their technological capabilities and knowledge but also their know-how. This fact also causes an opportunistic behavior which partners can receive unfair advantages. Since this paper focuses on vertical alliances that enable firms to coordinate with firms in the same industry, partners can also be their rivals. For these reasons, lack of trust, and behavioral uncertainties between partners can also cause failures in such a collaboration (Martinez-Noya & Narula, 2018), and this issue might be another reason why this paper confirms the negative impact.

The role of founders who manage the innovation and technological activities of enterprises can be an argument for the different results of this paper from other studies. This is because firms having founders that make fewer investments in innovation activities gain greater output from these actions (Block et al., 2023). Since the majority of firms in the research data of this study are managed by firms'

founders, this might be the reason why firms making lower investments in R&D, technology, and innovation activities indicate better financial performance levels.

The reason why this paper finds different results from other studies (Rahko, 2016; Zhang et al., 2022; Yuan & Hou, 2023; Son & Zo, 2023; Oh & Hwang, 2024; Plank & Doblinger, 2018; Garcia Martinez et al. 2014; Chung, 2022; Niño-Amézquita et al., 2017; Leung & Sharma, 2021; Pang & Gai, 2022) that verify the positive effects of gained patents, trademarks, subsidies, R&D alliances and R&D investments might be related to country-level differences. This is because these studies analyze firms from various markets including Germany, the UK, Italy, Spain, China, Malaysia, South Korea, and the USA that have greater R&D expenditures than Türkiye. According to the Word Bank, the percentages for R&D expenditures in % of GDP of these countries are greater than in Türkiye (World Bank, 2023b). This fact might not only be the reason why this paper differs from other studies but also might be the reason of the negative effect of innovation and technological capabilities on financial performance.

5. 1. Policy Recommendations

As highlighted in the previous paragraph, the lower amount of R&D expenses including R&D funds, subsidies, and incentives in Türkiye can also make firms ineffectively use these sources for innovation and technological activities. Since patents and trademark ownerships and, R&D investments are costly activities, the funds that the policymakers and other institutions provide might even not help businesses to afford the costs of these actions. For this reason, policymakers and institutions should provide more resources for enterprises in this specific market to make firms receive patents and trademarks and to stimulate R&D investments that increase firms' financial performance. Firms receiving R&D subsidies, funds, and incentives can hire talented workers who have already experienced patent, trademark, and R&D funds applications. Firms can also create departments for the application of patents, trademarks, and other quality certifications and R&D funds and monitor the activities of such a department to motivate department members.

As already mentioned, the developments in innovation and technological capabilities are very costly and complex procedures for firms. Besides providing more R&D funding for them, governments can also organize some events including workshops, or conferences to increase awareness of firm executives. Moreover, institutions that provide patents, trademarks, and subsidies can also generate educational activities to ease the application procedures of these opportunities. These institutions can also collaborate with universities to educate prospective entrepreneurs, regarding the details and importance of these opportunities. These institutions can also create several competitions to stimulate the technological and innovation capabilities of firm executives and prospective entrepreneurs. Winners of these competitions can receive free guidance services to adequately make their applications for patent, trademark, and R&D subsidy or incentive applications. Since R&D alliances can cause firm failures, firms also need to be trained for effective partner selections. In this regard, some courses should be

created to share information regarding how to make effective contracts with partners, how to protect and secure know-how, and intellectual properties, how to communicate with prospective and existing partners, and how to terminate the agreement between partners.

6. CONCLUSION

The majority of SMEs encounter various obstacles to improving their financial performance. This is not only because of competing with large enterprises, but also having lower amount of assets compared to their rivals. However, their tangible and intangible resources and capabilities included in RBV, namely, technological and innovation can make them increase their financial performance. In this regard, this paper aims to investigate the effects of technological and innovation capabilities on the financial performance of SMEs.

This paper applies Ordinal Logistic Regression analysis to analyze these impacts. The results indicate that technological and innovation capabilities of SMEs negatively affect their financial performance. The reasons for these results might stem from firm size, firms' partners, owners' role in technological and innovation activities, and the percentage of R&D expenses in the Gross Domestic Product of the country where the research data comes from. Policymakers' role in R&D financing, educational and training activities regarding technological and innovation activities, firms' role in partner selection and organizational structure, and the role of other institutions such as universities and other certification institutions such as patent office in educational and training activities might be some implications to achieve better innovation, technological and financial performance of enterprises.

Since this paper combines various resources and capabilities of RBV in a study, it expands the scope of RBV theory. This paper also categorizes R&D subsidies, alliances, and investments into a group of innovation capabilities. Moreover, this paper separately analyzes the impacts of these RBV capabilities of firms located in an emerging country. Thus, this paper makes significant contributions to this theory. The implications that the researcher presents also bring new sights for the practical contribution of the paper.

However, this paper has some limitations. The first limitation of this paper is related to the evaluation of financial performance. Since this paper only considers firms' executives' perception of the last 5-year profitability of enterprises, it does not consider any financial statements, tables, and ratios. Moreover, this paper is only limited to the tangible and intangible capabilities of RBV. This paper also investigates firms only from Türkiye and the SME segment. Further studies can evaluate the financial performance of enterprises by focusing on hard data such as financial statements, and reports. On the other hand, they can include various tangible and intangible capabilities of SMEs and large enterprises from different countries. Furthermore, firm-level and executive-level characteristics can be included in the analyses. For these reasons, they can make country-level, firm-level, and executive-level

comparisons in the effects of various tangible and intangible capabilities of businesses on their financial performance.

Research data was collected in 2019. Thus, this paper does not need the approval of Ethics Committee.

The study has been crafted in adherence to the principles of research and publication ethics.

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The entire work was carried out by its only, stated author.

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