Credit Risk Management in Small and Medium-sized Enterprises (SMEs)

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Doctoral Thesis Summary

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Řízení úvěrových rizik v malých a středních podnicích

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ABSTRACT

Information asymmetry and credit risk underlie in the reasons of credit access obstacles of Small and medium-sized enterprises (SMEs). In this regard, one of the purposes of the thesis is to find out constraints that stem from information asymmetries between firms and banks and also credit risks of SMEs in the bank credit access of Turkish SMEs. In order to solve asymmetric information and credit risk problems, the thesis aims to discover some factors that can influence bank lending decision to provide an easier access for those firms. Some methods that are based on hard data can solve the credit access issues. However, the nonexistence of audited financial statements and lack of complete and timely information provided by SMEs cause troubles for banks to evaluate SMEs' creditworthiness by financial indicators. To cope with this issue, the thesis suggests some variables that are based on soft information such as some attitudes of businesses and relationship between banks and firms. In this respect, the thesis supposes that by signaling their competencies and behaviors that are related with entrepreneurial orientation, SMEs can reduce banks' concerns about their credit risks in relationship lending.

Another target of this thesis to widen entrepreneurs' perspective to cope with constraints of bank financing. By highlighting the importance of these entrepreneurial characteristics, the research makes entrepreneurs and SMEs to understand their competencies and significance of signaling those skills through their relationship with banks. By doing so, the thesis offers an alternative way for SMEs to gain bank financing and face with reduced obstacles in their credit access.

Both banks and entrepreneurs can benefit from the outcomes of this research. By focusing on soft information such as SMEs' entrepreneurial characteristics banks can create new credit assessment methods to overcome credit default issues of SMEs. Moreover, the thesis can be useful for entrepreneurs to develop their entrepreneurial characteristics, and loan officers or loan managers can have better understanding of those behaviors. In this context, the thesis might be helpful for entrepreneurs and bank employees to improve their career and their working effectiveness. For these reasons, the research might be a useful resource in the academic field and business life by highlighting the importance of entrepreneurial ability and personal development in bank financing.

ABSTRAKT

Informační asymetrie a úvěrové riziko patří mezi zmiňované překážky přístupu k úvěrům Malé a střední podniky (MSP). Z tohoto důvodu je jedním z cílů mé práce najít komplikace vyplývající z informačních asymetrií mezi firmami a bankami a rovněž problémy spojené s úvěrovými riziky bank, ke kterým mají malé a střední podniky v Turecku přístup. Tato práce se zaměřuje na nalezení určitých faktorů ovlivňující rozhodování při úvěrových možnostech u bank a zajištění snadnějšího přístupu těchto podniků k nim. Toto by napomohlo vyřešit informační asymetrie a problémy spojené s úvěrovým rizikem. Některé metody založené na nezvratných údajích mohou vyřešit problematiku přístupu k úvěrům. Nicméně chybějící údaje týkající se revidované účetní závěrky a nedostatek úplných a včasných informací poskytnutých malými a středními podniky způsobují pro banky problémy, jenž brání vyhodnocení bonity malých a středních podniků s využitím finanční ukazatelů. Za účelem lepšího porozumění dané problematiky se v práci rovněž využívá proměnných faktorů, které jsou založeny na subjektivních informacích, jako jsou např. postoje vlastníků firem a vztahy mezi firmami a bankami. V této souvislosti práce předpokládá, že signalizací kompetencí a chování, které souvisí s podnikatelskou orientací, MSP mohou omezit obavy bank z úvěrových rizik ve vztahu k úvěrům.

Dalším cílem této práce je rozšířit perspektivu podnikatelů s cílem vyrovnat se s omezeními bankovního financování. Zdůrazněním důležitosti těchto podnikatelských charakteristik práce napomůže pochopit dovednosti podnikatelů a MSP a potřebu určitých signálů ve vztahu k bankám. Výzkum tak nabízí malým a středním podnikům alternativní způsob, jak získat bankovní financování a čelit snížení překážkám v přístupu k úvěrům.

Výsledky této práce mohou být přínosné jak pro banky, tak pro podnikatele samotné. Zaměřením se na měkké informace, jako jsou podnikatelské charakteristiky malých a středních podniků, mohou banky vytvořit nové metody hodnocení úvěrového rizika s cílem překonat problémy úvěrového selhání MSP. Kromě tohoto tato práce nabízí podnikatelům možnost uvědomit si způsoby rozvíjení jejich podnikatelských dovedností a bankovním úředníkům či manažerům lepší vnímání takového chování. V této souvislosti může práce napomoci podnikatelům i zaměstnancům bank zlepšit jejich práci a pracovní výkonnost. Z těchto zmiňovaných důvodů se jedná o užitečný zdroj informací jak v oblasti akademické, tak oblasti podnikání. Práce poukazuje na důležitost podnikatelských schopností a osobního rozvoje v bankovním financování.

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1. INTRODUCTION

1.1. Background of the Research

Similar with the definition of the European Commission (2003), Turkish SMEs (Small and medium-sized enterprises) are composed of small, medium and micro firms regarding their number of staff headcount (0-9 micro, 10-49 small, 50-249 medium-sized). More than 99 % of all business are SMEs in Turkey (KOSGEB, 2015-2018 KSEP Report) and this percentage is same as EU-28 countries (EC, Annual Report, 2017/2018). Those similar percentages for both Turkey and EU-28 countries highlight the key role of SMEs not only in Turkish economy but also in the economy of EU-28.

In an attempt to sustain those contributions to economies, it is required for SMEs to survive. In this regard, financing is one of vital factors for their survival while SMEs are substantially dependent on bank loans in their financing from external sources in Europe, Duarte et al. (2018) and in Turkey (Serefoglu and Gokkaya, 2017) Therefore, this research focuses on bank credit. However, especially in emerging countries such as Turkey, SMEs face with more obstacles regarding unstable market conditions, regulations of governments and lending policies of banks. Because of being the most common issues in receiving bank financing for SMEs in Turkey, cost of loans, amounts of debt and cash of firms, credit history, and collateral are considered as credit obstacles by this research to work on.

Although their importance for a country's economy cannot be underrated, SMEs face with all those mentioned obstacles because of their credit risk. Comparing with larger firms, SMEs lending is more hazardous (Altman and Sabato, 2007), because of their low profit margins, sales volumes and investment amount especially in financial crises (Andrikopoulos and Khorasgani, 2018). Those facts can make them to default in credit repayment that is the major credit risk for small firms (Dietsch and Petey, 2002). According to Minard (2015), information asymmetry among banks and SMEs is another reason of loan obstacles. When information asymmetry exists in bank lending, banks become more likely to misevaluate credit risk (probability of default) of SMEs. To protect themselves against this information asymmetry issue, banks require more obligations that create credit constraints for SME such as increasing interest rates or asking for more collateral (Duarte et al., 2018). Although, banks are willing to have updated and reliable information to evaluate barrowers' credit risk adequately

and give the right decision for lending, getting information from borrowers is such a taught situation because information is interiorized and difficult to access. In this case, banks look at some other indicators that are mainly based on soft data.

In this case, banks can search for specific information that may indicate the quality of SMEs (Stiglitz, 2002). This soft data also includes dimensions of entrepreneurial orientation (EO) that can be conveyed through both theories namely, signaling and relationship lending. Relational lending includes soft information that consists of characteristics and personality of owners, management quality, business strategy and ownership structure of firms (Belás et al., 2014). By relationship lending, banks obtain information about firms, and firms' environments and owners during the contracts so banks use this knowledge to evaluate credit risk and credit availability of businesses (Moro and Fink, 2013). In this case, Entrepreneurial Orientation (EO) can be a conceivable factor because it is identified as a strategy of enterprises that is related with their entrepreneurial characteristics such as being innovative, risk taker, autonomous, proactive and aggressive against their competitors. By signaling their entrepreneurial competencies related to EO, firms can reduce information asymmetries that is the underlying reason of their credit risk and credit constraints. By doing so, banks can be more informed about enterprises that have strong EO competencies, are able to perform better and outlast than other firms. For these reasons, they can be more likely to access to bank finance.

This research also evaluates influence of relationship lending on access to bank credit from different perspective by including different dimensions of it, namely, length of relationship (LOR), closeness of communication (COC) and exclusivity or house bank status (EHS). SMEs can show their quality to lenders by sending trustful, certain and notable signals (Zhao et al. 2008) and can also draw lenders' attention (Busenitz, et al, 2005). For instance, firms may get financing or can gain other financial sources by signaling their innovative abilities such as showing their patents and applying for patents (Baum and Silverman, 2004). Similarly, Moss et al. (2015) explain that the probability of gaining bank credit increases and length of access to finance can be shortened, if microenterprises signal entrepreneurial orientation' dimensions.

1.2. Research Gap

When it comes to impacts of EO on access to bank finance, number of studies lack and they basically consider three constructs of EO, namely, innovativeness,

risk taking and proactiveness. Although another measurement of EO namely autonomy was examined by Beltrame et al. (2018), their study investigated impact of autonomy on bank guarantees. Therefore, this research is a unique study that considers extended measurements of EO and their impacts on bank credit access.

Regarding signaling entrepreneurial orientation and access to finance, some studies analyzes venture capital financing, IPO investments and microfinancing institutions and some of them use entrepreneurial rhetoric and narratives (Moss et al. 2015). But this study offers entrepreneurs to convey their entrepreneurial characteristics during relationship lending that provides more communication and interaction opportunities with their lender. On top of that, this research applies signaling theory and use more credible indicators such as patent and investigates their impacts on bank credit access.

When viewed from different aspect, SMES that have no relationship with the banks that apply to get credit from, are obliged to face with processes of transactional lending techniques for their credit evaluation. This is because lenders do not have any information about those firms and are more interested to check financial statements of firms. Soft information such as EO characteristics of SMEs might not be important for lender and they will not focus on those characteristics of firms to evaluate them for those firms' credit evaluation (Beltrame et al., 2018). In this regard, this research considers SMEs that have lending relationship with banks. This study also includes both EO and relationship lending together and look their influences on gaining bank loans. Similarly, this is the only research that pays regard to influences of signaling EO and relationship lending on having bank credit. The reason of involving Signaling and relationship lending theories is that the impacts of signals quickly deteriorate. But during long term relationship, firms may able to send multiple signals and increase their probability to gain credit by reducing information asymmetry that is the main problem of SMEs' credit risks.

2. LITERATURE REVIEW
2.1. The Reasons for Bank Credit Obstacles of SMEs

The constraints that SMEs encounter in bank financing are stem from information asymmetry (Minard, 2015). Information asymmetry arises from lack of reliable information, and existence of opacity problem about default risk of borrower (Gama and Geraldes, 2012). For this reason, banks become more likely to evaluate credit risks of SMEs by mistake. To prevent this issue, banks

can create more constraints in SMEs' credit access such as asking more collateral or charging SMEs by higher interest rates. Moreover, to cope with this issue, banks need to check reliable sources such as audited financial statements that play as a guarantee role for banks to be sure about the borrowers' survival. The financial statements of SMEs that are opaque hinder SMEs to access bank credit. Therefore, it is important for SMEs to increase the transparency of their financial statements. Financial statements that are audited by external or internal auditor, timely and complete information are essential factors to overcome information asymmetries. Therefore, this research pays regards to those facts to measure information asymmetry.

However, small firms do not have any stock prices, they are usually not listed, not obliged to have audited financial statements and analysts do not control them (Berger and Frame, 2007). Moreover, they do not have transparent financial statements (Berger and Udell, 1995). Due to having no efficient information about small firms, banks are usually not prone to provide credits for SMEs (Gama and Geraldes, 2012), apply for credit rationing, look for more collateral (Berger and Udell, 1995; Rajan, 1994), charge small firms with higher interest rates or apply other activities that create difficulties for SMEs. Another substantial factor that determines credit access is the credit risk of SMEs. Credit risk is generally calculated as borrowers' probability of default and possible financial losses that they create for lenders (Andrikopoulos and Khorasgani, 2018). SMEs are more risky for banks to give credit compared to larger firms because they are usually not able to provide sufficient collateral, do not have enough internal cash flows to carry on their businesses, have high debt ratios and lack of ability to guarantee (Belás et al., 2014). Because of higher credit risk of SMEs, banks charge them with higher prices (Cowling et al., 2012) and higher interest rates (Yıldırım et al., 2013) look for more collateral requirements, (Behr and Güttler, 2007) apply credit rationing (Cenni et al 2015). Therefore, those four important determinant factors of credit risk are taken into consideration to evaluate credit risk of SMEs in this research.

2.2. Access to Bank Finance by Turkish SMEs

According to Turkish Banking Regulation and Supervision Agency (BDDK), 52 national, state and foreign banks exist in Turkish banking sector. Moreover, this report also expresses that 26% of total loans that are given in Turkish market have provided for Turkish SMEs (BDDK, 2018). If SMEs default in loan repayment for three running months, the loan becomes a non-performing SME loan (Kalaycı and Arslan, 2017).

There was an upward trend in nonperforming SMEs loans between the years of 2010 and 2018 in Turkish banking sector. While the volume of nonperforming loans was 6 billion Turkish liras (around 1 billion euros) in 2010, it increased 6 times more and became around 6 billion euros in September 2018. This result can be an evidence for the problems of banks' credit evaluation methods. This is because they might have given wrong decision to provide credits for some SMEs that have had high credit risks. Due to information asymmetry between those firms and banks, the banks in Turkish market might have not been able to calculate their credit risk correctly. To challenge with these issues in SMEs' lending, there should be a new mechanism to close this information gap between both players in bank lending. The annual weighted average interest rates of trade credits (including credits for SMEs) that were provided by banking sector in Turkey rates increased from 8.78% to 24.07% between years of 2013 to 2018. Those high interest rates could also be constraint for Turkish SMEs to access to banks' loans. According to OECD report (2018), SMEs interest rates in EU countries were lower than the rates of Turkey considering to years between 2013 and 2016. For this reason, SMEs in Turkey might have been obliged to get finance by higher interest rates in comparison to SMEs in these countries.

Financial freedom is a dimension of effectiveness of banking and being free against government supervision and intervention in the financial market. (Heritage, Financial Freedom Index, 2018). The score of Turkey from the financial freedom index is 60. According to Heritage, the country that has score of 60 from finance freedom has some barriers. For instance, financial organizations are not capable of providing all services because they are exposed to some limitations of the government. On the other hand, the central bank also has some constraints regarding controlling and ruling of financial organizations (Heritage, Financial Freedom Index, 2018). In the countries that have higher scores from financial freedom such as USA, banks have more independency to prolong loan terms and provide easier financing conditions for their customers. Due to having lower score from this indicator, Turkish SMEs can be more likely to face with more constraints in their bank credit access in comparison with the enterprises in European Union and USA.

Regarding resolving insolvency index, it is identified as "the ranking on the ease of resolving insolvency is based on the recovery rate that is a function of time, cost and other factors such as lending rate and the likelihood of the company continuing to operate" (The World Bank, Doing Business 2013, p. 126). Having worse rankings in resolving insolvency index and lower rates in the indicator of

recovery rate can be also evidence of increasing trend in non-performing loans in Turkey. Considering to Distance to frontier score from getting credit index (2017) that demonstrates the performance of economies and access to finance, Turkey's and average of Europe Union and OECD members' scores were 69, 76 and 77, respectively where the top score is 100. Therefore, individuals and enterprises in Turkey can be less likely to access to finance in comparison with some countries from European Union and OECD members.

By analyzing their own data, other studies find that high interest rates (Yıldırım et al., 2013), high borrowing costs (Karabıçak and Altuntepe, 2001), having lack of cash money and capital (Torlak and Uçkun, 2005), collateral and credit rationing (Yılmaz, 2016) are main bank financing barriers for Turkish SMEs. Comparing to other countries that have similar economic conditions with Turkey, the amount of available credits is lower in Turkey (Yüksel, 2011). As it is understandable from all above-mentioned reasons that hinder bank credit access, bank financing for Turkish SMEs is still problematic. Therefore, this research aims to present a different point of view for SMEs to cope with those obstacles by reducing their credit risks and information asymmetry.

2.3. Entrepreneurial Orientation (EO)

EO has been the most common management approach that has analyzed during the past thirty years (Gupta and Gupta, 2015). Firms that are innovative, risk taker, proactive, autonomous and competitive against their rivals are more likely to perform better in comparison with other enterprises (Vantilborgh et al., 2015; Wiklund and Shepherd, 2005). Some scholars have also highlighted the positive influences of EO to hinder business failures and to achieve business success (Lumpkin and Dess 1996; Wiklund and Shepherd 2005). Winklund and Shepherd (2005) state that firms can implement activities regarding EO to cope with obstacles of credit access. In this regard, Zampetakis et al. (2011) analyze this issue and find that EO has positive impacts on gaining access from financial sources. EO can be an effective solution overcome the barriers of credit access especially in the environment that have lack of novel chances. In such circumstances, entrepreneurs can gain advantages by taking risks, showing their innovativeness and proactiveness that enable them to become different from their rivals (Winklund and Shepherd, 2005).

2.3.1. Development of Hypotheses for EO and Access to Finance

Innovativeness makes enterprises to differ from other firms by providing new products or services (Short et al., 2009). Hence, they can improve their success (Vantilborgh et al., 2015). McCarthy et al. (2015), and Zampetakis et al. (2011)

also substantiate that a positive association exists between innovativeness and getting loans. By investigating SMEs from Austria and Italy, Beltrame et al. (2018) advocate that innovativeness has significant influences on gaining credits from banks. By considering above mentioned empirical results, this study sets hypothesis as follows:

H₁ₐ: Innovativeness of SMEs is positively related with their access to bank finance.

SMEs that are more risk taker have more tendencies to set up their own businesses and work for it. When an opportunity becomes apparent in the business environment, entrepreneurs usually do not hesitate to take risk for it. This is because they also have competencies to assess this opportunity's pros and cons. Owing those talents gives some chances to entrepreneurs to gain advantages toward their rivals and accelerates their firms' development (Vantilborgh et al., 2015). Zampetakis et al. (2011) corroborate that risk taking is positively related with access to finance. Therefore, the study assumes the next hypothesis as following;

H₁ᵦ: Risk taking behavior of SMEs is positively associated with their access to bank loans.

Proactive SMEs take more initiative to present new products and other innovative activities foresightedly (Moss et al., 2015) because they have ability to seize market (Short et al., 2009) and quickly determine and explore market opportunities . By having pro-active behavior firms also support their activities against their rivals and gain competitive advantages (Dess and Lumpkin, 2005). Zampetakis et al. (2011) bear out the positive relationship between proactiveness and access to finance. Considering to those facts another hypothesis can be set up as;

H₁c: Proactiveness of SMEs is positively related with their access to bank finance.

Competitive aggressiveness enables to penetrate markets by making remarkable activities such as price cutting (Short et al., 2009). It contains competitive behaviors and attacking strategies that enterprises act to have strong market position to secure this position against pressures of competitors. For these reasons, firms that have more competitive behaviors are more likely to perform well and firms gain advantages to take market opportunities and firms become more likely to access to finance (Moss et al., 2015). A positive association between competitive aggressiveness and getting credit access is confirmed by

the study of Beltrame et al., (2018). Due to having those arguments, the research presumes the following hypothesis;

H1d: Competitive aggressiveness of SMEs is positively associated with their bank credit access.

Autonomy refers to ability of entrepreneurs to act independently (Mohammed and Obeleagunzelibe, 2014) to seek new chances and they are not controlled by any institutional procedures, committees and shareholders. Autonomy play a significant role in SMEs performance (Moss et al., 2015). Covin et al. (2006) clarify that an enterprise that has lack of autonomy is in tendency to face with financial problems. However, considering to autonomy with gaining guarantees, Beltrame et al. (2018) verify that less autonomous SMEs get credits from mutual Loan Guarantee Institutions. Thus another hypothesis can be set up as following:
H1e: Autonomy of SMEs is negatively associated with their access to finance.

2.4. Relationship Lending

Transactional lending methods are mainly based on hard data to evaluate credit risk of SMEs by applying accounting-based models, credit rating, market-based methods and mix of those approaches. But due to focusing on soft data that credit officers and managers consider in the credit evaluation of SMEs, relationship lending comes into prominence. This is the reasons why this research focuses on this lending technique.

2.4.1. Development of Hypotheses for Relationship Lending and Access to Finance (ATF)

Length of relationship is measured as the number of years in the relationship between SMEs and banks. Early on in relationship, banks charge all new borrowers with similar costs. But during long relationship, banks become aware of quality (Lehmann and Neuberger, 2001), competency, and characteristics of firms. Therefore, information asymmetry problem reduces (Voordeckers and Steijvers, 2007), cost of credit become less expensive (Lehmann and Neuberger, 2001) and the credit amount that is provided by the loan managers can increase (Moro et al., 2015). Regarding the studies mentioned above, the research assumes another hypothesis that is presented below.
H2a: SMEs' length of relationship with their lender bank is positively related with their access to bank credit.

More frequent communications between loan officers and SMEs increase volume of loans that SMEs might receive (Moro et al., 2015). Because SMEs can become more trustful from the lending officers' perspective. Information

asymmetry (Lehmann and Neuberger, 2001) and credit risk of SMEs can be reduced (Voordeckers and Steijvers, 2007). Therefore, the researcher supposes another hypothesis as follows:

H$_{2b}$: SMEs' closeness of communication with their lender bank is positively related with their access to bank loan.

A bank that is the main credit provider of a firm is called as main bank or house bank (Behr and Güttler, 2007). When a firm has relations with a bank that is the only creditor of this firm, it is called as exclusivity in lending relationship (Berger et al, 2001). The main bank of SMEs gets the most of information about borrower firms during relationship lending. Hence, information asymmetry gets reduced and receiving loans from the main bank becomes more likely for enterprises (Cenni et al, 2015; Behr and Güttler, 2007, Giannetti, 2012). For these reasons, the last hypothesis regarding relationship lending and access to finance can be set up as;

H$_{2c}$: Exclusivity or house bank status of lender bank is positively associated with bank credit access of SMEs.

2.5. Signaling Entrepreneurial Orientation

By including information asymmetry into the economic models of decision making, Spence (1973) has found the signaling theory that provides optimal solutions for receivers and signalers. Signaling theory occupies an important position in relationship between entrepreneurs and capitalist and it purposes to solve problems regarding information asymmetry between them by using signals that provide information (Janney and Folta, 2006). Therefore, signaling is a significant factor in the relationship between lender and borrower and it has also influence on cost and availability of credit for borrowers (Zhao et al., 2008).

Four key factors exist in signaling theory namely receiver, signaler, signal and feedback (Connelly et al., 2011). In this study, signals are related with the dimensions of entrepreneurial orientation while the feedback is lending decisions of banks. Signalers are authorized people such as owners, shareholders, CEOs or accounting and finance managers who have knowledge about firms' characteristics regarding EO and they are well informed of bank credit processes and bank relations of the firms that they work for. They have information that outsiders (receivers) cannot easily gain.

Signals that are observable, unique, foreknown show the inherent quality of firms (Bergh et al., 2014; Zhao et al. 2008). In that vein, they can draw loan officers' attention (Bergh et al., 2014; Busenitz, et al., 2005) make lenders to

gain enterprises' trust because signal receiver can perceive that those firms will hit their targets, increase their profits so payback their credits and reduce asymmetric information problem between lenders and borrowers (Hopp and Lukas, 2014; Alsos and Ljunggren, 2013).

Preannouncement of novel goods (Akerlof, 1970), expenditures for advertising (Nelson, 1974), creation of new trademarks (Lee, 2002), having certifications (Janney and Folta, 2006) and agreements with leading organizations (Gulati and Higgins, 2003; Higgins and Gulati, 2006) can play signaling role that provide information about characteristics and capabilities of businesses and can reduce information asymmetries (Pollock and Gulati, 2007). Those features and competencies are also related with entrepreneurial orientation of SMEs. In this regard, entrepreneurial orientation has considered as a signal in some studies of entrepreneurship literature (Gao et al., 2008). Beltrame et al. (2018) profess that authorized people in the firms such as entrepreneurs and managers can improve their credit access by signaling their EO characteristics.

2.5.1. Development of Hypotheses for Signaling EO and Access to Finance

Signalers may manipulate the quality of information to affect receivers. Due to having conflicting interests, signaling theory searches some indicators that guarantee honesty in the communication between more informed signal senders and less informed signal receivers to limit the manipulation in the quality of the signal (Lee et al., 2016). Because of these reasons, the study considers certifications, R&D advertising expenses and subsidies and preannouncements of new products as the measurements of signaling EO because they are costly, observable, credible and not easy to imitate.

Certifications can draw bank officers' attention to make favourable credit decisions for firms (Janney and Folta, 2006). Applied and gained patents signal technical quality, knowledge, competencies (Warner et al., 2006) of firms. Therefore, it can reduce information asymmetry among firms and banks (Arthurs et al., 2009). Pederzoli et al. (2013) contend that credit risk of SMEs might be decreased by patents. Patent is also considered as a signal of firms' innovativeness (Warner et al., 2006; Baum and Silverman, 2004) and competitive aggressiveness (Ahlers et al., 2015). Hsu and Ziedonis (2013) and Baum and Silverman (2004) explain that the existence of patents is positively related with credit access of firms. Trademarks are also quality signals for firms to send loan officers in credit application (Gao et al., 2008). King et al. (2005)

find that management system certifications such as ISO 14001 may present positive information about firms' invisible features to lenders. This certification reduces information asymmetry among players in lending and increase reliability of the signal senders (Su et al., 2016). Because of these reasons, the research will set up next hypothesis herein below;

H_{3a}: Gained or applied certifications of SMEs are positively related with their access to bank finance.

R&D expenditures play similar signaling role as patents do, thus, they create chances for enterprises to have easier credit access (Baum and Silverman, 2004). Expenses for R&D activities (Heil and Robertson, 1991) and advertising can show firm quality to lenders and reduce information asymmetry (Kirmani and Rao, 2000). Advertising expenses are also quality signals for firms to send loan officers in credit application (Gao et al., 2008). R&D investments of the firms can signal firms' innovativeness (Arthurs et al., 2009). R&D investments and expenses might also be perceived as a signal of competitive aggressiveness of enterprises (Basdeo et al., 2006).

R&D subsidies and grants produce an effect that can be perceived similarly by external financiers as other certifications' influences. This is because the decisions that the government officer makes for granting R&D subsidies can certify the quality of firms. This fact builds trust for banks and it can influence the credit decision of lending officers too. Firms that are gained subsidies and grants regarding R&D are more likely to access loans from financing institutions (Meuleman and De Maeseneire, 2012). An agreement with leading companies provides opportunities for enterprises to share and change their resources, technologies, and private information to improve their abilities and increase their profits. Therefore, it might also positively influence firms to gain other resources from external sources such as bank credit (Pollock and Gulati, 2007). Relations with development institutions (Plummer et al., 2015) and interacting with prominent businesses and organizations make firms to provide more credible information about themselves to external financier (Ahlers et al., 2015). Positive influences of agreements or ties of firms on gaining credit have been proved by many studies (Gulati and Higgins, 2003; Higgins and Gulati, 2006; Zhang and Wiersema, 2009; Baum and Silverman, 2004; Ahlers et al., 2015). In line with those arguments, one of the hypotheses of this research can be set as following;

H_{3b}: R&D expenses, subsidies and affiliations of SMEs are positively related with their bank credit access.

Preannouncements seem like messages that provide information for receivers in relation with firms' attitudes in the newly developed products (Lee et al., 2016). By making preannouncements, firms can show how they are quality and they have competencies to differ against their rivals (Stiglitz, 2000). This can be an important factor to predict the direction and volume of firms' expected cash flows. Moreover, preannouncement of a product is a reliable signal to alleviate issues regarding information asymmetry (Heil and Robertson, 1991; Lee et al., 2016) and to gain loans from external financiers (Courtney et al., 2016; Jung, 2011; Lee et al. 2016). By making preannouncement firms can signal their innovativeness (Lee et al., 2016; Heil and Robertson, 1991) and competitiveness against their rivals (Heil and Robertson, 1991). For these reasons, another hypothesis is supposed as following;

H3c: SMEs' preannouncement of new products is positively related with their access to bank finance.

2.6. Entrepreneurial Orientation and Relationship Lending to Access to Finance

With the combination of relationship lending and EO, firms can be more inclined to make innovation for their products (Audretsch et al., 2007), therefore, increase their innovativeness (Cosci et al., 2015). In case of having non-competitive banking environment, banks might be in tendency to provide more credits for riskier firms that they have tight relations with (Jimenez et al., 2006). For those reasons, EO of SMEs might be a significant indicator that effects lending decisions of loan manager or officer during relationship. Loan officers can perceive that SMEs will be able to payback their credits and banks will not encounter with credit default problems (Voordeckers and Steijvers, 2007). In a similar manner, banks can become aware of characteristics of firms that are related with EO during relationship lending. Therefore, information asymmetry problem reduces (Voordeckers and Steijvers, 2007) and SMEs can get credit access (Moro et al., 2015). In accordance with these studies, the researcher assumes the following hypothesis;

H4: SMEs' EO and their relationship with bank in lending are positively related with their access to bank credit.

2.7. Signaling EO and Relationship Lending to Access to Finance

Under the conditions of relationship lending, banks can be more likely to observe EO signals due to having close ties and more interactions with those

businesses. But, if banks and enterprises do not have close ties, banks can face with difficulties to see EO of firms (Beltrame et al., 2018). Another importance of signaling EO in relationship is that impact of EO signals can quickly deteriorate and lose its influences. Signaling EO in relationship lending give chances to firms to repeat those signals by frequently communicating and having long relationship with banks (Janney and Folta, 2006). This fact also alleviates the deterioration of influences of EO signals and draws credit officers' attention to provide credits for signalers.

In case of non-existence of relationship lending, signalers only can send EO signals during their credit application. For instance, Micucci and Rossi (2013) clarify that longer relationship and high share of debt from main bank, improve operations that are related with R&D, development of new products and innovativeness. Therefore, signaling entrepreneurial orientation can be an important factor in relationship lending activities to have influence on the credit decision of banks. From this point of view, the research hypothesizes the following statement:

H_5: Signaling EO in SMEs' relationship with lender are positively related with SMEs' access to bank finance.

3. AIM, METHODOLOGY AND DATA

3.1. Aim and Research Problem

Access to bank credit is very crucial issue for most of SMEs all over the world and credit risks and information asymmetry between those firms and banks are the underlying reasons of this problem. To cope with asymmetric information and credit risk issues and to provide an alternative way for SMEs to gain bank financing, this comprehensive study purposes to investigate the influences of EO of Turkish SMEs and relationship lending on access to bank finance by applying signaling theory. Firms may be able to get easier credit access by signaling their characteristics related with EO in relationship lending.

Most of banks apply some methods that are based on hard data such as accounting ratios to evaluate credit risk of SMEs. However, SMEs usually do not have audited financial statements and this fact causes information asymmetry issue. To cope with this issue, EO can be effective solution to overcome barriers of bank credit access because EO is based on soft data and can be conveyed during relationship between banks and SMEs. In this regard, the research problem for this research can arise as follows:

How does EO enable to access to bank finance for Turkish SMEs?

3.2. Conceptual framework

The conceptual framework of this research is depicted by Figure 3.1 that presents lucidity in relation with the concept of the thesis.
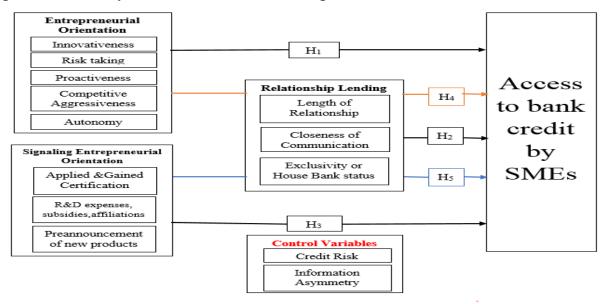

Figure 3. 1: Conceptual Framework
Source: Created by the researcher and based on results of previous studies

Table 3. 1: Definitions of Key Variables and Abbreviations

Variable	Definition
Entrepreneurial Orientation (EO)	"EO refers to the processes, practices, and decision-making activities that lead to new entry as characterized by one, or more of the following dimensions: a propensity to act autonomously, a willingness to innovate and take-risks, and a tendency to be aggressive toward competitors and proactive relative to marketplace opportunities" (Lumpkin and Dess, 1996, pp. 136–137).
Innovativeness (INNO)	Enterprises' tendencies and operations to produce new goods and services by applying new plans, projects, technologies, and procedures (Short et al., 2009).
Risk Taking (RIT)	"The degree to which managers are willing to make large and risky resource commitments i.e., those which have a reasonable chance of costly failures. Firms with an entrepreneurial orientation are often typified by risk-taking behavior, such as incurring heavy debt or making large resource commitments, in the interest of obtaining high returns by seizing opportunities in the marketplace" (Lumpkin and Dess, 1996, pp. 144).

Proactiveness (PRO)	"Seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in the mature or declining stages of life cycle" (Venkatraman, 1989, p. 949).
Competitive Aggressiveness (CA)	"Refers to how firms relate to competitors, that is, how firms respond to trends and demand that already exist in the marketplace" (Lumpkin and Dess, 1996, pp. 147).
Autonomy (AUTO)	"Independent action of an individual or a team in bringing forth an idea or a vision and carrying it through to completion and the ability and will to be self-directed in the pursuit of opportunities" (Lumpkin and Dess, 1996, pp. 140).
Relationship Lending	"If scale economies exist in information production, and information is durable and not easily transferred, these theories suggest that a firm with close ties to financial institutions should have a lower cost of capital and greater availability of funds relative to a firm without such ties. We term these ties relationships" (Petersen and Rajan, 1994, p. 3-4).
Length of relationship (LOR)	"The number of years that the lender has relationship with the borrower" (Berger et al. 2014).
Closeness of communication (COC)	The frequency of interactions between borrower and lender during the year (Moro et al., 2015).
Exclusivity or house bank status (EHS)	The percentage of total debt that is provided from the premier lender (Cosci et al., 2015; Elsas, 2005; Cenni et al., 2015).
Signaling Theory	Provides optimal solutions for receivers and signalers by including information asymmetry into the economic models of decision making (Spence,1973).
Applied & gained certification (AGC)	Applied or obtained patent, certification, trade mark and licenses (Arthurs et al., 2009; Lee, 2002; Janney and Folta, 2006).
R&D expenses, subsidies, affiliations (RDE)	R&D expenses (Baum and Silverman, 2004), R&D subsidies (Meuleman and De Maeseneire, 2012) and affiliations (Janney and Folta, 2006) are important implications that produce a similar effect with other certifications' influences to signal EO.

Preannounceme nt of new product (PNP)	"Preannouncements are formal purposeful communications that inform message receivers of a firm's claimed intent to introduce a new product to the market at a future date" (Lee et al. 2016, p. 457).
Information asymmetry (INFA)	Arises from lack of complete and timely information (Nanyondo et al., 2014), and existence of opacity problem about default risk of borrower (Gama and Geraldes, 2012; Berger and Frame, 2007)
Credit risk (CR)	Occurs when borrowers default in loan repayment (Dietsch and Petey, 2002).

Source: Created by the researcher and based on previous studies

3.3. Research Questions

- What are the obstacles to access to bank finance for SMEs?
- Is there a relationship between entrepreneurial orientation and access to bank finance?
- How does relationship lending influence SMEs' access to bank finance?
- Does a positive relationship exist between signaling entrepreneurial orientation and access to finance?
- How do SMEs' relationships with banks and their entrepreneurial orientation influence bank credit access of SMEs?
- How do signaling EO and relationship with banks influence gaining loans for SMEs?

3.4. Research Objectives

- To determine the credit constraints for SMEs,
- To analyze the relationship between EO and bank credit access of SMEs,
- To investigate the direct effects of relationship lending on bank credit access of SMEs,
- To examine the association between signaling entrepreneurial orientation and acquiring bank loans,
- To view impacts of both entrepreneurial orientation and relationship lending on access to finance,
- To find out the effect of signaling EO and relationship lending on credit access of SMEs.

3.5. Research Design

This research applies positivist approach because it generally evaluates variables that are determined by previous studies and it also applies existing theories to set up hypotheses. Moreover, quantitative, value-freedom, critical realism,

hypothesis, deduction, objectivity, generalization, functionalism and cross-sectional analysis are other approaches that this research uses for research design. In general, this study is an empirical quantitative research because it collects data that is convertible to numbers and measurable statistically. The data was collected by a questionnaire survey. To make generalization and hit its targets such as making better estimations and statements about the study, the researcher chose adequate sample size for selected attitudes and issues of SMEs. By doing so this research fulfilled the requirements of generalization. In order to establish causal relationship between variables, to find new opinions about research problem and to identify current and reliable conditions of firms and entrepreneurs, the thesis uses an exploratory and descriptive research.

3.6. Data Collection Methods

The collection of primary data was performed by a questionnaire survey. Structured self-administered questionnaires (internet mediated) were developed to gain information from SMEs. Back-translation technique was applied by the researcher for the translation of the survey questions. Both of original and back-translated questionnaires were compared and then the final version of the questionnaire was created and delivered to potential respondents of the research for the pre-testing. To increase response rate and reliability of the data, the research also applied a pilot survey questionnaire. Dichotomous (yes, no), categorical, ordinal(ranked) and five points Likert type questions were employed to scale the responses from the questionnaires. Measurements of credit risk and signaling entrepreneurial orientation, are used as dichotomous (descriptive) data and measured by yes/no questions. The data type for dimensions of EO, and information asymmetry is ranked(ordinal) data. To collect data for these variables the study applied 5 Point Likert Scale. On the other hand, size of firm, relationship lending are scaled as categorical ranked (ordinal) data. All survey questions were created and validated by previous researches.

3.7. Sample and Sampling Methods

The sample of this research includes SMEs that made credit application in last three years. The respondents of the surveys were authorized people in SMEs who played an active role in recent credit application, had enough information about firms' competencies and activities and had closer relationship with banks' credit officers such as owners, shareholders, CEOs and finance and accounting managers. Stratified random sampling method was applied to select SMEs from different geographical regions of Turkey. By doing so SMEs were divided to

different strata that consisted of all 7 regions of Turkey. The number of firms that involved in the sample for each region was identified by the proportion of the active SMEs in each region to the total numbers of the operating SMEs in Turkey. Then, the researcher sent emails to the randomly selected firms to make them fulfill the survey. At this stage, the researcher employed purposive sampling method and gave detailed information in the e-mails about which SMEs and which people in these SMEs could fulfill the survey.

Table 3. 1: Share of SMEs' Population in Each Region Of Turkey And The Sample Of The Research

The Regions of Turkey	Population of SMEs	The sample of the research
Marmara	38%	185 (38.6%)
Ege	17%	81 (16.9%)
İç Anadolu	16%	47 (9.6 %)
Akdeniz	11%	51 (10.6%)
Karadeniz	9%	41 (8.6%)
G. Doğu Anadolu	6%	39 (8.1%)
Doğu Anadolu	3%	35 (7.3%)
Total	**100%**	**479 (100%)**

Source: OECD 2004, Small and medium-sized enterprises in TURKEY

Considering the result from formula of Peduzzi et al. (1996) that is 493, the sample size of this research is compatible with them. This is because the number of respondents for this research is 479. Thus, it meets with the sample size requirement of a binary logistic regression model.

3.8. The Applied Methods for Data Analysis

The research applied parametric and nonparametric tests by using collected survey responses to perform the analyses. For instance, to evaluate non-bias response of two different groups regarding relationship lending, Kolmogorov-Smirnov test was employed. Furthermore, binary logistic regression analysis was used to examine the relationship between the dependent and independent variables. On top of that Wald Statistics was performed to analyze the significance of each independent variable in logistic regression models. The study also carried out Hosmer and Lemeshow test and considered p values from Chi Square Test to assess whether the created models are fit or not. In addition, the study considered multicollinearities between independent variables by presenting scores from Variance Inflation Factors (VIF) and tolerances. The research used IBM SPSS Statistics 23 version to make analyses for logistic regression models, correlations and multicollinearities between independent

variables and descriptive statistics. Moreover, both SPSS Statistics 23 and STATA Statistics/Data Analysis 13th version performed for the reliability variables. Furthermore, the researcher gained fulfilled surveys that were created via google forms and word documents. Therefore, to investigate non-response bias of responses of two different groups of surveys, Independent sample t test, Chi-square and Kolmogorov-Smirnov statistics were performed.

3.9. Data and Characteristics of Firms and Respondents

The data collection process was performed between June, 2018 to October 2018 by the researcher. The total number of questionnaires was 524, but due to having missing values and problematical responses, 45 of them were not included, therefore, 479 SMEs that were located all regions of Turkey, were analyzed. The majority of the respondents (190 respondents, 39.7% of the total respondents) were owners of SMEs. Moreover, 95 respondents (19.8%) were shareholders, while the number of finance and accounting managers that fulfilled the surveys were 74 (15.4%) and 68 (14.2%) respectively. The number of CEOs who were respondents in this research was 52 (10.9%).

Regarding credit access of the enterprises, credit applications of 79.75% of firms (382 enterprises) in the sample were accepted by banks. However, 97 SMEs (around 20.25% of total sample) could not receive loans due to being rejected in their credit applications. To emphasize the reasons of rejections in bank credit applications of SMEs, problems regarding credit history or credit report was the most common reason for the rejected SMEs (27 firms, 27.8% of total rejected applications). Around 21.7% of rejected SMEs stated that banks' concerns about their firms' debt amount was the reason of their rejection. Next, the issues related with collateral and profitability of enterprises were other most given reasons by SMEs for their rejected credit applications (19.6% and 16.5%).

Corresponding to first research question that considers created difficulties for SMEs in their credit access, 215 respondents (44.9% of the total respondents) stated that providing collateral was the hardest achievable requirements for them. Cost of loans (22.8%) , having an adequate credit reputation (13.6%) having lower amount of debt (12.5%) and having sufficient amount of cash (10.9%) were other hard achievable requirements that the firms faced in their credit application. However, 50 respondents reported that they did not face any difficulties to access to finance (10.4% of the total respondents). Percentages do not up to 100% because the question regarding to obstacles of credit access was asked by a multiple answer question.

4. RESULTS AND DISCUSSION

4.1. Results for EO and Access to Finance

Considering to multiple logistic regression model for EO and access to bank finance, independent variables consist of five measurements of EO namely, innovativeness, risk taking, proactiveness, competitive aggressiveness and autonomy, while the dependent variable is access to finance (binary/ yes, no).

Table 4. 1: The Results of Logistic Regression Analysis for EO and Access to Finance

Variable	B	SE	OR	90% CI	Wald statistic	p
Innovativeness (INNO)	-0.042	0.138	0.959	[0.764, 1.204]	0.091	0.763
Risk Taking (RIT)	**-0.377**	0.124	0.686	[0.559, 0.841]	9.278	**0.002**
Proactiveness (PRO)	0.000	0.175	1.000	[0.750, 1.334]	0.000	0.999
Competitive aggressiveness (CA)	0.196	0.132	1.217	[0.979, 1.512]	2.203	0.138
Autonomy (AUTO)	-0.072	0.163	0.930	[0.712, 1.217]	0.195	0.733
Constant	2.278	0.609	9.761		14.018	0.000
Model-1: ATF = 2.278 – 0.042*INNO - 0.377*RIT + 0.000*PRO + 0.196*CA - 0.072*AUTO						

Source: Survey data, 2018
Note: CI = confidence interval for odds ratio (OR).

According to results from Wald statistics, risk taking is found to be statistically significant predictor in logistic regression equation. (B= -0.377, Wald χ^2 = 9.278, p= 0.002 < 0.10 for risk taking). But the B coefficient for risk taking is negative, therefore, lower values of risk taking is associated with greater possibilities of having access to finance. On the other hand, non-existence of positive relationship between innovativeness, proactiveness, competitive aggressiveness and autonomy on access to finance are confirmed by the analysis. For these reasons, the research rejects H1a, H1c, H1d and H1e hypotheses. Although, risk taking has relationship with gaining loans, they are negatively associated. Therefore, the study also rejects H1b hypothesis.

The results of this study regarding EO and access to finance oppose to the findings of the studies of Wiklund and Shepherd (2005), Zampetakis et al. (2011), McCarthy et al. (2015), Beltrame et al. (2018), and Lee et al. (2015). Although some of those studies propound positive relationship between innovativeness, risk taking, proactiveness, competitive aggressiveness and negative association between, autonomy and access to finance, this research do not find any positive relationships among dimensions of EO and access to bank

finance. However, negative relationship between risk taking and access to finance is confirmed by this study. The reason why this study does not find any positive relationship among dimensions of EO and access to bank credit might also be related with the factors that banks consider to assess credit applications of Turkish SMEs. The banks in Turkish market might be more focused on the financial indicators such as financial statements or balance sheet of those firms. Therefore, loan officers and managers may not be interested with entrepreneurial behaviors of firms.

4.2. Results for Relationship Lending and Access to Finance

A multiple logistic regression model was performed to test hypotheses regarding to measurements of relationship lending and access to bank finance. The independent variables for this analysis are LOR, COC and EHS that are the measurements of relationship lending, while dependent variable is access to bank finance by SMEs.

Table 4. 22: The Results of Logistic Regression Analysis for Relationship Lending and Access to Finance

Variable	B	SE	OR	90% CI	Wald statistic	p
Length of relationship (LOR)	0.284	0.151	1.328	[0.988, 1.786]	3.534	**0.06**
The closeness of communication (COC)	0.347	0.093	1.414	[1.180, 1.696]	14.021	**0.00**
Exclusivity or house banks status (EHS)	0.398	0.170	1.488	[1.066, 2.079]	5.440	**0.02**
Constant	-1.058	0.509	0.347		4.323	0.03
Model-2	ATF= -1.058 + 0.284*LOR + 0.347*COC + 0.398*EHS					

Source: Survey data, 2018

The p values from Wald statistics for all variables of relationship lending are found to be significant predictors to access to finance in this logistic regression model (at 10% significance level). Positive B coefficients indicate that access to finance becomes more likely as the length of relationship (LOR), the closeness of communication (COC) and exclusivity or house banks status (EHS) increases. Owing to the results that support positive relationship among the constructs of relationship lending and access to credit, the research accepts H2a, H2b and H2c hypotheses. For this reason, the research finds similar results with Petersen and Rajan (1994), Berger and Udell (2002), Moro and Fink (2013), Voordeckers and Steijvers (2007), Moro et al. (2015), and Cenni et al. (2015) that bear out association between relationship lending and access to bank finance.

Turkey has very competitive banking sector that consists of 52 different banks. According to BDDK (2018), the number of these banks' branches was 11.594 and the number of employees was 208.629 in September, 2018. Those branches usually located in densely populated areas that most of SMEs are next to. Apart from credit departments of banks, independent sales teams also exist in various banks to provide credits to SMEs by frequently visiting them. For these reasons, credit departments and sales team might have had close relations with SMEs that this research analyzed. Those facts can be the reasons why this research found the positive association between relationship lending and access to finance.

4.3. Results for Signaling EO and Access to Finance

In consideration of multiple logistic regression model for Signaling EO and access to finance, AGC, RDE and PNP are independent variables, and the dependent variable is access to finance.

Table 4. 33: The Results of Logistic Regression Analysis for Signaling EO and Access to Finance

Variable	B	SE	OR	90% CI	Wald statistic	p
Applied or obtained certifications (AGC)	1.787	0.372	5.969	[3.238, 11.001]	23.097	**0.000**
R&D expenses, subsidies and affiliations (RDE)	-0.037	0.377	0.964	[0.518, 1.793]	0.009	0.923
Preannouncement of new products (PNP)	-0.040	0.099	0.961	[0.816, 1.131]	0.163	0.687
Constant	0.402	0.345	1.494		1.353	0.245
Model-3	ATF= 0.402 + 1.787*AGC - 0.037*R&D - 0.040*PNP					

Source: Survey data, 2018

According to Table 4.3, Applied or obtained certifications (AGC) has shown statistically significant influence on access to finance (p<0.10). Thus, it can be propounded that the firms that had already applied or gained certifications are more likely to access to finance. For this reason, the study accepts H3a hypothesis that supposes the positive association between AGC and getting bank credit. On the other hand, P values are pretty high for RDE and PNP and they are both higher than 10% significance level. For this reason, nonexistence of relationship between RDE, PNP and access to finance has been confirmed. Thus, the research fails to approve H3b and H3c hypotheses.

The finding that affirms influence of applied or gained certifications on credit access is compatible with some studies that result positive impacts of patents (Baum and Silverman, 2004; Hsu and Ziedonis, 2013) and ISO certification on

gaining finance (Bergh et al., 2014). On the contrary, the study disproves the results of both studies Ahlers et al. (2015) and Hopp and Lucas, (2014) that do not find any significant relationship between patent ownership and access to finance. This study also objects to some outcomes of the studies of Baum and Silverman (2004), Meuleman and De Maeseneire (2012), Janney and Folta (2006), Pollock and Gulati (2007), Courtney et al. (2016), Higgins and Gulati (2006). This is because those studies substantiate the positive associations between R&D subsidies, grants, expenses, advertising expenditures, ties with prominent actors and access to finance, while the results of this study do not confirm any relationship among those variables.

Corresponding to preannouncements of a novel product, this study is also not compatible with some studies such as Courtney et al. (2016) and Lee et al. (2015) that vindicate the positive relationship between preannouncements and getting finance. Majority of SMEs in the sample of this research operated in manufacturing industry (51.4% of the total firms). Due to having production line, manufacturing firms are able to develop new products or improve their existing goods. By making these activities, they are more likely to have or apply certifications for their production line and products. Moreover, Donati (2016) states that enterprises in manufacturing industry usually have adequate cash flows. Manufacturing SMEs in this research might have had enough amount cash to apply for those certifications that have enabled them to signal their EO to receive bank credit.

4.4. Results for EO and Relationship lending to Access to Finance

The research applies the same method, namely a multiple logistic regression model to test hypothesis that whether EO of Turkish SMEs with their bank relations are positively related to access to finance or not. All measurements of EO and relationship lending are included in the model as independent variables. On the other hand, the research has also added two control variables, credit risk and information asymmetry into this model, while the dependent variable is same with other models.

Table 4. 44: The Results of Logistic Regression Analysis for EO and Relationship Lending to Access to Finance

Variable	B	SE	OR	90% CI	Wald statistic	p
Innovativeness	-0.196	0.179	0.822	[0.578, 1.169]	1.193	0.275
Risk Taking	-0.270	0.148	0.763	[0.571, 1.020]	3.329	**0.068**

Proactiveness	-0.172	0.222	0.842	[0.545, 1.300]	0.604	0.437
Competitive Aggressiveness	0.203	0.168	1.226	[0.881, 1.704]	1.463	0.226
Autonomy	0.120	0.194	1.128	[0.771, 1.649]	0.384	0.535
Length of relationship	0.470	0.191	1.600	[1.100, 2.329]	6.032	**0.014**
The closeness of communication	0.348	0.113	1.416	[1.135, 1.766]	9.495	**0.002**
Exclusivity or house bank status	0.238	0.203	1.269	[0.852, 1.888]	1.375	0.241
Credit Risk	-3.750	0.422	0.024	[0.010, 0.054]	78.841	**0.000**
Information Asymmetry	-0.568	0.294	0.567	[0.319, 1.008]	3.730	**0.053**
Constant	2.780	1.051	16.123		7.000	0.008
Model-4	ATF= 2.780 – 0.196*INNO – 0.270*RIT – 0.172*PRO + 0.203*CA + 0.120*AUTO + 0.470*LOR + 0.348*COC + 0.238*EHS – 3.750*CR – 0.568*INFA					

Source: Survey data, 2018

After running this logistic model, the variable namely EHS became insignificant by this new model. The items of EO, namely innovativeness, proactiveness, competitive aggressiveness and autonomy are also not significant similar with the first model. P values for these predictors are greater than 10 percent significance level. Therefore, an association does not exist between those predictors and credit access. On the other hand, significant p values exist in the Table 4.4. regarding to risk taking, LOR, COC, credit risk and information asymmetry. However, risk taking, credit risk and information asymmetry have negative coefficients and it indicates that greater values from these predictors are related with lower possibilities of access to finance. Firms with higher values from both LOR and COC are more likely to access to finance. Due to having non-existence of positive associations of EO and access to finance, H4 hypothesis is rejected.

Those results are not consistent with the study of Jimenez et al., (2006) because they champion that banks can provide credits for risk taker SMEs that they have close ties with (Jimenez et al., 2006). Similarly, the outcomes of this study also contrast with the findings of Rotich et al. (2015) that advocate SMEs' EO activities in relationship lending make them to receive credits. On top of that, this study also challenges with the findings of Cosci et al. (2015) that innovativeness provides bank credit by increasing in relationship lending. Even in relationship lending, authorized people of SMEs might have not been aware of their EO competencies to specify them in their credit applications to gain credit. This issue can be the reason why positive relationship does not exist

between EO with relationship lending and access to finance. On the other hand, by having longer relationship and frequent communication with SMEs, banks might have distinguished whether SMEs are risky or not. Therefore, they might have given credits for firms that are less risk taker.

4.5. Results for Signaling EO and Relationship Lending to Access to Finance

The main model of this research involves measurements of signaling EO and relationship lending as independent variables, also includes both control variables namely, credit risk and information asymmetry. To examine the impact of predictive variables on outcome variable namely, access to finance, H_5 hypothesis was set.

Table 4. 5: The Results of Logistic Regression Analysis for Signaling EO and Relationship Lending to Access to Finance

Variable	B	SE	OR	90% CI	Wald statistic	p
Applied or obtained certifications (AGC)	1.344	0.446	3.834	[1.598, 9.196]	9.063	**0.003**
R&D expenses, subsidies and affiliations (RDE)	-0.030	0.452	0.970	[0.400, 2.354]	0.004	0.947
Preannouncement of new products (PNP)	-0.004	0.117	0.996	[0.791, 1.253]	0.001	0.969
Length of relationship	0.314	0.186	1.369	[0.950, 1.972]	2.833	**0.092**
The closeness of communication	0.319	0.113	1.376	[1.103, 1.706]	7.993	**0.005**
Exclusivity or house bank status	0.213	0.203	1.237	[0.831, 1.842]	1.097	0.295
Credit Risk	-3.558	0.408	0.029	[0.013, 0.063]	75.963	**0.000**
Information Asymmetry	-0.569	0.298	0.566	[0.316, 1.015]	3.646	**0.056**
Constant	1.277	0.943	3.587		1.836	0.175
Model-5	ATF= 1.277 + 1.344*AGC − 0.030*RDE - 0.004*PNP + 0.314*LOR + 0.319*COC + 0.213*EHS − 3.558*CR − 0.569*INFA					

Source: Survey data, 2018

As illustrated in Table 4.5, p values for AGC, LOR, COC, credit risk and information asymmetry are statistically significant at 10 percent significance level. Significant impacts of EHS on access to finance do not exist in case of controlling all other variables. For these reasons, it can be concluded that the H5 hypotheses that assumes positive associations of signaling EO, relationship lending and access to finance is rejected.

The results of this research are also compatible with the findings of previous studies that confirm negative relationship between information asymmetry and access to finance (Nanyondo et al., 2014) and credit risk and gaining loans (Andrikopoulos and Khorasgani, 2018). On the other hand, the result of this study regarding signaling EO and relationship lending to access to bank finance is not compatible with the finding of Micucci and Rossi (2013). Most of the respondents of this research had minimum bachelor degree (78.3% of the total respondents) and had more than ten years sectoral experience (73.7% of the total respondents). Due to having long years experiences in same industry and being educated, the respondents might have noticed the importance of signaling these certifications in their relationships with credit officers to gain bank loans.

5. CONCLUSION

As it is confirmed by many studies, credit obstacles are experienced more by smaller firms in comparison with larger enterprises. By performing analyzes, this research is also approved that access to finance becomes more likely when firm size increases. In relation with credit obstacles, information asymmetry and credit risk are the major factors that other constraints are mainly stem from. To solve those problems, many studies consider credit rating models that are basically based on accounting ratios that consist of hard data. However, majority of SMEs do not have audited financial statement. In this regard, to overcome with the constraints of bank credit access and to provide them a solution to receive bank loans, the thesis focused on soft information. By doing so, the research purposed to provide a comprehensive model in SME financing by considering credit risk issues of those businesses. In line with this selected purpose, the research applied for both relationship lending and signaling theory that based on soft information such as entrepreneurial characteristics (EO) of entrepreneurs and signals related with them. The influences of these theories to decrease information asymmetry and credit risk of SMEs have been substantiated by existing studies. This research also confirmed negative correlations between signaling EO, credit risk and information asymmetry.

In line with the aim of the study, the research proposed 6 research questions. Regarding to credit obstacles that SMEs encounter to access to bank finance, the research revealed that collateral requirements was the most common issue from the from the perspective of analyzed SMEs. Then, the costs of credits, credit reputation, level of debt and lack of cash are the other constraints. On the other hand, 50 SMEs did not experience any credit obstacles in bank financing.

Another research question of this study was whether a positive relationship exists between EO and access to bank finance. Although, the research presumed positive relationship between the measurements of EO and credit access in the hypotheses, none of them was accepted. Innovativeness, proactiveness, competitive aggressiveness and autonomy were not related with access to finance. However, a significant negative relationship between risk taking was confirmed. SMEs that took more risks, became less likely to access bank credit.

Corresponding to the research question that was related with relationship lending and access to finance, SMEs that had longer relationship, more frequent interactions and more amount of debt from their main bank were more likely to access to finance. When it comes to examine the relationship between signaling EO and access to finance, only a construct of Signaling EO, namely, applied and gained certifications was statistically significant. Therefore, likelihood of access to finance for SMEs that had applied or gained patents, certifications, trademarks and license was higher than SMEs that did not have those certifications. However, other constructs of Signaling EO such as R&D, advertising expenses and preannouncement of new products were not associated with receiving bank credits.

The research also took constructs of relationship lending into consideration and examined relationship of both variables, relationship lending and EO with credit access. Although direct impact of EHS was significant, running this variable with other items of EO made it insignificant. Innovativeness, proactiveness, competitive aggressiveness and autonomy were also not significant in this new logistic regression model too. Negative relationships between risk taking, credit risk, information asymmetry and access to finance were confirmed. Thus, more SMEs that had less credit risk, information asymmetry and risk-taking tendency accessed to bank finance than other businesses. On the other hand, positive relationship between length of relationship, closeness of communication with banks on access to finance were confirmed. Those facts confirmed that SMEs that took lower risks, had more year relations and more frequent communications with banks were more likely to access to finance than other firms that did not have these abilities.

Regarding to main purpose of this study, all constructs of signaling EO, relationship lending, information asymmetry and credit risk with bank credit access were investigated. Positive relationship between AGC, LOR, COC and access to bank finance and negative relationship between credit risk, information asymmetry and receiving bank loans were corroborated. Hence, SMEs that had

applied or gained certification, longer relationship, more frequent interactions with banks, lower credit risk and information asymmetry were more likely to access to bank finance more than other enterprises.

5.1. Contribution to Theory

First of all, this research has expanded previous researches into credit risk management and bank credit access of SMEs by including signaling and relationship lending theories that are based on soft data. In this regard, by adding two of mostly cited theories in entrepreneurship literature together in a model, the research became different from other studies. Apart from other studies that focus on financial indicators such as accounting ratios and financial statements, this research basically focused on behavioral characteristics of firms and their ability to use those characteristics to overcome information asymmetry and credit risk issues to have credit access. Having relationships and frequent interactions with banks can make entrepreneurs to send multiple signals to loan officers to reduce information asymmetry and so credit risks to gain loans.

All previous studies regarding EO signals focus on financing from microfinance institutions, venture capitalist or initial public offerings (IPOs). Therefore, this research is sole that considers signaling EO in bank lending. On the other hand, influences of EO constructs on access to finance have already analyzed by some studies. However, considering these studies some of them focuses on different sectors, various financing sources, different dimensions of EO and some of them have lack of number of respondents. As far as the researcher knows, the constructs of relationship lending namely, proportion of main bank in total debt and frequency of interactions with banks have never considered by previous studies in Turkey. But this research analyzed the impacts of EO and relationship lending on access to bank finance from widen perspective by including five dimensions of EO, different measurements of relationship lending and involving high number of Turkish SMEs. Since all those facts have not analyzed together in the literature yet, this research also expands previous studies by providing empirical evidences related with these variables.

5.2. Contribution to Practice

Academicians can use the result of this research for some related courses that focus on entrepreneurship, communication, quality certifications and bank financing educations and trainings. Moreover, the research can be guide for entrepreneurs to improve their entrepreneurial characteristics, bank credit access, development of their career and work efficiency for their firms. By

motivating themselves to create new ideas, improve their existing products and run those facts in having certification process not only improves firm quality but also their likelihood of gaining bank credit. The findings and suggestions of this research also might help policy makers to apply some new regulations and activities to support development of entrepreneurship, SME financing and bank lending. Banks can also gain benefits from the results of this research. By presenting the reason of credit risks, obstacles, and the solutions for those issues, this study might extinguish banks' concerns about credit risks of SMEs. This research also might create awareness among banks regarding importance of certifications in the credit access of SMEs. On the other hand, this study provided an alternative way for banks to solve information asymmetry between themselves and SMEs by focusing on soft information.

5.3. Limitations

This research is limited only with the bank credit and SMEs in Turkey. Therefore, the study is not available to make comparison with other SMEs from different countries. The analyzes for the key variables were limited because of having limited time in data collection so the collected data only consisted of the snapshot of respondents. Moreover, the study investigated relationship lending and signaling theories that were based on soft data. For this reason, the study was limited to apply some methods that examine information from hard data such as accounting ratios and financial statements. Although, a self-administered questionnaire was developed for respondents, the willingness of respondents was another limitation. By including other financing instruments, focusing on both types of methods that include soft and hard data and collecting data from more countries future researches can present more comprehensive study in entrepreneurship literature. Moreover, more respondents, credit obstacles, variables that have impact on credit risk and credit access of SMEs, and larger enterprises can also be included by researchers for more extensive studies.

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2018, International Scientific **Conference** of the Department of Business Management, Faculty of Business Management, University of Economics in Bratislava,16-17 May, Bratislava, Indexing in **Web of Science, D.**

Melich, P. and **Civelek, M.** Comparison of The Credit Scoring Models In The Engineering Industry Of The Slovak Republic. 10th international scientific **conference** Competition organized by College of Polytechnics Jihlava, 17-18 May, 2018, Indexing in **Web of Science, D.**

CURRICULAM VITAE

MEHMET CİVELEK   m_civelek@windowslive.com
                                      1281 T.G. Masaryka 76001
                                      Zlin, Czech Republic.

WORK EXPERIENCE

Project, Teaching and Research Assistant   September 2015 to date
Tomas Bata University in Zlin, Czech Republic

The name of the projects:
Internal Grant Agency of FaME TBU No: IGA/FaME/2019/002, "The role of institutional environment in fostering entrepreneurship".
Internal Grant Agency of FaME TBU No. IGA/FaME/2017/010: Financial Constraints on Economic Activities.
Internal Grant Agency of FaME TBU No. IGA/FaME/2015/025: The possibilities of the financial performance growth for commercial banks in the context of the credit risk of SME and the customer satisfaction.

The name of the subjects that was taught:
Controlling - Auditing   2016/2017 Winter Semester, for Master Students
                                4 hours per week
Controlling - Auditing   2017/2018 Winter Semester, for Master Students
                                4 hours per week

Research Assistant   February 2019 to date
University of Business in Prague, Czech Republic

The name of the projects: Technology Agency of Czech Republic,
                              Projekt TACR ETA TL 02000562.

Reviewer in peer reviewed Journals   September 2018 to date

International Journal of Entrepreneurial Knowledge,

Journal of Business Economics and Management.

Research Assistant   January, 2018 to April 2018

Windesheim University of Applied Science, Zwolle, the Netherlands

The name of the research project: Optimizing the order2 cash process of SMEs and evaluate   the adoption of Supply Finance solutions.

- Analyzing order 2cash process and existing tools of SMEs,
- Developing a questionnaire that can assess order2 cash process of SMEs,
- Developing a tool that can analyze the results of questionnaire and present key information about the O2C process of the respondents in semi-automated way.

University of Economics in Bratislava

The name of the research project: Research grant no. I-18-105-00, "Financial Analysis as a tool of Sustainable Development in enterprises of the engineering industry".

Technical Operations Assistant Specialist   2009-2011

Turkey Finance Participation Bank in İstanbul, Turkey

- Solving ATMs' problems,
- Doing salary payments,
- Developing and testing new salary payment system with IT department,
- Teaching new salary payments system to the customers and workers,
- Reporting and analyzing ATMs and salary payments' transactions.

The Projects that were done in the bank:

The Integration of the Payment System.

Transfer of ATM Card Operations to a different department.

Development of ATM Functions and Its' System Integration.

FOREIGN LANGUAGE

English (Advanced), Spanish (Beginner), Czech (Beginner).

PROFESSIONAL COMPETENCIES

- Planning, Financial Analysis and Reporting,
- Auditing-Controlling, System Integration,
- Operational Process Management, Supply Chain Finance,

- Quality Management, Credit Risk Management.

EDUCATION

Doctorate-PhD: Tomas Bata University Zlin/ Czech Republic, Finance
(2015- to date)
Erasmus-PhD: Mendel University Brno / Czech Republic, 3,43/4, Business
(2013- 2014)

Project papers in Mendel University:
Turkish Tax System, Global Civil Society and Global Governance, ALTMARK
Case C-28000 - covers STATE AIDS, The External Relation of the EU.

Doctorate-PhD: Gebze Technical University Kocaeli/ Turkey, 3,71/4
Business Administration (2013-…..)

Project papers in Gebze Technical University:
Risk Management, Financing in Higher Education in European Union Countries
and Turkey.
Language School in England: Language Specialist International Portsmouth/
6.5/9 - IELTS Course (2011-2012)
Master's Degree: Gebze Technical University Kocaeli/ Turkey, 4.00/4.00
Business Administration (2010-2011)
Project papers in Master Degree:
Hedge Funds, Hedge Funds' Statistics, Hedge Funds and The State of Hedge
Fund Markets.
Bachelor's Degree: Pamukkale University, Denizli/Turkey, 2,62/4.00,
Economics (2004-2008)

COMPUTER SKILLS
- Ms Office Programs (Word, Excel, Powerpoint), Ms Outlook. (Advanced)
- Sentez-Eta Accountancy Programs. (Advanced)
- E-views Econometric Program. (Proficient)
- AMOS SPSS. (Proficient)
- STATA. (Proficient)
- Lisrel (Beginner)

Mehmet Civelek, Ph.D.

Credit Risk Management in Small and Medium-sized Enterprises (SMEs)

Řízení úvěrových rizik v malých a středních podnicích

Doctoral Thesis Summary