

**SMEs in Algeria and the constraints of access to bank financing:
empirical survey**

المؤسسات الصغيرة والمتوسطة في الجزائر وقيود تمويلها المصرفي: دراسة ميدانية

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Abstract:

Several internal factors for SMEs have been identified through empirical work as determinants of access to bank financing that significantly increase the probability of their financial exclusion by banks. In this work, we try to better understand the financing obstacles of small and medium enterprises in Algeria and shed light on the reasons for their financial exclusion by banks on the basis of the internal factors of these institutions. The obstacles to financing SMEs are generally the results of their internal specificity (size, age, sector of activity, informational opacity...) as well as their behavioral nature.

Keywords: SME; Difficulty in accessing bank finance; Credit rationing; Empirical survey; Algeria.**JEL Classification Codes:** G2, G3

ملخص:

تم تصنيف العديد من العوامل الداخلية للشركات الصغيرة والمتوسطة من خلال العمل التجريبي كمحددات للوصول إلى التمويل المصرفي والتي تزيد بشكل كبير من احتمال إقصائها المالي من طرف البنوك.

في هذا العمل نحاول أن نفهم بشكل أفضل المعوقات التمويلية للمؤسسات الصغيرة والمتوسطة في الجزائر وتسليط الضوء على أسباب استبعادها المالي من قبل البنوك على أساس العوامل الداخلية لهذه المؤسسات. إن العوائق التي تحول دون تمويل المشاريع الصغيرة والمتوسطة الحجم هي بشكل عام نتائج خصوصياتها الداخلية (الحجم، العمر، قطاع النشاط، عتامة المعلومات...) فضلاً عن طبيعتها السلوكية.

كلمات مفتاحية: المؤسسات الصغيرة والمتوسطة، صعوبات التمويل المصرفي، تقنين الائتمان، دراسة ميدانية، الجزائر

تصنيفات JEL : G2، G3

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INTRODUCTION:

In most countries, commercial banks are the main source of financing for SMEs; access to bank credit is therefore an essential condition for the development of this sector (OECD, 2007). In fact, external financing of SMEs remains mainly dependent on the bank, which remains the preferred, or even sole, interlocutor for SMEs. The bank-SME relationship is often favoured by the structure of the banking market and the difficulties of access to alternative sources of financing, as suggested by Levratto (1990), Van Pham (2010), Tlili (2012), Dietsch and Mahieux (2014).

This situation is, without doubt, even more true in Algeria where the financial system is so far totally dominated by banks, which leaves SMEs little room for manoeuvre in the search for alternative financing to bank loans. It is traditionally the credit institutions that provide the vast majority of the capital needed by SMEs. In parallel with the management and provision of means of payment, the bank acts as an intermediary between savers on the one hand and risky borrowers engaged in a process or intertemporal expenditure on the other (Ziane, 2004). There is thus a transformation of risks at lower cost through the information production function of the financial intermediary. This function is mainly materialised by the existence of a long-term customer relationship which is often described as a favourable element for the availability of financing for the SME.

In this work, we try to highlight the constraints of access of SMEs to bank financing in Algeria through a field study. In order to collect the qualitative and quantitative information necessary for the analysis of the problem of SME financing in Algeria, it seemed appropriate to us to use the technique of survey by sampling, which constitutes a method of collecting information from a representative sample of the population by using an administration mode.

Following the realisation of an initial sample, the second phase of the approach consisted in the elaboration and sending of a questionnaire to the 200 SMEs selected in the wilaya of Béjaia. In order to test our hypotheses concerning the access of SMEs to sources of financing for their investments, we had to collect information specific to each enterprise, taking into account the limited attention and time that the managers were likely to give to our approach.

The survey lasted three months and was conducted by ourselves, sometimes by direct contact with the respondents in order to explain our research objective and to ensure the decoding of the questions and provide the necessary explanation to the respondents if necessary.

1- Sources of debt financing solicited by SMEs

Regarding the companies that actually approached a bank for a loan, the survey attempted to identify the nature of the loans requested. Some of the companies interviewed have applied for bank credit to finance investments, but also to finance their operating cycle.

Table (1) : Types of bank loans requested by SMEs

| Type of credit | Funding requested | | | Missing (DAP* ou NR**) | |
|-------------------------------|-------------------|-------|---------|------------------------|------|
| | Number | % | Valid % | Number | % |
| Short term loan | 61 | 59,8% | 66,3 | 10 | 9,8 |
| Medium or long term loan | 73 | 71,6 | 79,3 | 10 | 9,8 |
| Leasing | 27 | 26,5 | 30,3 | 13 | 12,7 |
| Other types of debt financing | 5 | 4,9 | 5,6 | 13 | 12,7 |

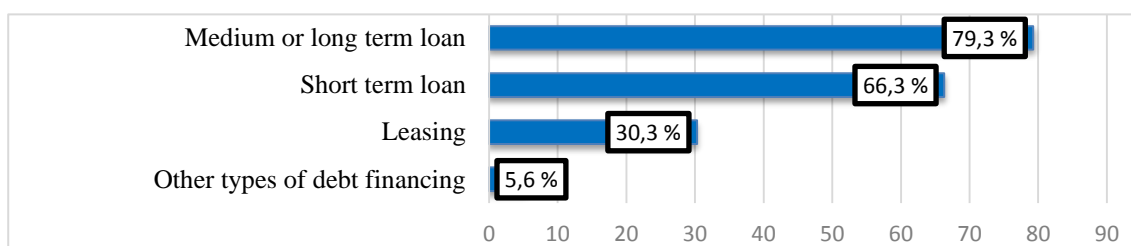
Source : Made from survey data.

DAP* : Question does not apply to respondent NR** : No response

The table provides an order of magnitude of debt financing and its distribution according to the three main types of SME financing, namely: short term loan, medium or long term loan and leasing. SMEs rely much more on long or medium term borrowing at 79% and operating credit at 66%.

The graph below provides a more striking view of the different types of bank financing requested by SMEs.

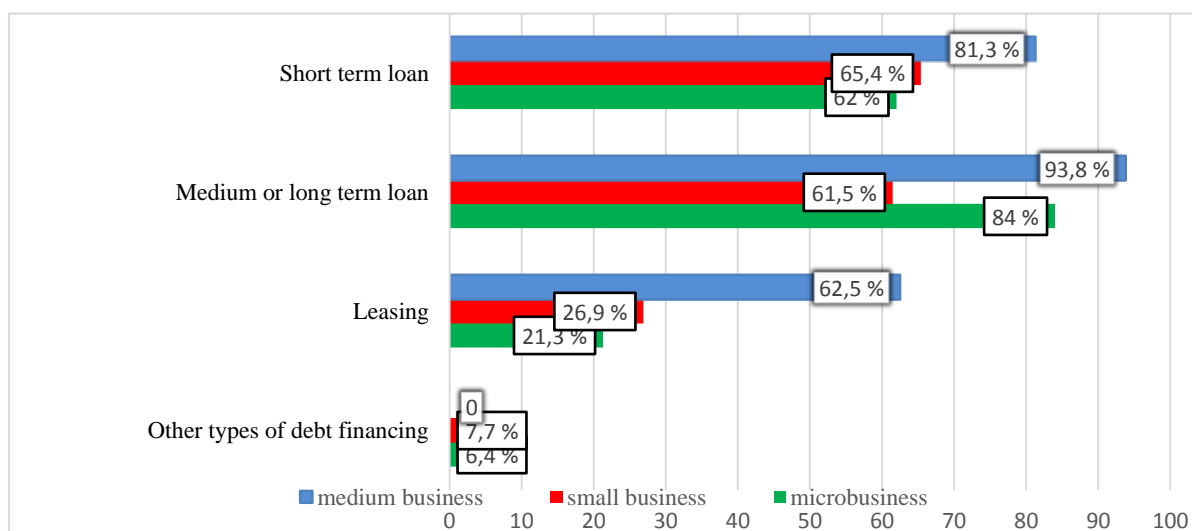
Fig (1) : Types of bank loans requested by SMEs



Source : Based on survey data.

The following figure shows a breakdown of SME debt financing by type of financing and size of business.

Fig (2) : Types of bank financing requested by SMEs according to their size



Source : Based on survey data.

- Medium-sized enterprises are those which most requested medium- or long-term loans (93.8%), followed by micro-enterprises (84%).

-Medium-sized businesses are the ones that have requested short-term loans the most (81.3%), followed by small businesses (65.4%).

- Leasing is also much more requested by medium-sized enterprises (62.5%) against 21.3% among micro-enterprises.

We will verify through the independence tests, whether there is a relationship between the use of bank loans (explained variable) and the characteristics of SMEs (the variables defining SMEs) and those linked to entrepreneurs (owners / managers of SME).

Chi-square is used to estimate the strength of the relationship between the variables. In this kind of test, the default null hypothesis (H0) is that the two variables are independent. In other words, there is no relationship between the use of SMEs to bank loans to finance their investments and the characteristics of SMEs as well as those of their owners.

The decision rule for the SPSS test is based on a level of statistical significance, the p-value. If p is less than 0.05, we reject H0. The conclusion will therefore be that, if p is less than 0.05, there seems to be a link between the two variables. The strength of the relationship can then be demonstrated by V of Cramer.

Table (2) : Chi-square tests about existence of relationships between the use of bank loans and the characteristics of SMEs and entrepreneurs

| Characteristics of SMEs | Recours à l'emprunt bancaire pour le financement des investissements de l'entreprise | | | |
|--|--|-------------------|-------------------------------------|-------------|
| | Value | Degree of freedom | Asymptotic significance (bilateral) | V of Cramer |
| Company age | 5,917 ^a | 4 | 0,205 | / |
| Legal status | 1,690 ^a | 3 | 0,639 | / |
| Number of employees | 4,779 ^a | 2 | 0,092 | / |
| Turnover | 0,944 ^a | 2 | 0,624 | / |
| Total assets | 2,510 ^a | 2 | 0,285 | / |
| Activity area | 12,095 ^a | 15 | 0,672 | / |
| Existence of a Finance function within the company | 0,286 ^a | 1 | 0,593 | / |
| Size of the company * | 3,769 ^a | 2 | 0,152 | / |
| Development phase | 2,804 ^a | 4 | 0,591 | / |
| Duration of the relationship with the main credit provider | 3,689 ^a | 2 | 0,158 | / |
| Age of owner / manager | 0,830 ^a | 3 | 0,842 | / |
| Gender of owner / manager | 2,308 ^a | 1 | 0,129 | / |
| Level of education of the owner / manager | 3,486 ^a | 4 | 0,480 | / |
| Owner / manager experience in the business | 3,147 ^a | 3 | 0,369 | / |
| The owner is himself the manager of the company | 0,065 ^a | 1 | 0,799 | / |

Source : Based on survey data .

The results of the chi-square tests indicate that there is no relationship between the use of bank loans for financing investments and the different characteristics of SMEs and those of their owner-managers.

Obviously, the odds or risk of declaring the responses of SMEs to the use of credit for investment finance to be different, when they are equal, are greater than the significance level of 5%. Consequently, we must accept the null hypotheses (H0) and conclude that within SMEs the use of bank loans does not depend on the characteristics of SMEs or those of their owner-managers.

2- Perception of bank financing conditions by SMEs

To analyze the financing conditions, SMEs were questioned on several dimensions: documents required, interest rates, the length of negotiation of credit terms, the requirement for guarantees, etc.

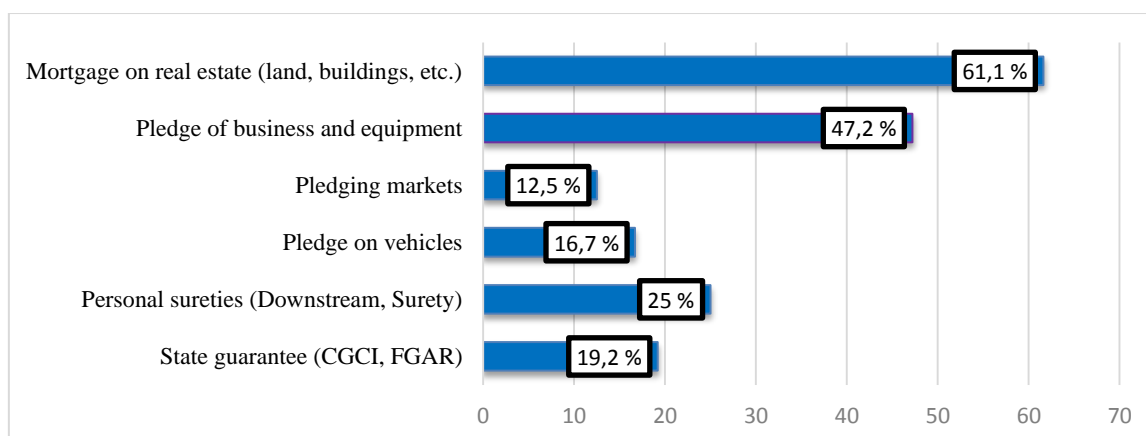
2-1- Guarantee requirement

The requirement for guarantees directly affecting the assets of the company or entrepreneur is considered one of the main obstacles to financing SMEs. Banks often require SMEs looking for financing to offer mortgages on property, including land, buildings that can be used to repay the loan, or personal collateral. Indeed, more than 78% of SMEs say that their bankers have required guarantees in their efforts to obtain bank financing. The presentation of guarantees seems to be the most important criterion for obtaining a favorable financing decision. Banks in Algeria rely more on guarantees than on analysis in terms of future project cash flows. In addition to the question of banks' analytical competence, there are the difficulties SMEs have in complying with transparent accounting.

2-1-1- Nature of guarantees required for SMEs by credit institutions

In this context it is necessary to define what type of guarantees are required and accepted from the point of view of banks. This is highlighted in the following figure:

Fig (3) : Nature of guarantees required for SMEs by credit institutions



Source : Based on survey data.

Mortgage on real estate is the most demanded collateral and used by a greater number of SMEs to obtain bank credit (61.1%). This is followed by pledges of business and equipment at a rate of 47.2%. Vehicle pledges are required in 16.7% of cases.

2-1-2- Impression of SME managers as to the guarantees required by banks

Among companies that have been asked for guarantees by credit institutions, 53% say that the required collateral thresholds are not within the company's reach and that they have difficulty providing them. The proportion of micro-enterprises having experienced difficulties in providing the guarantees requested by the banks is greater, it is 60.71% against 54.54% for small enterprises and 37.5% for medium-sized ones.

2-2- Credit margins or costs

The interest rates on the loans offered are relatively similar; with regard to short-term loans, they are between 6.25 and 8%, depending on the duration of the loan requested and the nature of the financing request file.

With regard to medium-term loans, the rates are slightly lower and vary for the most part between 5.25% and 8%, always in relation to the duration and the nature of the financing request file.

There is no real difference depending on the size of the company, nor on the sector of activity or the age of the company. The influence of the interest rate, in particular in a company, can be seen through the forecast income statement and other financial statements. In fact, interest constitutes financial charges payable monthly or quarterly according to the terms of the contract and therefore affects the profitability of the company. Thus, any increase in the interest rate by the bank increases the financial charges of the company, followed by a drop in financial income and then in net income. Anything that subsequently causes a drop in the company's financial profitability. What does not fit with its preestablished objectives.

However, the rate is only one element of the cost impact of a loan on a business. It is necessary to measure the weight of the levies on the profits of the company, that is to say, the weight of the financial charges compared to their results. These also include the base rates charged, the various fees and commissions plus VAT, etc.

It then appears a significant burden of financial charges for SMEs. This justifies the fact that more than three quarters of SMEs, that is 76.3% of respondents consider that the credit costs applied by banks are high. Once again, this cost is significantly different depending on the size of the companies, to the detriment of the smaller ones.

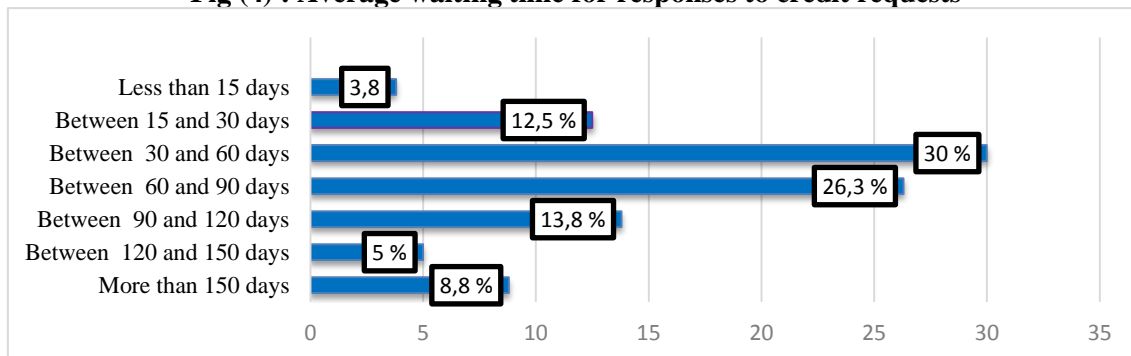
2-3- Administrative slowness and complexity of procedures

Above high interest rates and heavy collateral, bankers may seek to address their uncertainty about the future performance of the funded business and its repayment capacity by imposing restrictive covenants in contracts. Lenders will protect themselves and thus reduce agency problems by imposing a number of constraints in contracts that will significantly limit the freedom of the owner-manager to use the company's cash.

2-3-1- Waiting time for responses to credit requests

The following figure presents the opinion of SMEs on the time elapsed between the submission of the application for funding and the bank's final response. SME waits on average two months and 25 days to receive a response.

Fig (4) : Average waiting time for responses to credit requests



Source : Based on survey data.

The length of time it takes to negotiate the credit and waiting terms before funding is accepted or refused by the lender is relatively long, with about 54% of SMEs reporting waiting times of 60 days or more. Only 16% of SMEs say wait times do not exceed 30 days.

2-3-2- Documents required by banks

The importance attached to the availability of information on economic, financial or even administrative flows may be justified in that it increases transparency and reduces reluctance. This position is supported by all the theoretical and empirical developments of our literary journal. Nevertheless, the issue of the dissemination of information and the provision of documents to banks may be perceived as a problem for SMEs.

There is no doubt that a large proportion of SMEs applying for credit during the period 2016-2020, or 70,3 % said that the documents required by banks to obtain a loan were numerous. In addition to the usual accounting documents, supporting documents are required (legal and administrative documents, commercial documents,...).

3- SMEs and access to bank loans

The analysis of the survey data shows that the accessibility of credit is mainly correlated with the type of financing sought. Among the companies that approached a credit institution for investment financing during the period 2016-2020, the results of their approaches are presented in the following table:

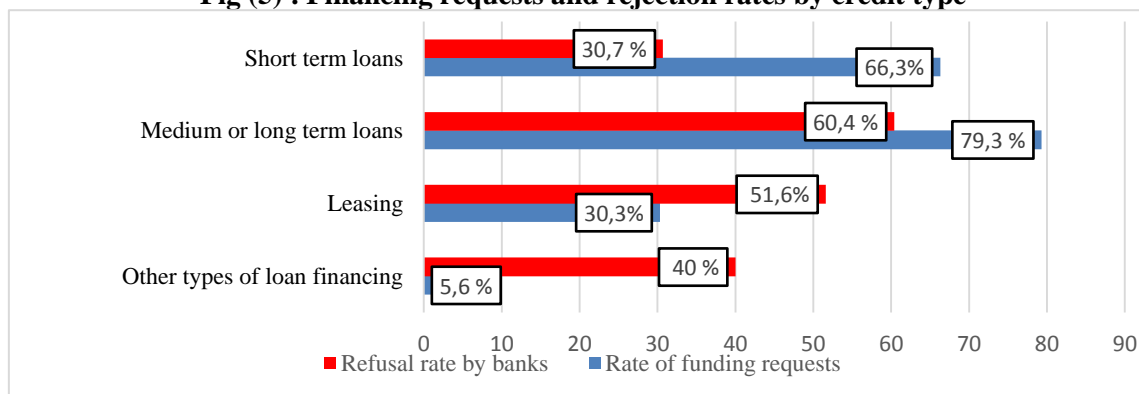
Table (3): Funding and acceptance requests rates by type of credit

| Type of credit | Application rate | Acceptance rate |
|-------------------------------|------------------|-----------------|
| Short term loans | 66,3 | 69,3 |
| Medium or long term loans | 79,3 | 39,6 |
| Leasing | 30,3 | 48,4 |
| Other types of loan financing | 5,6 | 60,0 |

Source : Based on survey data.

Thus, SMEs have much easier access to short-term debt than to long-term debt.

Fig (5) : Financing requests and rejection rates by credit type



Source : Based on survey data.

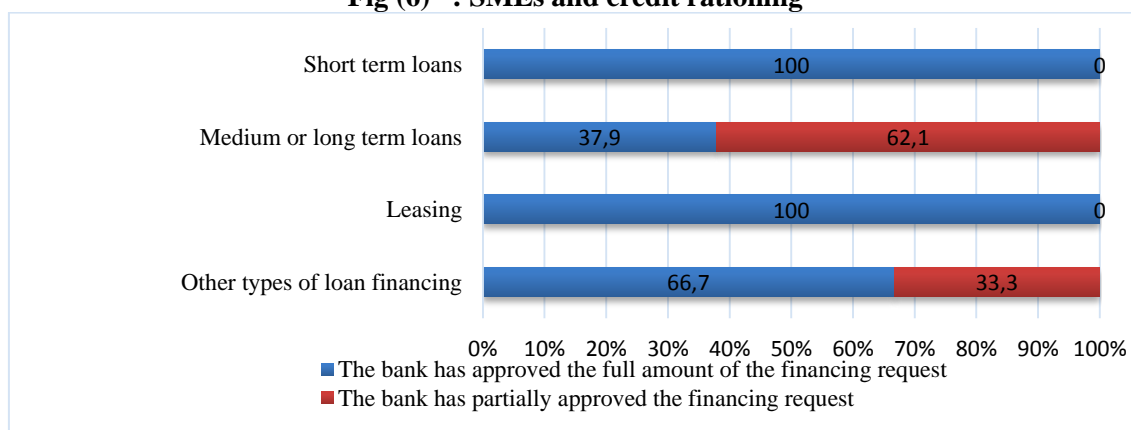
During the 2016-2020 period, several SMEs were faced with a refusal concerning at least one of their credit requests. The approval rate for short-term loan applications is much higher than that for medium and long-term financing. In a general way :

- 60.4% of medium and long-term loan applications were not accepted;
- 51.6% of leasing applications were unsuccessful;
- 30.7% of short-term loan applications were declined.

Analysis of the survey data also verifies that access to credit is mainly correlated with some variables related to the characteristics of businesses. Younger and smaller SMEs are more likely to get only part of the financing they request, or to have their requests rejected outright. Indeed, the highest rejection rates were recorded among micro-enterprises and SMEs established for less than three years.

For accepted credit applications, we asked survey participants to further detail the responses depending on whether the bank approved the full amount of the funding requests or in part. Based on the relatively small number of responses for each amount, it is difficult to come to any meaningful conclusions about credit rationing. The main reflection consists in concluding that more the amount requested to finance investments increases, higher is the rationing rate. For short-term borrowing, respondents said that banks have approved the full amount of funding requests.

Fig (6) : SMEs and credit rationing



Source : Based on survey data.

Regarding the medium- or long-term credits obtained, 62% of the SMEs reported that the applications were partially approved by the credit institutions, personal contributions were required.

3-1- Access to credit according to the SME's profile

We examine access to credit as a function of variables related to SME characteristics.

3-1-1- Access to financing by company size

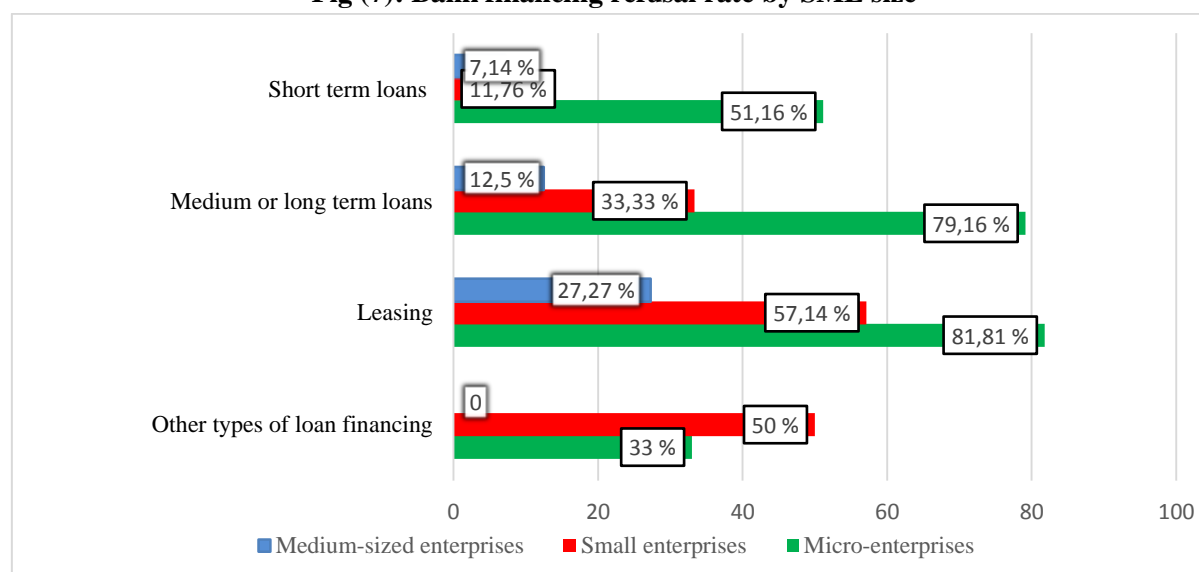
Among the SMEs included in the survey, micro-enterprises are more likely than other categories of SMEs to face difficulties when trying to obtain bank credit. In other words, accessing bank loans is even more difficult as the business is small. Indeed, 65% of micro-enterprises were refused a bank loan during the period 2016-2020 against 47.05% for small enterprises and 22.5% for medium-sized enterprises.

Table (4): Access to bank financing according to the size of the SME

| Type of bank financing | Number | Micro-enterprises | Small enterprises | Medium-sized enterprises |
|-------------------------------|--------------|-------------------|-------------------|--------------------------|
| Short term loans | Request rate | 62,00 | 65,38 | 81,25 |
| | Refusal rate | 51,16 | 11,76 | 7,14 |
| Medium or long term loans | Request rate | 84,00 | 61,54 | 93,75 |
| | Refusal rate | 79,16 | 33,33 | 12,5 |
| Leasing | Request rate | 21,28 | 26,92 | 62,50 |
| | Refusal rate | 81,81 | 57,14 | 27,27 |
| Other types of loan financing | Request rate | 6,38 | 7,69 | 0,0 |
| | Refusal rate | 33,3 | 50,0 | - |

Source : Based on survey data.

Fig (7): Bank financing refusal rate by SME size



Source : Based on survey data.

- 51% of micro-enterprises were refused short-term credit compared to 12% for small enterprises and 7% for medium-sized enterprises.
- 79% of micro-enterprises had their applications for medium- or long-term credit refused, compared to 33% for small enterprises and 12.5% for medium-sized enterprises.
- 82% of micro-enterprises had their applications for leasing refused compared to 27% for medium enterprises.

Regarding credit rationing by banks, it seems to occur for a higher share of micro-enterprises than for small and medium-sized enterprises. Indeed, for medium- or long-term credit, for example, 66.7% of micro-enterprises that obtained medium- or long-term credit said that lenders partially approved their financing requests, compared to 42.9% for small enterprises and 61.5% for medium-sized enterprises.

A priori, according to the previous results, the size of the firm influences access to debt financing. We will proceed, through chi-square independence tests, to verify the existence of a statistically significant relationship between access to bank credit and the size of the SME (measured by each of its components taken separately and measured by the three criteria retained jointly in the definition of the SME in Algeria).

Table (5): Chi-square tests on the existence of a relationship between access to bank finance and SME size

| Characteristics of SMEs | Access to short-term credit Pearson Chi-square | | | |
|-------------------------|---|-------------------|--|---|
| | Value | Degree of freedom | | Asymptotic significance (Bilateral) Cramer's V |
| Number of employees | 18,856 ^a | 2 | | 0,000 0,501 |
| Turnover | 11,312 ^a | 2 | | 0,003 0,388 |
| Actif total | 14,230 ^a | 2 | | 0,001 0,436 |
| Company size * | 20,026 ^a | 2 | | 0,000 0,517 |
| Characteristics of SMEs | Access to medium and long-term credit Pearson Chi-square | | | |
| | Value | Degree of freedom | | Asymptotic significance (Bilateral) Cramer's V |
| Number of employees | 45,895 ^a | 2 | | 0,000 0,710 |
| Turnover | 31,851 ^a | 2 | | 0,000 0,592 |
| Actif total | 40,307 | 2 | | 0,000 0,666 |
| Company size * | 43,252 ^a | 2 | | 0,000 0,689 |
| Characteristics of SMEs | Access to leasing Pearson Chi-square | | | |
| | Value | Degree of freedom | | Asymptotic significance (Bilateral) Cramer's V |
| Number of employees | 11,544 ^a | 2 | | 0,003 0,610 |
| Turnover | 6,686 ^a | 2 | | 0,035 0,464 |
| Actif total | 14,614 ^a | 2 | | 0,01 0,687 |
| Company size * | 9,766 ^a | 2 | | 0,008 0,561 |

Source : Based on survey data.

* According to the definition of the SME in Algeria.

Depending on the size of the SME, the probability or risk of declaring the responses of micro, small and medium-sized enterprises to access to medium- and long-term credit to be different when they are equal is close to zero, well below the 5 % significance level of the human sciences. Consequently, it is appropriate to reject the null hypothesis (H0) and conclude that within SMEs access to medium- and long-term credit depends on the size of the company (using the three criteria for defining SMEs based on the number of employees, turnover and total assets) or based on each of these criteria taken individually.

Cramer's V is a transformation of the Chi-square to make it easier to interpret. For the variable size of the enterprise measured by the three criteria at the same time, we have $V > 0.689$, the minimum (independence) being 0 and the maximum 1, there is therefore, at the level of the sample, a fairly significant relationship between access to medium or long-term credit and the size of the enterprise. This result is also valid if we take the sole criterion of the number of employees as a measure of the size of the firm, with Pearson's Chi-square statistic (45.895) for a significance value of 0.000 and Cramer's V of 0.710.

With regard to access to leasing, the results of this survey indicate that there is a relationship between the size of the company (measured either by the three criteria at the same time or by each of the criteria taken individually) and access to this form of financing (two-sided asymptotic significance of less than 5%).

As it has always been found in the literature review, by several authors such as (Levratto, 1990; Colot et al. 2010; Smolarski and Kut, 2011; Miloudi and Benkraiem, 2014) size has a positive influence on access to debt. This was revealed by the empirical results of our study, which consider that larger is the firm, greater its financial capacity, and this plays in its favour in access to bank credit.

These results confirm (for bank loans) the first hypothesis (H1) of this study, i.e. that the conditions of access to sources of financing vary according to the size of the enterprise, smaller is the size of the enterprise, more there is difficulties to access financing.

The results also confirm the hypothesis (H2) concerning access to finance according to the level of equity capital.

With regard to access to credit (in all its forms) according to the company's turnover, the table shows us that the values of the chi-square statistic are significant ($p < 0.05$), indicating that there is a significant relationship between the turnover of the SME and access to short-term and medium or long-term bank credit. However, V de Cramer (0.388 for access to short-term credit and 0.592 for access to medium or long-term credit) indicates that these relationships are not very important.

Under the circumstances, hypothesis (H7) according to which it is assumed that companies with low levels of turnover are those which suffer more from difficulties of access to financing and which have the lowest acceptance rates of their requests for credit from the banks are confirmed concerning access to short-term and medium or long-term bank financing.

3-1-2- Access to financing depending on the age of the company

Regarding the variable "Age of the company" and its effect on access to credit, the following should be highlighted:

- 40% of companies established for less than 5 years have seen their short-term credit applications refused compared to 30% for companies whose age is between 5 and 10 years and 22% for companies aged between 10 and 20 years.
- Around 67% of companies established for less than 3 years have seen their requests for medium and long-term credit refused compared to 52.38% for companies whose age is between 10 and 20 years.
- 75% of companies established for less than 5 years have had their leasing applications refused compared to 33.33% for companies between 5 and 10 years old.

At first glance, it can be said that the age of the SME has a positive influence on access to bank loans.

Table (6) : Tests for the existence of a relationship between the age of the SME and its access to bank financing

| Type d'emprunt bancaire | Access to credit according to the age of the SME | | | |
|---------------------------|--|-------------------|-------------------------------------|------------|
| | Value | Degree of freedom | Asymptotic significance (Bilateral) | Cramer's V |
| Short term loans | 13,898 ^a | 4 | 0,008 | 0,430 |
| Medium or long term loans | 25,209 ^a | 4 | 0,000 | 0,526 |
| Leasing | 2,925 ^a | 4 | 0,570 | / |

Source : Based on survey data.

The Chi-square tests confirm the existence of a relationship between the age of the enterprise and access to medium or long-term credit and short-term credit. In fact, the probability or risk of declaring the answers of SMEs regarding access to medium and long-term credit and short-term credit to be different when they are equal is close to zero. This probability of making an error is therefore below the 5% significance level. Consequently, the null hypothesis (H0) must be rejected and it must be concluded that within SMEs, access to medium and long-term credit and access to short-term credit depend on the age of the firm.

Consequently, the hypothesis (H3) that younger is the company, more difficult it is to access financing (particularly bank financing) for its investments is approved. This result contradicts the predictions of trade-off theory (TOT), in that older firms have a better reputation and more experience which can reduce agency costs through a positive signal.

3-1-3- Access to financing depending on the sector of activity

Looking at the various sectors in which SMEs operate, it can be seen that it is more likely to have medium or long-term loan applications refused in enterprises that are active in the transport and communication (83.3%), trade (76.9%), miscellaneous industry (71.4%), construction and public works (69.2%) sectors, than in those that operate in the agriculture and fisheries (60%) and agri-food industry (37.5%) sectors. Nevertheless, the Pearson Chi-square statistic (17.567) with a significance value of 0.286 is above the alpha level (0.05)

which suggests that there is no evidence to support the existence of a significant relationship between the sector of activity of the SME and its access to medium and long term bank credit. The same observation is valid for access to leasing credit with the Pearson Chi-square statistic (13.982) for a significance value of 0.234.

Therefore, the hypothesis H8 according to which it is assumed that certain sectors of activity (mainly operating in industry, carrying out research and development activities) would require high amounts of investment that would not be fully financed by the internal resources of the SMEs, are likely to present financing problems and are prone to credit rationing is not approved.

3-1-4- Access to bank financing according to other characteristics of SMEs

In addition to the variables studied above, there are others that may explain the access of SMEs to bank loans, these are subjected to chi-square independence tests and the results are presented in the following table.

Table (7) : Access to bank financing according to other characteristics of SMEs

| Characteristics of SMEs | | | Access to short-term credit Pearson Chi-square | |
|--|---------------------|-------------------|---|------------|
| | Value | Degree of freedom | Asymptotic significance (Bilateral) | Cramer's V |
| Legal status of the company | 4,463 ^a | 3 | 0,216 | / |
| Existence of a finance and / or accounting function or department within the company | 3,231 ^a | 1 | 0,072 | / |
| Duration of the relationship with the funder | 4,142 ^a | 2 | 0,126 | / |
| Characteristics of SMEs | | | Access to medium and long-term credit Pearson Chi-square | |
| | Value | Degree of freedom | Asymptotic significance (Bilateral) | Cramer's V |
| Legal status of the company | 7,524 ^a | 3 | 0,057 | / |
| Existence of a finance and / or accounting function or department within the company | 14,480 ^a | 1 | 0,000 | 0,451 |
| Duration of the relationship with the funder | 20,458 | 2 | 0,000 | 0,474 |
| Characteristics of SMEs | | | Access to leasing Pearson Chi-square | |
| | Value | Degree of freedom | Asymptotic significance (Bilateral) | Cramer's V |
| Legal status of the company | 0,712 ^a | 3 | 0,870 | / |
| Existence of a finance and / or accounting function or department within the company | 4,014 ^a | 1 | 0,045 | 0,360 |
| Duration of the relationship with the funder | 3,114 ^a | 2 | 0,211 | / |

Source : Based on survey data.

Among the variables studied, some have an effect on the access of SMEs to bank credit, namely the existence or not of a finance and/or accounting function or department within the enterprise. The existence of a finance and/or accounting function reflects the degree of opacity or transparency of the SME and its capacity or not to produce the financial information required by the lenders.

The values of the chi-square statistics for access to LMT credit and access to leasing are significant ($p < 0.05$), but Cramer's V indicates that these relationships are weak ($V = 0.451$ for access to LMT credit and 0.360 for access to leasing). The results of the Chi-square tests also allow us to conclude in favour of the existence of a significant relationship between the SME's long-term relationship with its main financial backer and its access to medium and long-term bank credit. This finding does not hold for access to leasing and short-term credit since the Pearson Chi-square statistics are greater than 0.05 .

3-2- Access to credit according to the profile of entrepreneurs

The results of the chi-square tests show the independence between access to finance in its different forms and the set of characteristics related to the entrepreneur.

Indeed, contrary to what one might expect, firms with educated owner-managers, experienced in their businesses or sectors of activity, are more likely to obtain credit, the chi-square statistic is not significant ($p > 0.05$) for all variables studied.

Therefore :

- Contrary to what is discussed in most gender discriminatory debates on conditions and access to finance, which argue that men are more likely to access sources of finance than women, the results of our study argue that the effect of the gender of the manager on the likelihood of having bank finance is not significant.

Thus, the hypothesis (H9) which assumes the existence of a positive relationship between the age of the owner/manager and access to finance, particularly bank finance, is not confirmed.

- Hypothesis (H10) which assumes that female owners have more difficulties in accessing finance is not confirmed.

- The hypothesised relationship (H11) between the level of education of the SME owner/manager and access to finance, where a high level of education is an expression of easy access to finance, is not approved.

- The hypothetical relationship (H12) between the experience of the entrepreneur and access to bank credit is not confirmed.

4- Logistics modeling: the determinants of access to bank financing

Based on variables related to the profile of SMEs and their owners, we used logistic regression to identify the factors that may explain the likelihood of an SME obtaining bank financing. The dependent variable is obtaining bank financing (or not); the independent variables are the variables presented in the statistical tests above. We first run the regression model with the Forward Stepwise (LR) method which establishes the base model by selecting the variables significantly associated with obtaining bank financing by the the stepwise

selection method based on the likelihood ratio. This step allows us to identify the variables that are significant for obtaining bank financing. We present the significant results selected by all steps of this method, and the last step with all significant and non-significant variables in table (9). The model can be written as follows:

$$Y_i = \beta_0 + \beta_1 A_3 + \beta_2 A_4 + \beta_3 A_5 + \beta_4 A_6 + \beta_5 A_7 + \beta_6 A_8 + \beta_7 A_9 + \beta_8 A_{10} + \beta_9 B_1 + \beta_{10} B_2 + \beta_{11} B_3 + \beta_{12} B_4 + \beta_{13} B_5 + \beta_{14} B_5 + \beta_{15} C_1 + \beta_{16} D_4 + \epsilon_i$$

4-1- Exploratory study of variables

The table below shows the results of the two-tailed tests between each of the explanatory variables and the dependent variable "access to bank loan" obtained from the SPSS v 21 software and corresponding to step 0 of the regression.

Access to bank loans is divided into three parts depending on the nature of the loan requested by the SME, short-term credit, long or medium-term credit or leasing.

Table (8) : Two-tailed tests between explanatory and dependent variables

| Explanatory variables | Explained variable 1 = Access to LMT credit | | | Explained variable 2 = Access to leasing | | | Explained variable 3 = Access to short-term | | |
|-----------------------|---|-----|--------|--|-----|--------|---|-----|--------|
| | Score | DDL | SIG | Score | DDL | SIG | Score | DDL | SIG |
| A.3 | 23,830 | 1 | 0,000* | 2,201 | 1 | 0,138 | 12,318 | 1 | 0,000* |
| A.4 | 2,901 | 1 | 0,089 | 0,203 | 1 | 0,652 | 1,693 | 1 | 0,193 |
| A.5 | 43,626 | 1 | 0,000* | 11,543 | 1 | 0,001 | 16,907 | 1 | 0,000* |
| A.6 | 30,708 | 1 | 0,000* | 6,423 | 1 | 0,011 | 11,032 | 1 | 0,001* |
| A.7 | 39,843 | 1 | 0,000* | 14,600 | 1 | 0,000 | 12,717 | 1 | 0,000* |
| A.8 | 2,698 | 1 | 0,100 | 1,917 | 1 | 0,166 | 2,229 | 1 | 0,135 |
| A.9 | 18,480 | 1 | 0,000* | 4,014 | 1 | 0,045 | 3,231 | 1 | 0,072 |
| A.10 | 40,711 | 1 | 0,000* | 9,764 | 1 | 0,002 | 17,646 | 1 | 0,000* |
| B.1 | 3,766 | 1 | 0,052 | 0,005 | 1 | 0,944 | 3,816 | 1 | 0,051* |
| B.2 | 1,339 | 1 | 0,247 | 0,969 | 1 | 0,325 | 0,361 | 1 | 0,548 |
| B.3 | 0,022 | 1 | 0,881 | 0,479 | 1 | 0,489 | 0,023 | 1 | 0,880 |
| B.4 | 0,413 | 1 | 0,520 | 1,777 | 1 | 0,183 | 0,324 | 1 | 0,569 |
| B.5 | 0,164 | 1 | 0,685 | 4,092 | 1 | 0,043 | 1,061 | 1 | 0,303 |
| C.1 | 4,789 | 1 | 0,029* | 2,320 | 1 | 0,128 | 3,751 | 1 | 0,053 |
| D.4 | 16,105 | 1 | 0,000* | 3,112 | 1 | 0,078 | 4,140 | 1 | 0,042* |
| Overall statistics | 51,988 | 15 | 0,000* | 25,485 | 15 | 0,044* | 27,661 | 15 | 0,024* |

Source : Based on survey data.

* significant at the 5% level.

At the 95% confidence level, the results allow us to see that most of the variables are significant, so they would probably contribute to the improvement of the models.

4-2- Calculating the probability of access to bank loans

The stepwise top-down (Wald) regression method was used for the logistic regression. The SPSS v21 software eliminates the least significant variable at each step until a perfect fit for

the model is detected. All the variables were introduced in the first step, even those that were not significant in the previous step.

4-2-1- Probability of access to medium or long term credit

At the end of the iterations, the software stopped at step 13 and retained only 02 variables out of the 15 introduced that are significant and predict the probability of SMEs accessing long or medium term debt.

Table (9) : Variables in the equation access to medium or long term credit

| | | A | E.S. | Wald | ddl | SIG. | Exp (B) |
|-----------------------|----------|--------|-------|--------|-----|--------|---------|
| Stage 1 ^a | | | | | | | |
| ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ |
| Stage 13 ^a | A.6 | 1,283 | 0,472 | 7,394 | 1 | 0,007* | 3,606 |
| | A.7 | 1,763 | 0,462 | 14,568 | 1 | 0,000* | 5,828 |
| | Constant | -6,536 | 1,201 | 29,632 | 1 | 0,000* | 0,001 |

Source : Based on survey data.

* significant at the 5% level.

The variables retained and introduced in the equation of the model of SMEs' access to medium- or long-term bank loans at the 13th stage, in addition to the constant, are: the firm's turnover and total assets.

$$p (Y_1 = 1 / X) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2)}}$$

is the probability that the event access to medium or long term credit occurs for given values of Xi (set of explanatory variables of the model).

From this estimation, the following model can be extracted to explain SMEs' access to medium- or long-term bank loans: The SME's access to medium- or long-term credit is a function of its turnover and the total amount of its assets.

$$\text{Logit}(p) = \ln \left[\frac{p}{1-p} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

$$Y_1 = - 6,536 + 1,283 A_6 + 1,763 A_7 + \varepsilon i$$

Both variables were selected with a positive weighting. Indeed, higher is the level of turnover and total assets of the SME, higher is the discrimination and higher is the probability of access to LMT credit.

The estimator of β_1 provides the odds ratio when the company's turnover varies by one level.

$$RC = \exp(\beta_i)$$

For the variable Turnover : $RC = \exp(\beta_1) = 3,606 > 1$

For the variable Balance sheet total: $RC = \exp(\beta_2) = 5,828 > 1$

Access to medium and long-term bank financing increases with the increase in the level of the company's turnover and the total of its balance sheet. Medium-sized enterprises are more likely to access medium and long-term bank financing than small enterprises, the latter have more access to finance than micro-enterprises.

4-2-2. Probability of access to leasing

At the end of the iterations, the following results were obtained at the end of step 13:

Table (10) : Variables in the access to leasing equation

| | | A | E.S. | Wald | DDL | SIG. | Exp (B) |
|-----------------------|----------|--------|-------|-------|-----|--------|---------|
| Stage 1 ^a | | | | | | | |
| ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ |
| Stage 13 ^a | A.7 | 3,496 | 1,249 | 7,833 | 1 | 0,005* | 32,986 |
| | B.5 | -2,609 | 1,243 | 4,407 | 1 | 0,036* | 0,074 |
| | Constant | -1,192 | 2,641 | 0,239 | 1 | 0,625 | 0,275 |

Source : Based on survey data.

* significant at the 5% level.

At the end of the thirteenth "step", the programme was able to discriminate between the SMEs of the sample and it retained two criteria which are presented in the access to leasing function as follows :

$$\text{Logit}(p) = \ln \left[\frac{p}{1-p} \right] = \beta_1 X_1 + \beta_2 X_2$$

$$Y_2 = 3,496 A_7 - 2,609 B_5 + \varepsilon_i$$

The SME's access to leasing is a function of the total amount of its assets as well as the quality of its entrepreneur if he manages the business himself or not.

The estimator of β_1 provides the odds ratio when the total amount of the firm's assets varies by one level.

$$RC = \text{ex}(\beta_1) = 32,986 > 1$$

The estimator of β_2 provides the odds ratio when the owner is himself a manager of his company.

$$RC = \text{ex}(\beta_2) = 0,074 < 1$$

4-2-3- Probability of access to short-term credit

At the end of the iterations, the following results were obtained in step 13:

Table (11) : Variables in the access to short-term credit equation

| | | A | E.S. | Wald | DDL | SIG. | Exp (B) |
|-----------------------|-----------|--------|-------|-------|-----|--------|---------|
| Stage 1 ^a | | | | | | | |
| ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ |
| Stage 13 ^a | A.8 | 0,124 | 0,071 | 3,083 | 1 | 0,079 | 1,132 |
| | A.10 | 3,144 | 1,063 | 8,741 | 1 | 0,003* | 23,188 |
| | Constante | -4,523 | 1,504 | 9,037 | 1 | 0,003* | 0,011 |

Source : Based on survey data.

* significant at the 5% level.

In this third model of SME access to short-term bank borrowing, only the SME size variable is significant.

$$p \left(Y_3 = \frac{1}{X} \right) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1)}}$$

is the probability that the event access to short-term credit occurs for given values of the explanatory variable of the model.

We can therefore extract from this estimation the following model to explain SMEs' access to short-term bank borrowing: the SME's Access to short-term credit is a function of its size.

$$\text{Logit}(p) = \ln \left[\frac{p}{1-p} \right] = \beta_0 + \beta_1 X_1$$

$$Y_3 = -4,523 + 3,144 A_{10} + \varepsilon_i$$

L'estimateur de β_1 permet d'avoir le l'odds ratio quand la taille de l'entreprise varie d'un niveau.

$$RC = \exp(\beta_1)$$

$$RC = \exp(\beta_1) = 23,188 > 1$$

The chances of accessing short-term bank financing increase with the increase in the size of the SME, measured jointly by the three criteria, number of employees, turnover and balance sheet total, according to the definition thresholds of the SME in Algeria. Medium-sized enterprises are more likely to have access to short-term bank financing than small enterprises, the latter having easier access to this mode of financing than micro-enterprises.

5- Factors explaining the refusal or rationing of credit to SMEs

In our study, it was a question of determining the main obstacles to the satisfaction of financing requests from SMEs through the main reasons for rejecting financing requests by credit institutions. Respondents were asked to choose, from a suggested list, the reasons given by credit institutions.

- The reason most often cited concerns the company's inability to provide the guarantees requested by the banks (51%). The securities constitute an accessory to the credit, apart from the financial guarantee sought at the level of the feasibility and profitability of the project, the first security will be sought at the level of the production tool or the production itself before resorting to the assets of the manager.

- The inadequacy of the company's own funds is nonetheless a determining factor in the decision to grant or reject a credit application; it is the second most frequently cited reason by 41.5% of respondents. The long-term solvency of a company remains linked to the level of its equity, which also constitutes, in the eyes of financing institutions, a criterion for assessing the level of commitment of the managers.

Undercapitalisation is one of the weaknesses of SMEs, which is partly explained by the scarcity of investment financing instruments.

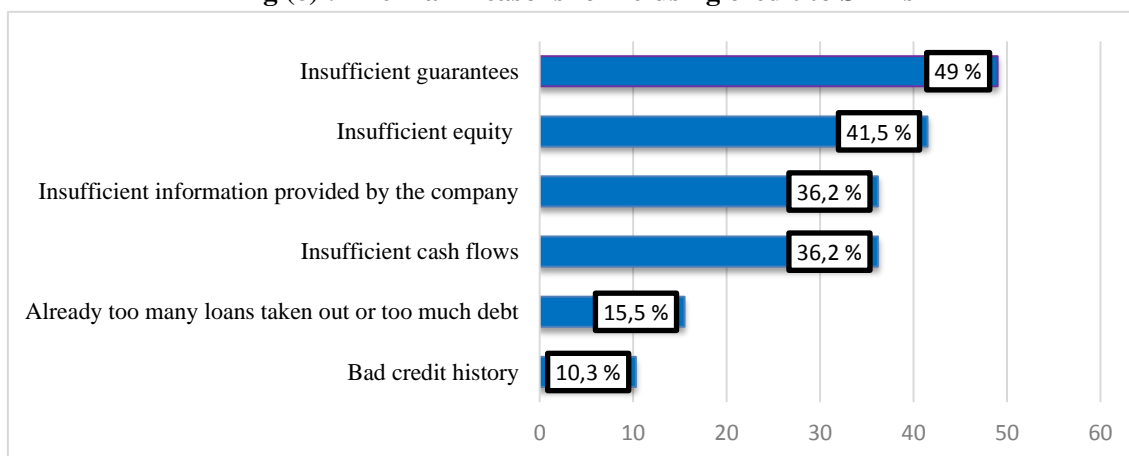
- For 36.2% of the enterprises, the refusal of their credit applications was justified by the insufficient information (financial and strategic information required by the banks) provided by the enterprise. On the issue of information, it is often stated that SMEs are more difficult to analyse than other enterprises.

- For 36.2% of enterprises, the refusal was motivated by the insufficient cash flow generated by their activity.

- For 15.5% of the enterprises, the reason for the non-completion of their credit applications was insufficient repayment capacity because they had already taken on too much debt.

- The companies interviewed and concerned by a refusal gave other reasons, including a poor credit history. Other justifications such as a bad business plan or a sector of activity considered risky are absent or rare.

Fig (8) : The main reasons for refusing credit to SMEs



Source : Based on survey data.

Conclusion:

Let us recall that our aim is to shed light on the problem of financing the investments of Algerian small and medium-sized enterprises, to measure the access of SMEs to financing, and to evaluate their financial problems as well as their degree of satisfaction with the services provided by financial institutions through information on their attempts to obtain different types of financing in order to contribute to the improvement of knowledge on the strategy for the promotion and development of SMEs in Algeria

The corroboration or refutation of the hypotheses is based on an empirical analysis carried out on a sample of SMEs in the wilaya of Béjaïa. The analysis of the survey data allowed us to highlight the conditions of financing of SME investments in Algeria and the difficulties of access to financing, especially banking financing. It emerges from this study that for a significant proportion of SMEs, the conditions for obtaining financing for their investments are difficult.

Bank financing, although it is the only source of external financing available in Algeria for SMEs, remains weak. The majority of the grievances of the SMEs towards the banking system concern the dysfunctions, the cumbersome nature and the excesses of the banks and their depressive impact on real activity: excessive guarantees, delays in the processing of credit files that are too long, interest rates that are too high, the reception of customers is insufficient, relations with foreign countries are insufficiently taken care of, lack of training of personnel, etc.

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