IMPACT OF FINANCIAL CONSTRAINTS ON SMALL & MEDIUM ENTERPRISES PERFORMANCE IN PAKISTAN

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Abstract:

Small and Medium Enterprises (SMEs) play a vital role in the economic development of the country providing employment to a huge portion of the total non-agricultural labour force. But SMEs are unable to work at their full potential because of many obstacles, including financial challenges being the severe ones. The present study analyzed the impact of different financial resources and financial constraints on labour productivity.

Labour productivity is an important determinant of SMEs' performance because of the major employer of non-agricultural labour.

The "Enterprise Survey Data-2013" was utilized for regression analysis. The results revealed that internal finance is preferred by most SMEs and it increased labour productivity. Bank finance and equity finance had a negative impact because of the "pecking order theory". Finance from Non-Bank Financial Institutions had a positive while trade credit and informal finance had a negative impact on labour productivity. The impact of financial constraints for fixed assets denied the prior expectations, supporting the results that SMEs relied upon internal finance. SMEs used more internal finance proving that these SMEs were working at increasing returns to scales and able to provide the collateral requirements of fixed assets. It is concluded that small firms were more constrained financially. As the size of the firm increases will be the firm financially constrained. Additionally, the "learning by doing hypothesis" was working for the present sample of SMEs. The government should work to bring financial market stability while SMEs should work with better business plans.

Keywords: Small & Medium Enterprises, Financial Constraints, Enterprise Survey Data, Gross Domestic Product, Labour Productivity.

1- Introduction

Small and Medium Enterprises (SMEs) play an important role in the economic development of the country because it is a huge source of employment for nonagricultural labour. In recent years, much attention has been paid to the financing of SMEs and provided an important topic to economists and policymakers (Singh et al., 2013). The reason for its importance is that SMEs account for a large part of employment and enhance growth in most developing countries (Ozer, 2016). Several studies have been made on SMEs and their financial obstacles which concluded that SMEs face inappropriate financing conditions (Beck and Demirguc-kunt, 2005). About half of the SMEs in developing countries rated access to finance as biggest constraint for their operations. Furthermore, SMEs were more credit constrained than the large firms (Ozer, 2016; Singh et al., 2013).

In Pakistan, the importance of SMEs cannot be ignored in their development. The government of Pakistan has declared it one of the priority sectors for the development of Pakistan. SMEs constitute about 90% of the total industrial sector, providing 80% of employment to non-agricultural labour of the country. According to the estimates of SMEDA, SMEs are contributing 30% to the total GDP annually, 25% of manufacturing exports and PKR.140 billion to exports. The manufacturing sector of Pakistani SMEs is the third largest sector of the economy. It contributes 13.5% to GDP and gives employment to 14.1% of the total labour force. The loan granted by banks was PKR.1385.5 billion during 2006-14 and 50% of the loan was granted to SMEs. However, this loan was concentrated in some sectors (Ahmad et al., 2015). Therefore, this sector should be provided incentives to produce full potentialities and to contribute to the development of the country. The constraints in its development especially financial obstacles should be addressed. In developing countries like Pakistan, internal finance is a major source of finance for all firm sizes. When internal finance becomes inadequate, firms have to turn over formal finance. But in developing countries, capital market is not favourable for SMEs. In such situations, most of the firms try to meet their investment needs by equity finance (Husain, 2015). But equity finance is also unable to fulfill total investments needs of SMEs. To overcome the situation, most SMEs approach to other resources of finance like informal finance and trade credit. These sources are preferred either in start-up period or crises period for enterprises (Aliber, 2002). However, the impact of alternative financial resources remains very low as compared to internal finance.

The present paper consists of five sections. Section 1 provides an introduction about the study. Section 2 is based on the review of previous studies. Section 3 is all about data analysis and investigating the empirical relationship in dependent and independent variables. Section 4 constitutes of regression analysis while section 5 is about conclusion of the study.

2- Literature Review

Since the last decade, much attention has been paid on performance of the firms. There are different aspects of SMEs' performance: Annual sales growth, Labour productivity, Firm's Innovation and firm size distribution, returns on equity and Returns on invested capital, Liquidity, Profit margin and Returns to assets. In developing countries, SMEs accounts for a

huge job creation (Ayyagari et al., 2011). In Pakistan, SMEs are providing employments to 80% of the non-agricultural labour (SMEDA, 2007). So, SMEs' performance measured in terms of labour productivity is most important. By taking into consideration its importance, this paper investigates the impact of financial constraints and financial resources along with size and age of the firm on labour productivity. SMEs' performance can be determined by different parameters. Previous papers has identified different aspects of SMEs' performance as Annual sales growth, Labour productivity, Firm's Innovation and firm size distribution (SN. et al., 2013; Wang, 2014), Returns on equity and Returns on invested capital (Popa et al., 2014), Liquidity, Profit margin and Returns to assets (Kapkiyai, 2015; Muguchu, 2010). However, SMEs' performance measured in labour productivity is important because of the fact that SMEs are major employment provider in developing countries (Ayyagari et al., 2011). The existing literature provided comprehensive information regarding finance availability and obstacles in finance availability to SME sector. Internal finance is a major source of finance. However, access to formal finance can increase performance of SMEs and verified its positive impact by empirical studies (Ahiawodzi et al., 2012; Muguchu, 2010; Beck, 2007). Although SMEs have to face many obstacles in access to finance and the reasons have been explored in previous literature as mentioned by Brown and Lee, 2015; Ozturk and Mrkaic, 2014; Abdesamed et al., 2014. Equity finance increases SMEs' performance but used in case of unviability of bank finance.

Beck (2007); Ackah (2011); Paquini et al. (2010) and SN. et al. (2013) provided empirical evidence on the negative impact of financial constraints in the performance of SMEs. Alongside, it is important to note that besides barriers in access to formal finance, easy access to finance influences SMEs performance positively. Devis et al. (2008) and Husain (2015) proved that small firms mostly used equity to run their businesses.

The other side of this scenario clarifies that due to obstacles in formal financing, in developing countries most SMEs rely on alternative sources of finance to run their businesses. These alternative sources include informal finance and trade credit. The use of different alternative financial sources than formal finance to run the business is essential in developing countries (Ozer, 2016; Tang, 2014). The reason for this turn is difficult and timely process to get formal loans (Singh et al., 2013). The impact of informal finance on SMEs' performance is also positive which is empirically analyzed by Mungiru et al., (2015). Trade credit can influence SMEs performance positively as confirmed by Kapkiyai, (2015) and Kuntchev et al., (2012) and Carbó-Valverde et al. (2008).

Another contributor in positive influence to performance of SMEs is its size. Beck, (2007) and Kuntchev et al., (2012) confirmed that the smaller the firm, the more it will be credit constrained. As size increases, access to finance becomes easy ultimately positive impact on performance. But due to structural inertia, size can have an inverse impact Margaretha and Supartika (2016). Likewise, the age of the firm is also a focus of many studies. Its impact on the performance of SMEs is either positive as favoured by Beck and Cull (2014) and Ozturk and Mrkaic (2014) or negative as confirmed by Banerjee (2014) and Radipere et al. (2014).

2- Methodology

3.1- Financing challenges for SMEs

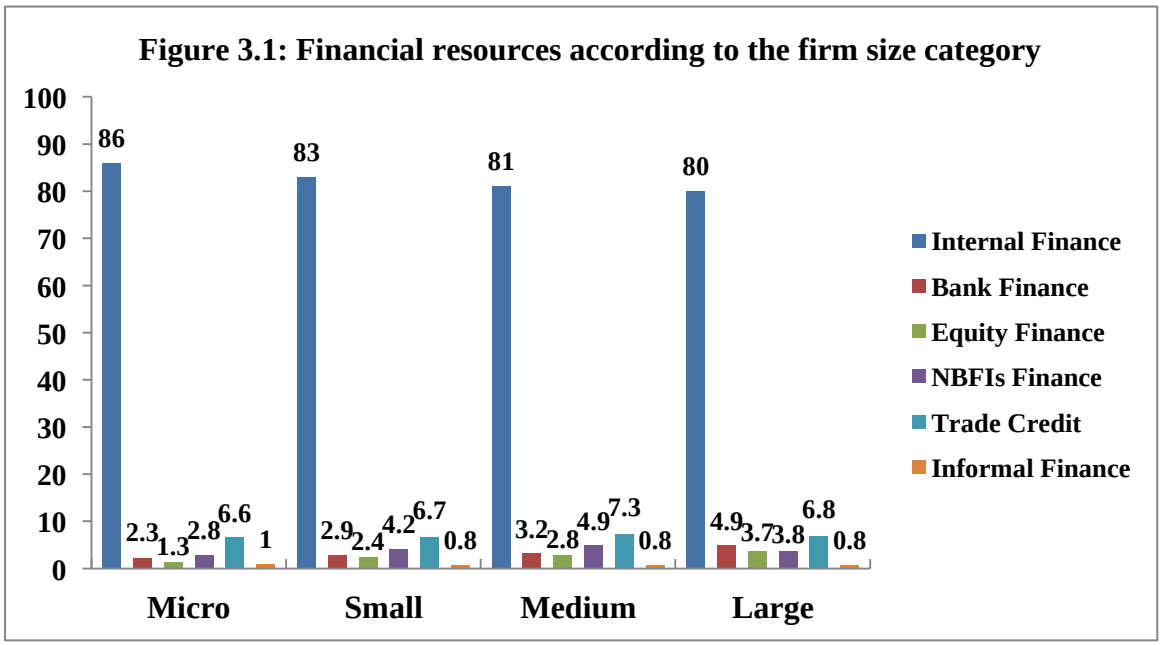
As compared to large firms, SMEs faces several constraints in obtaining finance (Ahmad et al., 2015). More clearly, SMEs are facing poor access to bank finance and as a result, many businesses rely upon other sources of finance. The situation is more challenging in developing countries because of the weak financial systems (Beck & Demirgüç-Kunt, 2006). These challenges can be categorized as supply-side and demand-side challenges. On the supply side banks' risk-averse approach, high transaction costs and high investment in government securities are creating dis-equilibrium (a situation where demand and supply forces do not meet to bring stable market equilibrium) in SMEs financial markets. Demand side challenges include the inability to provide collateral requirements, lack of awareness about different banking services, lack of satisfactory business plans, lack of innovative products and poor marketing opportunities (Ahmad et al., 2015). The high demand for the collateral requirement from the supply side and inability of SMEs to provide such requirements on the demand side is considered the most severe obstacle in the performance of the SMEs.

3.2- Data Source

The data utilized in this study is extracted from the "Enterprise Survey Data" which is a project of "The World Bank". The main aim of the survey is to analyse the business situation of the firms and provide indicators for a favourable environment for business. It also provides information about constraints to the growth of this sector. Pakistan is included in lower middle-income countries. 1247 firms of Pakistan are included in the sample. The sample includes 1042 manufacturing firms, 76 retail firms and 129 service firms. 79 micro, 505 small, 387 medium and 276 large firms are included in the sample (table 3.3). Most of the enterprises are located in Punjab i.e. 668, 215 in Sindh, 212 in KPK, 61 in Balochistan and 91 in Islamabad. The stratified random sampling technique was used to collect the data. Three levels of stratification were used: industry, firm size and region. Industry stratification was defined in seven manufacturing industries and two service sectors.

3.3- Financial Resources

The financial resources of a firm are internal finance, bank finance, equity finance, NBFIs finance, trade credit and informal finance. Formal finance resources include finance from banks and NBFIs while informal finance resources include finance from friends, family, relatives, and neighbours etc.



The situation of financing for enterprises according to the firm size category has been described in figure 3.1. Most of the investment needs have been fulfilled by internal finance or retained earnings. Not only small, medium, and micro firms, but large firms also fulfil their investment needs through internal finance. During the year 2012-13, enterprises obtained only 3% of loans from the banking sector. The share of bank finance is small because of the obstacles in obtaining loans from banks. It is clear from the figure that all firm sizes utilize more than 80% of the internal finance for their businesses.

3.4- Financial Constraints

Collateral requirements can be considered a proxy for financial constraints (Altomonte et al., 2017). The collateral requirement is one of the biggest obstacles more than loans and is demanded against the provision of formal finance from financial institutions (banks and NBFIs). In Asian countries, land/buildings have more acceptance as security for loans. Machinery/equipment, accounts receivable and personal assets of the owner are other forms of collateral requirements which have relatively less acceptability. This makes access to finance even more difficult. The negative impact of financial constraints on labour productivity was empirically analyzed by Kuntchev et al. (2012) and Ferrando et al. (2015).

Figure 3.2 presents the situation of collateral requirements according to the firm size category[1]. The collateral requirements have been classified into fixed assets and current assets. For the graphical representation, fixed assets are further divided into three categories; land/building,

[1] *Micro firms have been excluded from the analysis of collateral requirement as none of the micro firm has responded for the relevant question.*

machinery/equipment, personal assets of the owner i.e. house etc. on the other hand, accounts receivable are considered as current assets.

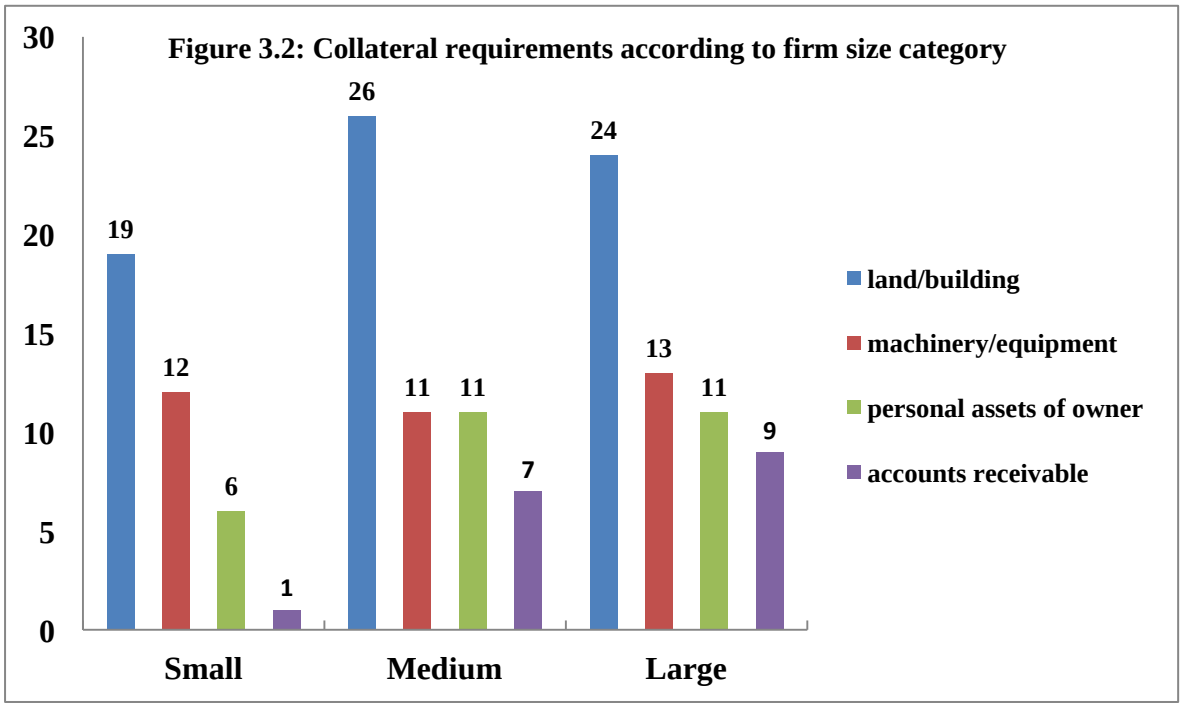


Figure 3.2 shows that 19% of small, 26% of medium and 24% of large firms have accepted that land or building is required to get a loan. On the other hand, 12% of small, 11% of medium and 13% large size firms accepted that machinery or equipment is required to get loans. This implies that machinery or equipment has relatively less acceptance as a collateral requirement.

3- Regression Analysis

4.1- Summary Statistics

Dummy variables have been created for all financial resources and collateral requirements. 4 dummy variables have been created for firm size.

Labour productivity is calculated as a log (total annual sales / total employees of the firm), where total annual sales have been calculated in US$.

Table 4.1: Summary Statistics

Variable's Name	Variable's Definition	$\bar{x}$	σ
Labour Productivity	Log (Total Annual Sales/Total Employees), where annual sales are calculated in US$	2.36	9.614
Internal Finance	Dummy variable coded 1 if firm used Internal Finance, otherwise 0	0.868	0. .338
Bank Finance	Dummy variable coded 1 if firm obtained finance from banks, otherwise 0	0.086	0. .281
Equity Finance	Dummy variable coded 1 if firm sold equity, otherwise 0	0.026	0.160
NBFIs Finance	Dummy variable coded 1 if firm obtained finance from NBFIs, otherwise 0	0.013	0.116
Trade Credit	Dummy variable coded 1 if firm used trade credit, otherwise 0	0.190	0.392
Informal Finance	Dummy variable coded 1 if firm got finance from Informal resources, otherwise 0	0.041	0.199
Collateral of Fixed assets	Dummy variable codded 1 if firm accepted that fixed assets are required as collateral, otherwise 0	0.60	0.23
Collateral of current assets	Dummy variable coded 1 if firm accepted that current assets are required as collateral, otherwise 0	0.013	0.116
Micro	Dummy variable coded 1 if number of employees in firm is 1-4, otherwise 0	0.063	0.243
Small	Dummy variable coded 1 if number of employees in firm is 5-19, otherwise 0	0.404	0.491
Medium	Dummy variable coded 1 if number of employees in firm is 20-99, otherwise 0	0.310	0.462
Large	Dummy variable coded 1 if number of employees in firm is ≥100, otherwise 0	0.221	0.415
Age	Log (2013 – year of establishment of the firm)	2.63	1.07

$\bar{x}$ = Mean, **σ** = Standard deviation

4.2- Correlation Matrix

Table 4.3 provides information about correlation among the variables. Most of the values are < 0.5 and show weak correlation.

Table 4.2: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 **LP**	1.00													
2 **IF**	0.11	1.00												
3 **BF**	(0.06)	0.05	1.00											
4 **NBFI**	(0.05)	0.01	0.23	1.00										
5 **Inf**	(0.06)	0.03	0.09	0.31	1.00									
6 **TC**	(0.04)	0.10	(0.02)	0.11	0.18	1.00								
7 **EF**	(0.07)	0.02	0.27	(0.01)	0.01	0.02	1.00							
8 **CFA**	0.10	0.04	0.42	(0.02)	0.02	(0.02)	(0.00)	1.00						
9 **CCA**	(0.00)	0.02	0.25	(0.00)	0.09	0.03	0.07	0.44	1.00					
10 **Micro**	(0.07)	0.04	(0.00)	0.24	0.10	(0.04)	(0.00)	(0.08)	(0.03)	1.00				
11 **Small**	(0.11)	(0.02)	(0.13)	(0.06)	0.00	0.04	0.04	(0.09)	(0.07)	(0.24)	1.00			
12 **Med**	0.08	(0.01)	0.07	(0.05)	(0.04)	0.02	(0.00)	0.00	0.03	(0.21)	(0.56)	1.00		
13 **Large**	0.09	0.01	0.08	(0.03)	(0.03)	(0.05)	(0.04)	0.17	0.08	(0.14)	(0.39)	(0.34)	1.00	
14 **Age**	0.17	0.10	0.00	(0.06)	(0.07)	(0.00)	(0.00)	0.05	0.02	(0.04)	(0.18)	0.05	0.19	1.00

LP = Labour Productivity, IF = Internal Finance, BF = Bank Finance, NBFI = Finance from NBFIs, TC = Trade Credit, Inf = Informal Finance, EF = Equity Finance, CFA = Collateral of Fixed Assets, CCA= Collateral of Current Assets, Med = Medium firm size ( ) = Negative values.

4.3- Model of the Study

For the present study, multiple regression analysis is employed to examine the relationship in labour productivity and independent variables of the study. This technique is more appropriate and is widely used for the analysis of the models which have one dependent variable and multiple independent variables (Ingason et al. 2013). The model is used in many studies such as Ahiawodzi et al., (2012); Li et al. (2015); Ingason et al. (2013); Niresh et al. (2014); Roychowdhury (2015); Popa et al. (2014); Duru et al. (2014); Kapkiyai, (2015) and Woo et al. (2014). The general form of the model is as follows:

$$yi = \alpha + {}_1x_1 + {}_2x_2 + {}_3x_3 + \cdots\cdots\cdots + {}_kx_k + \epsilon_i\beta \qquad \beta \qquad \beta \qquad \beta$$

For the present study, the model is specified as follows:

$$\boldsymbol{Labour\ productivity} = \alpha_0 + \beta_1 Internal\ Finance + \beta_2 Bank\ Finance + \beta_3 Equity\ Finance + \beta_4 NBFIs\ Finance + \beta_5 Trade\ Credit + \beta_6 Informal\ Finance + \beta_7 Collateral\ of\ Fixed\ assets + \beta_8 Collateral\ of\ Current\ assets + \beta_9 Medium + \beta_{10} Small + \beta_{11} Age + \epsilon_i$$

4.4- Results and Interpretation

The results for the multiple regression analysis have been presented in table 4.3. Micro firm size is excluded because of non-responsiveness while large firm size is excluded because of the problem of multicollinearity.

Table 4.3: Multiple Regression Results

Labour productivity	Coefficient	P. value for t-test
Internal finance	1.678354	0.000***
	(0.00060)	
Bank finance	-1.007712	0.010**
	(0.01559)	
Equity finance	-0.6026363	0.024**
	(0.02265)	
NBFIs finance	0.3711116	0.049**
	(0.02887)	
Trade credit	-0.1609422	0.020**
	(0. .00512)	
Informal finance	-0.4797754	0.002***
	(0.00141)	
Collateral of fixed assets	1.370623	0.001***
	(0.00305)	
Collateral of current assets	-0.8805293	0.010**
	(0.01376)	
Small firms	-0.2659018	0.213
	(0.09259)	
Medium firms	0.3083431	0.039**
	(0.01901)	
Age of the firm	0.0286586	0.013**
	(0.00056)	
Constant	7.420408	0.005***
	(0.05579)	

*/**/*** indicates significant values at 10/5/1% levels respectively
( ) = Standard errors n = 531, R-square = 0.5810

The results are significant at cluster robust[2]. Clustered robustness is frequently applied in data where the structure of the relationship inside of the cluster is unknown (Esarey and Menger, 2017). This method is suitable for the cross-sectional data collected from different regions. The variables are independent in different regions but when they are combined, the variables become related. Cluster robustness minimizes the probability of such variables being correlated.

[2] *Cluster robust standard errors are first proposed by Liang and Zeger (1986) and modified for stata by Rogers (1993). The procedure of cluster robust is based on White's robust standard errors.*

For, the regression results, a sample of 531 firms has been included. The remaining observations have been excluded because of the missing information. The model of the study presents an R-squared value of 0.5810, which reflects that model is explaining 58% of variations in labour productivity due to independent variables.

The results of the regression verified the prior hypothesis for the impact of internal finance, NBFIs finance and trade credit with labour productivity. Likewise, the assumption of the negative impact of current assets on labour productivity is also proved to be true while for the impact of age, the learning by-doing hypothesis is also confirmed. The small firms are analyzed to be more constrained financially and have a negative relationship with labour productivity, but the results are not significant. On the other hand, as firm size increased from small to medium, the results significantly confirmed that as size increases, labour productivity increases. The results for internal finance and informal finance are significant at 1% level while results for NBFIs finance, trade credit, the collateral requirement of current assets, medium firm size and age of the firm have a significance level of 5%.

The regression results also presented some results violating the established hypotheses. From the regression analysis, it is concluded that bank finance and equity finance have a negative impact on labour productivity. This contradiction is a result of the pecking order theory, which states that firms prefer internal finance over bank finance and bank finance over equity finance. Also, in case of a high percentage of firms relying upon internal finance leads to a negative impact of bank finance and equity finance. Both results are significant at the 5% level. The impact of informal finance on labour productivity is also estimated to be negative. This is due to the fact that informal finance only gives 1% assistance for the entire financial requirement of the firms. The results are significant at 1% for the impact of informal finance on labour productivity. The same is the case of the impact of the collateral requirement of fixed assets on labour productivity whose results are also significant at a 1% level. The impact of collateral requirements on labour productivity is also reversed to the prior investigation. The reason is as most of the firms rely more than 80% of their investment needs on internal finance indicating that firms are working on increasing returns to scales. In developing countries, fixed assets are accepted more as collateral requirements and the firms can provide such collateral requirements. Therefore, the impact of the collateral requirement of fixed assets on labour productivity is positive.

5- Conclusion

Extensive literature has been reviewed to explore the relationship between labour productivity and independent variables. Based on previous literature, relevant hypotheses have been extracted. The literature suggested the positive impact of financial resources such as internal finance, bank finance, equity finance and informal finance. But the impact of NBFIs finance and trade credit can be either positive or negative. Collateral requirements have negative impact on labour productivity. While size and age of the firm can also either increase or decrease labour productivity. In some studies, it is also analyzed that size and age do not have any influence on labour productivity.

The results showed that internal finance and NBFIs finance have a positive impact on labour productivity while trade credit has a negative impact on labour productivity. Likewise, prior expectations of current assets, size and age of the firm are also fulfilled by the results. The results showed that the requirement of current assets as collateral decreases labour productivity. Two firm sizes are considered in the analysis; i.e. small and medium firm sizes. The results showed that small firm size is more constrained financially and has a negative impact on labour productivity. With an increase in firm size, the impact of firm size becomes positive. The age of the firm also confirmed learning by doing hypotheses.

The results of the regression analysis provided some conflicting results rejecting the initial hypotheses. The hypotheses related to bank finance, equity finance and collateral requirement of fixed assets denied established hypotheses. Due to the pecking order theory, firms prefer internal finance over bank finance and bank finance over equity finance. Secondly, due to the excessive use of internal finance, the impact of bank finance and equity finance becomes negative.

The collateral requirements of fixed assets also have the opposite impact on labour productivity. In developing countries, fixed assets have more acceptability as collateral as compared to current assets. Most of the firms included in the sample relied upon internal finance. This indicates that these firms are profitable firms and can provide fixed assets as collateral.

5.2- Contribution to Research

This study has provided an empirical analysis of the impacts of financial resources and financial constraints on labour productivity. Previously, performance of the firm is analyzed mostly with annual sales growth, innovation or returns on assets. As SMEs are major contributors in providing employment, labour productivity is an important parameter of firm's performance in developing countries. The study provided empirical investigation of pecking order theory and learning by doing hypothesis and estimated their significant existence. Additionally, conflicting results of collateral requirement of fixed assets helped to reach an important conclusion that although unavailability of such collateral makes firm financially constrained, but provision of such collateral has significant positive impact on labour productivity.

5.3- Policy Implications

From the regression results, it is concluded that finance from formal financial institutions is not preferred by most of the firms. The condition of bank finance is not providing assistance to SMEs to overcome their financial inadequacies. The government of Pakistan should work on the improvement of financial market situation. SBP, SMEDA and SME Bank are working for the betterment of this sector but their regulations need to be fully implemented to overcome the situation.

The policy regarding SMEs was last published in 2007. The government of Pakistan should pay attention on this sector as being mentioned as one of the priority sector for the development.

The condition of collateral requirement against loans should be re-analyzed and re-stated according to the recent needs of SMEs. Also, the firms should prepare their annual statements to provide a better insight of the businesses for policy initiatives.

The situation of financing from informal sources and trade credit can be enhanced by good market reputation of business and innovative business plans. The owner of the firms should be aware of the facts and should plan financial strategies accordingly.

5.4- Limitations of the study

The present study has some empirical limitations. The study has measured firm's performance in labour productivity whereas other parameters of firm's performance such as Annual sales growth, Firm's Innovation and firm size distribution, Returns on equity, Returns on invested capital Liquidity, Profit margin and Returns to assets can also be analyzed. Size of the firm is considered according to the criteria of The World Bank (i.e. number of employees of the firm). Further, the size of the firm can also be examined as assets of the firm or annual sales returns to provide better scenario about the impact of size on firm's performance. Moreover, due to the omitted variables, the model is not good fit. The goodness of fit can be increased by including other variables related to financial condition of the firms.

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