Joint project of the National Bank of the Republic of Belarus
and Alliance for Financial Inclusion (AFI)
«Measuring Access to Finance:
Developing Evidence-based Access Policies in Belarus»

Estimation and analysis of SME access to finance in the Republic of Belarus

National Survey Results

Minsk, National Bank of the Republic of Belarus

2012

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Introduction

The National Bank has commissioned a survey (the National Bank Survey) to study various aspects of financial inclusion of SMEs, including demand, access and use of financial services. The survey covered a sample of 1815 respondents. The Institute of Economic Research under the Ministry of Economy (State Research Institution, SRI), has performed an analysis of the survey data and constructed an econometric model of the Total Financial Inclusion Index (TFI) for SMEs. This Report presents the findings of this analysis.

1. Sample overview

The National Bank Survey was initially conducted among 2000 small and medium-sized enterprises (SMEs). From this initial sample, 1815 respondents were selected based on the number of employees and annual sales[1]. Of this final sample, 66.1% were small enterprises with up to nine employees; 64% had annual sales of less than 1 billion Belarusian Roubles (BYR). (Figures 1, 2)
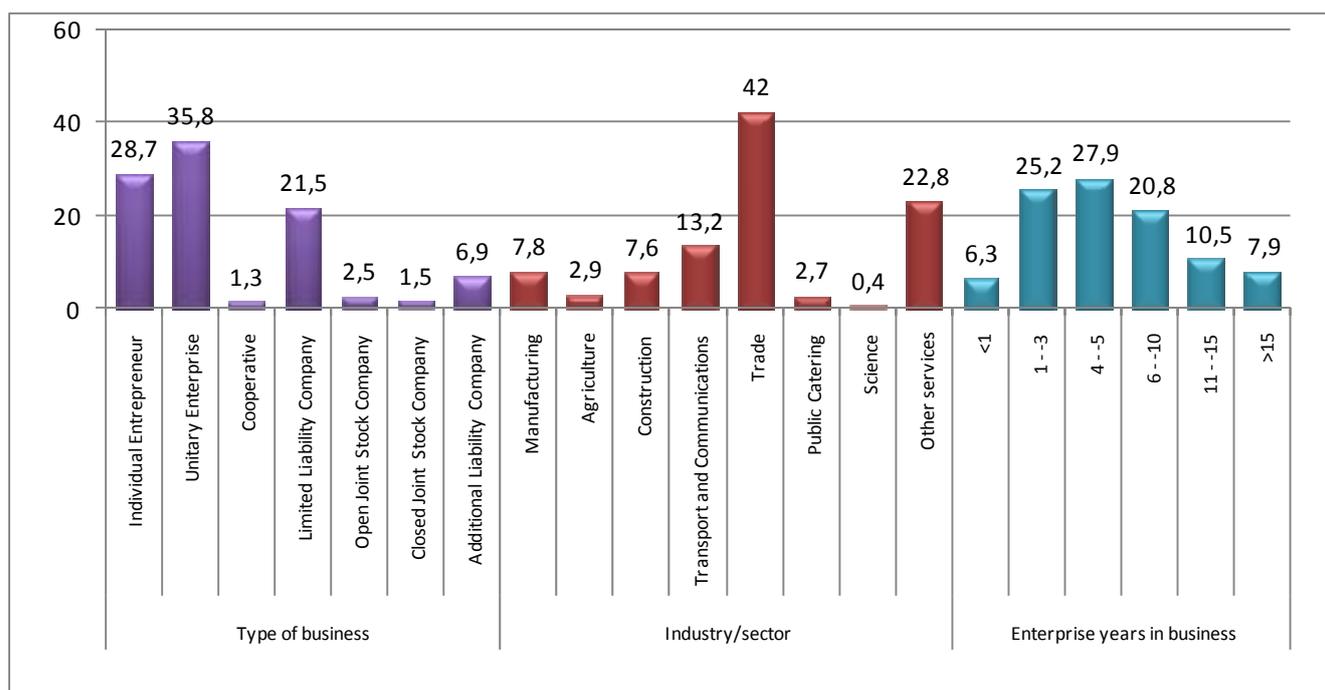

Figure 1 Selected socio-economic characteristics of SME respondents (% of total)

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[1] In legal terms the survey was conducted among small business entities as they are defined by the respective Belarusian legislation – individual entrepreneurs and legal entities with the number of employees not exceeding 100 and annual turnover not exceeding 2 billion Belarusian roubles. Average exchange rate of 8000 Belarusian roubles per 1 USD was established when the survey was implemented.
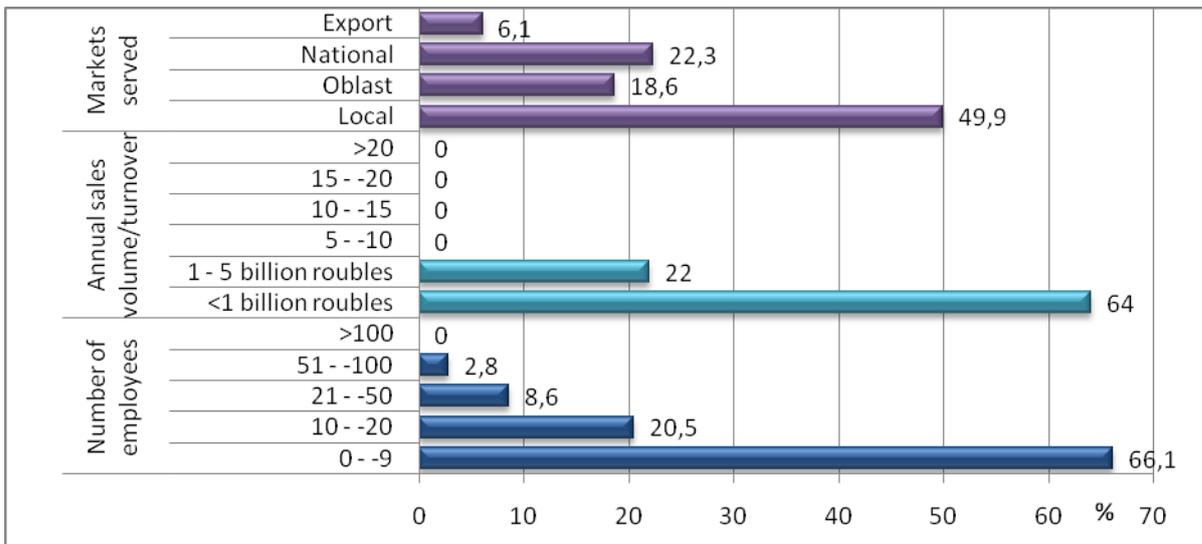
Figure 2 Distribution of SME respondents by number of employees, annual sales, market sales (% of total)

The typical SMEs included in the sample were small-scale enterprises serving the local (49.9%) and national markets (22.3%). Export-oriented SMEs numbered 6%.

The largest shares of the sample were active in trade (42%), and 'other services' (22.8%), followed by 13.2% in transport and communications, 7.8% in industry and 7.6% in construction. The predominant business types were unitary enterprises (35.8%), individual entrepreneurs (28.7%), and limited liability companies (21.5%). Over two-thirds of the SMEs surveyed had on the market for 1 - 10 years.

Mean age of the CEO in the companies surveyed was 26 - 65 (Figure).
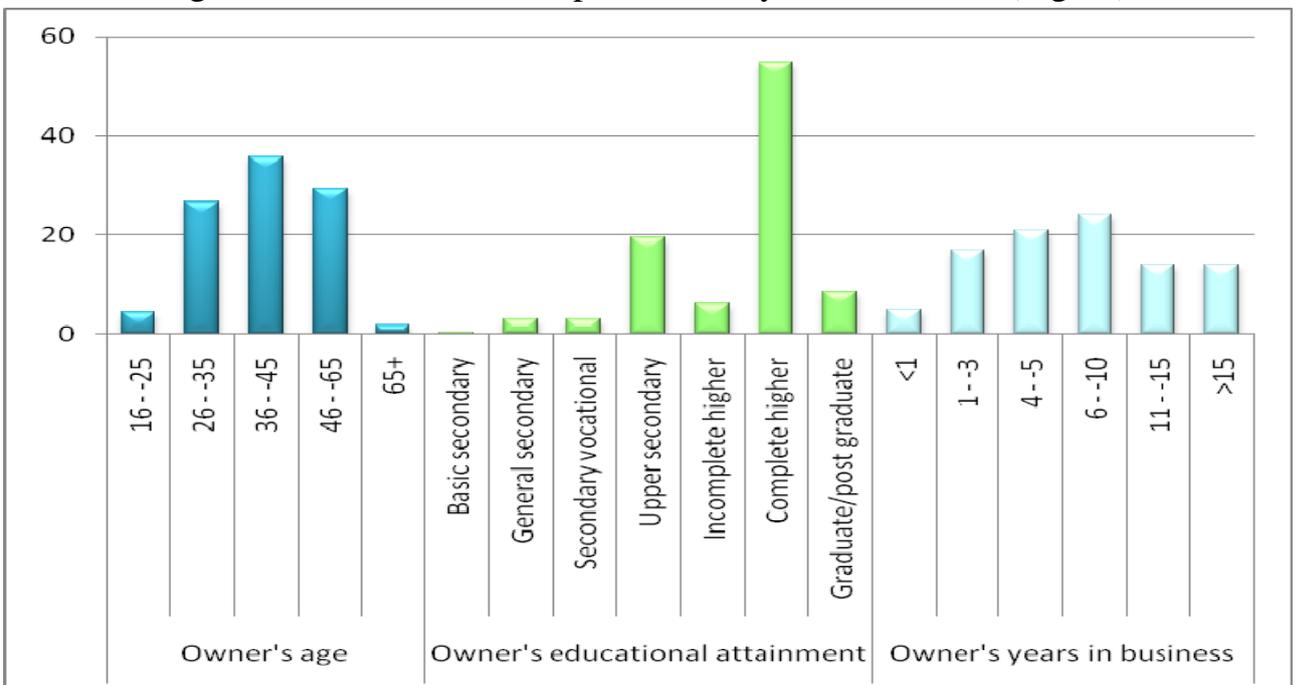
Figure 3 Distribution of SME owners by age, educational attainment, and years in business (% of total)

More than one-half of the CEOs (54.8%) had higher education. Almost all of the CEOs have more than one year of business experience. 5% of them had less than one year of business experience.

2. Descriptive statistics of the datasets

As indicated by the frequency of use data from the survey of SMEs, the top three types of services utilised by the respondents are banking, insurance and credit. The percentages of yes-responses to questions regarding the most common services were as follows: current account, 97.9%; bank transfers, 54.2%; internet banking, 30.6%; debit card, 19.6%, international money transfers, 15.4%; mobile banking, 14.0% (Figure 4).

Reported utilisation rates for the most common insurance services were 32.3% for car insurance, 20.8% for social insurance, and 13.3% for property insurance. Working capital loan was used by 23.2% and auto loan by 9.5%.
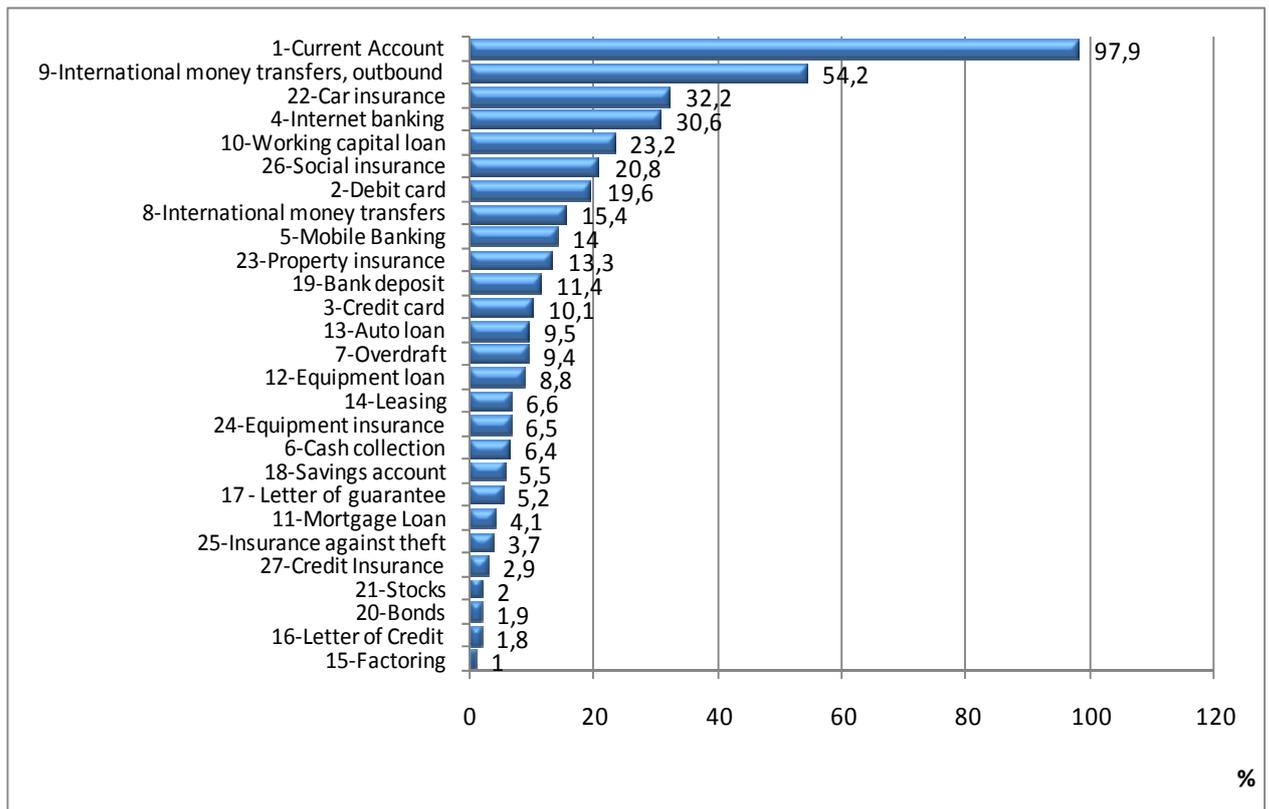

Figure 4 Usage of financial services among SMEs[2]

The survey revealed the following regional trends in the use of financial services:

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[2] Number before the name of the financial service represents the periodic number of the financial service in the questionnaire.

- current account is the most prevalent financial service in all seven administrative regions - use of this service was reported by almost 100% of respondents in each region;

- domestic bank transfers was the second most prevalent service in every administrative region except Minsk City, where it was in fourth position, after 'auto loans' (second) and 'internet banking'(third).

The maximum reported number of services used by a single respondent (i.e. the sum of yes-responses to Questions 1.1. - 1.27) was 27. Maximum number of reported types of services (banking, credit, savings, insurance) used by one respondent was 4.

On average, each respondent was using 4.1807 services and 1.9791 types of services.

Table 1 – Summary statistics for financial inclusion

	minimum	maximum	average	median	standard deviation
N_services_firm	0.00	27.00	4.1807	3.0000	2.85585
	0.00	4.00	1.9791	2.0000	0.93067

3. Total Financial Inclusion Index (firms)

Total Financial Inclusion Index for small and medium-sized enterprises (TFI I_Firms) measures the degree of financial inclusion among small firms.

The following financial inclusion criteria were applied:
0. 0 services – no usage, fully excluded;
1. 1-2 services – basic use;
2. 3-5 services – intensive use;
3. 6-8 services – advanced use;
4. 9 and more services – intensive use;

The value of the Total Financial Inclusion Index, computed using the project methodology, was close to 100% (99.2%). Use of 1-2 services was reported by 31.7% of respondents (basic use), and another 41.8% reported the use of 3 - 5 services (active use). Advanced users (6-8 services) numbered 18.7%, and users of 9 or more services, 7% (Figure 5).
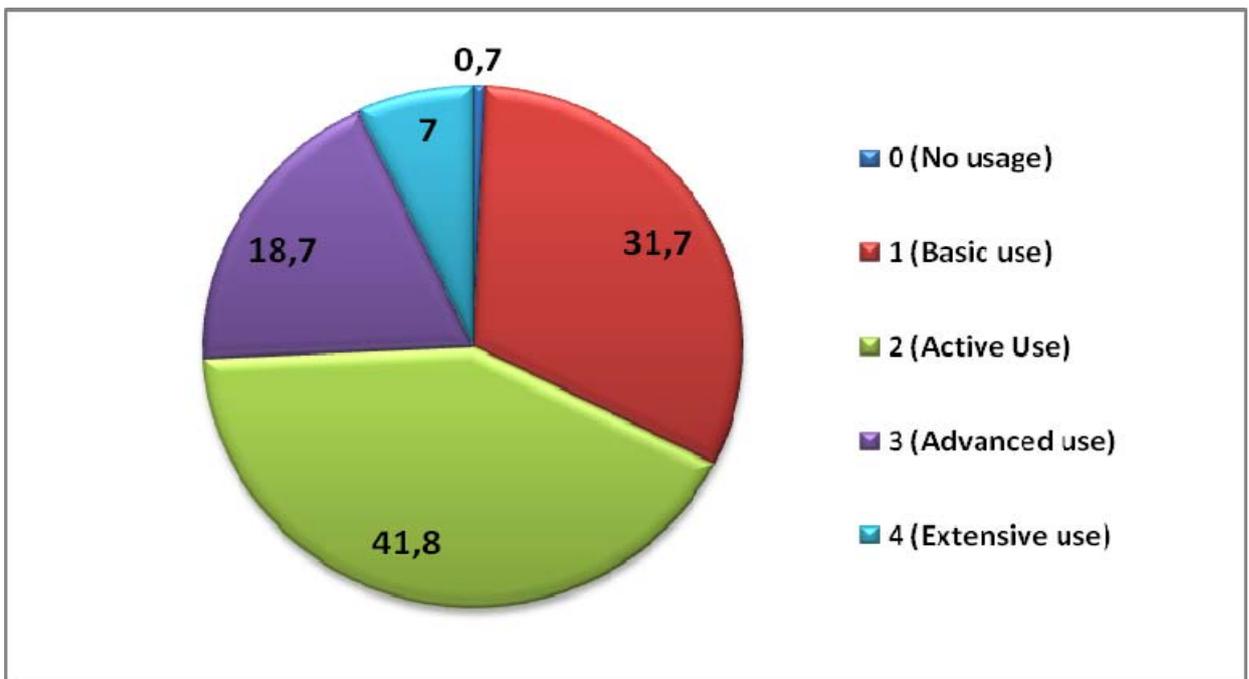
Figure 5 Components of the Total Financial Inclusion Index (firms)

Financial inclusion of firms was highest for banking services (98.7%) and lowest for savings (17.5%). Reported use of credit services among firms was 38.1% and insurance services 43.6% (Figure 6).
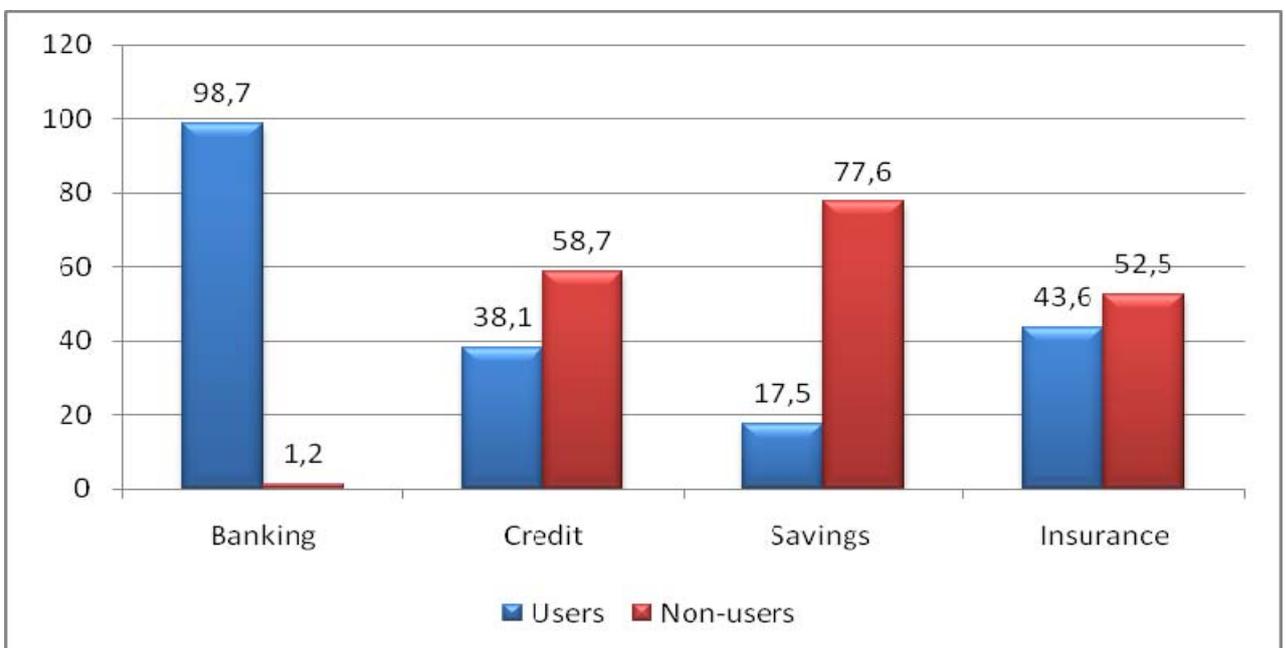

Figure 6. Financial inclusion of SMEs, by type of service

TFI-I and TFI-II values for small and medium sized enterprises are listed below.

TFI-I=99.2%;

TFI-II$_{banking}$= 98.7%;

TFI-II$_{credit}$ = 38.1%;

TFI-II$_{savings}$= 17.5%;

TFI-II$_{insurance}$ = 43.6%;

Use of multiple services was reported by 63.6% respondents.

TFI-II$_{multiple\ services}$ = 63.6%;

The combinations of services were identified by cross-tabulation.

Banking and credit 99.9% of SMEs using credit services also use banking services. Of SMEs reporting the use of banking services, 38.5% were also using credit services. Of SMEs who denied the use of credit services, 98.0% were using banking services. The category "other" also includes respondents who gave no answer to the respective item in the questionnaire (Figure 7).
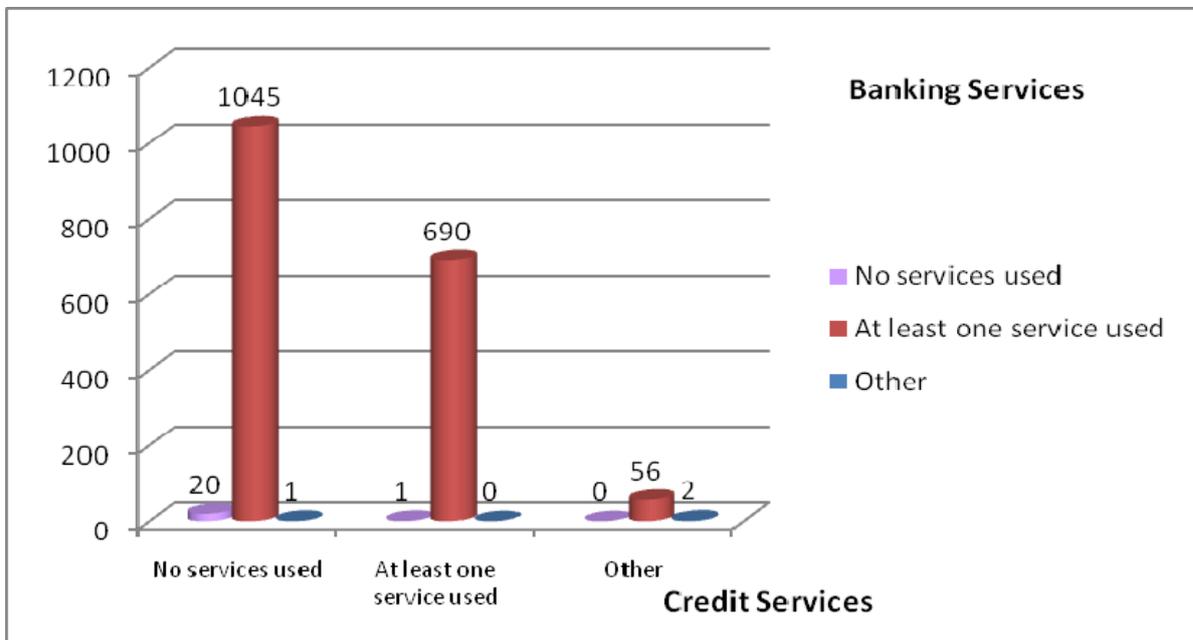
**Figure 7. Use of multiple services: banking and credit**

Banking and savings 17.8% of SMEs who were using banking services also reported the use of savings. Respondents who denied the use of baking services also denied the use of savings. Of SMEs reporting the use of savings, 100% also reported the use of banking services. Of SMEs denying the use of savings, use of banking services was denied by 1.5% (Figure 8).
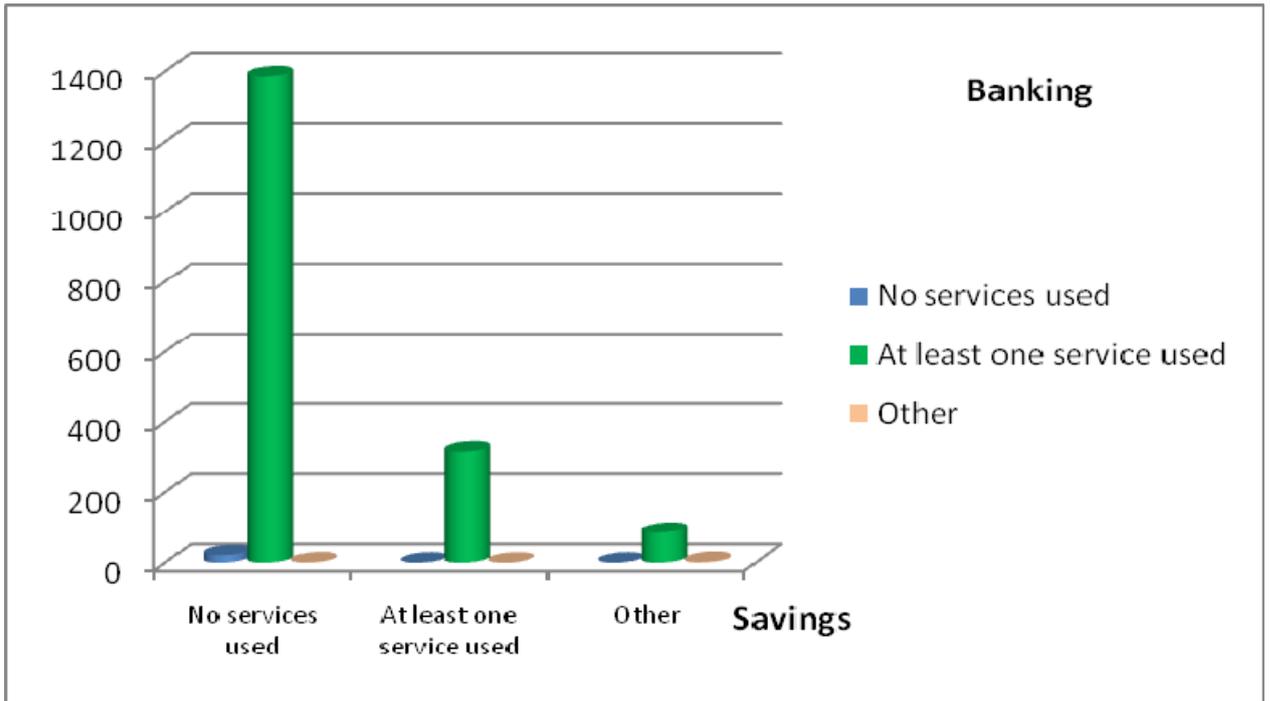
Figure 8 Use of multiple services - banking and savings

Banking and insurance Of SMEs reporting the use of banking services, 43.6% also reported the use of insurance services. Of SMEs denying the use of banking services, use of insurance services was reported by 52.4% and non-use by 47.6%. 98.6% of users of insurance services were also using banking services. Only 1% of respondents who denied the use of insurance services also denied the use of banking services (Figure 9).
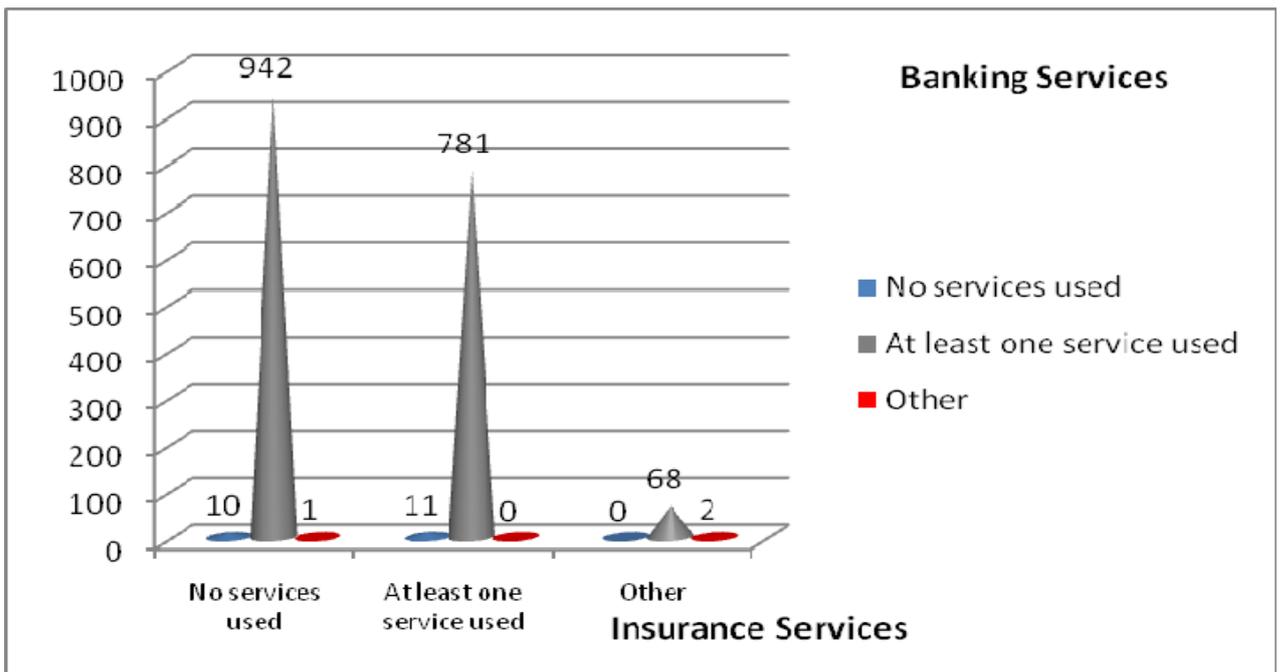
Figure 9 Use of multiple services - banking and insurance

Credit and savings Of respondents who reported the use of credit services, 24.7% were also using savings. Of those denying the use of credit services, use of savings was reported by 13.0% and non-use by 86.4%. Use of credit services was reported by 53.8% of users of savings. Among respondents who reported non-use of savings services, 34.0% were users of credit services, and 65.4% were not using either service (Figure 10).
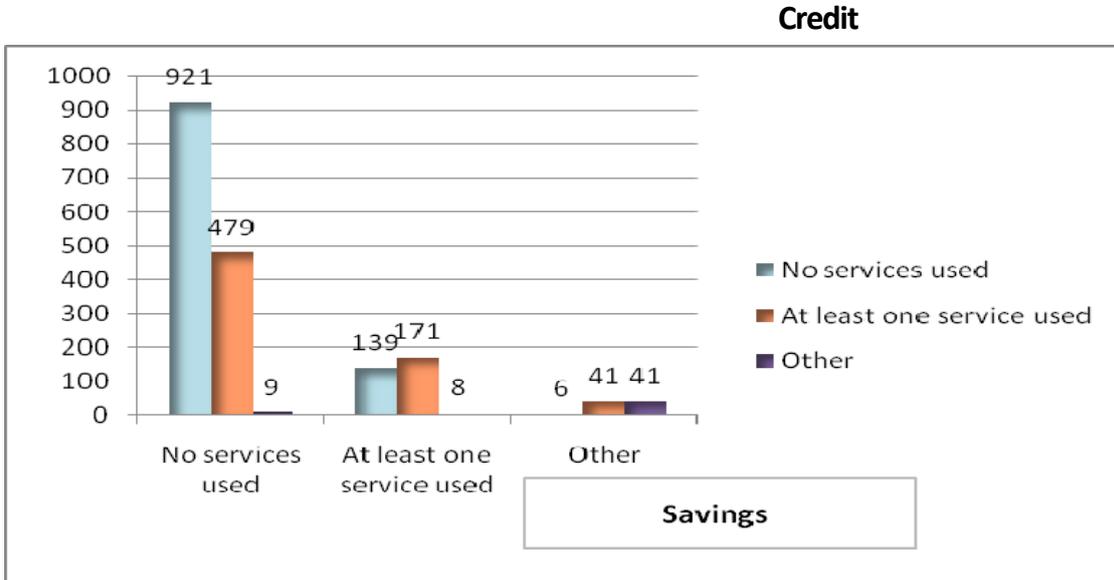
Figure 10 Use of multiple services - credit and savings

Credit and insurance 57.7% of users of credit services were also using insurance. Among non-users of credit services, 34.9% reported the use of insurance services, and 64.2% denied the use of such services. Of SMEs reporting the use of insurance, 50.4% also reported the use of credit services. The proportion of users of credit services among non-users of insurance was 27.9%, and non-users 71.8% (Figure 11).
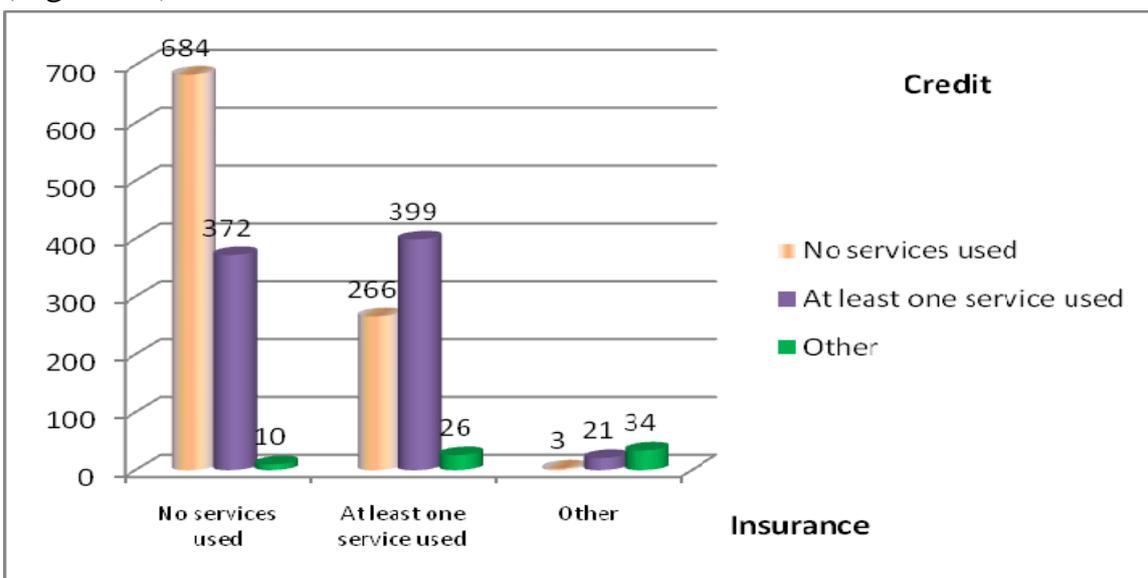
**Figure 11 Use of multiple services - credit and insurance**

Savings and insurance Users of savings numbered 72.5% among respondents who reported the use of insurance, and non-users 23.4%. The proportion of users of insurance among non-users of savings was 40.7%, and non-users 58.6% (Figure 12).
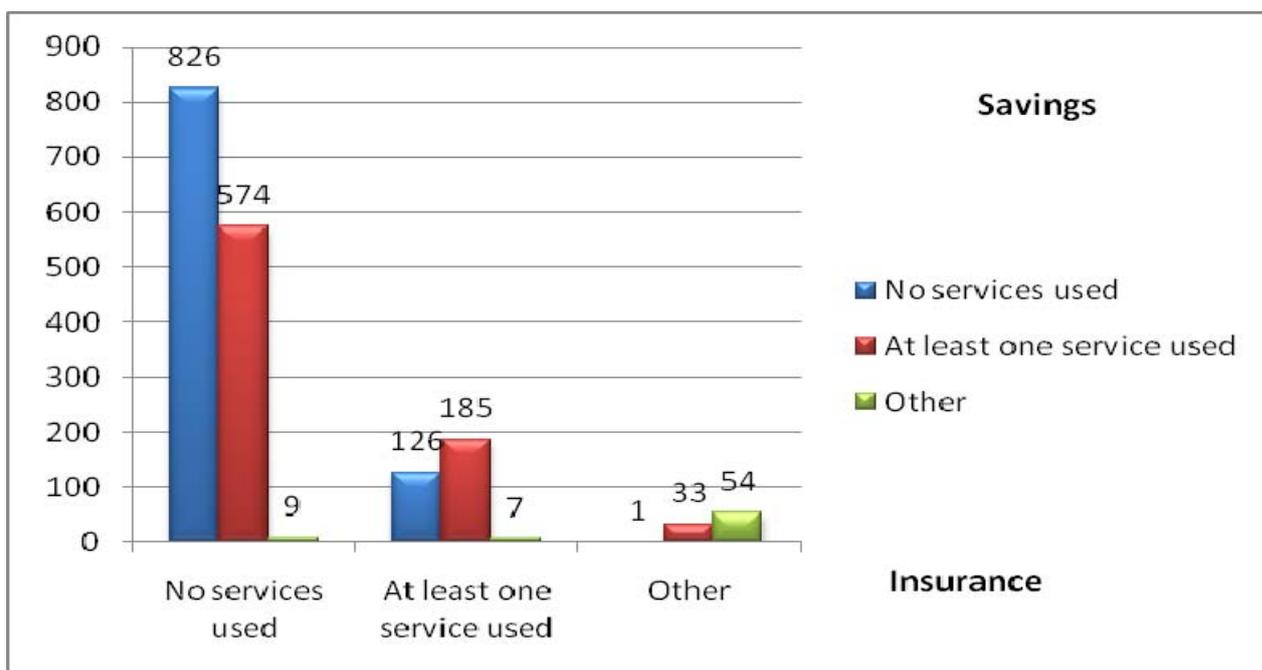
Figure 12 Use of multiple services - savings and insurance

4. Analysis of relationship between TFI and covariates

Covariation analyses were performed to find relationships between TFI and various characteristics of respondents.

Cross-tabulation Cross-tabulations of the inclusion variables were constructed using the descriptive variables derived from the respondent characteristics.

Cross-tabulation results of the variable **Use_firm** with descriptive variables are presented below.

Type of business Individual entrepreneurs typically use 1 - 2 services (42.2%) or 3 - 5 services (39.2%). Active use is the most prevalent among unitary enterprises (44.5%). The majority of producers' cooperatives (56.5%) are basic users. Active use is the most prevalent among limited liability companies (45.8%). Advanced and active users prevail among open joint-stock companies (33.3% and 31.1%, respectively). Use of 3 - 5 services was reported by 40.7% of closed joint stock companies. 38.4% of additional liability companies used 3 - 5 services, and 31.2% were advanced users (Figure 13).
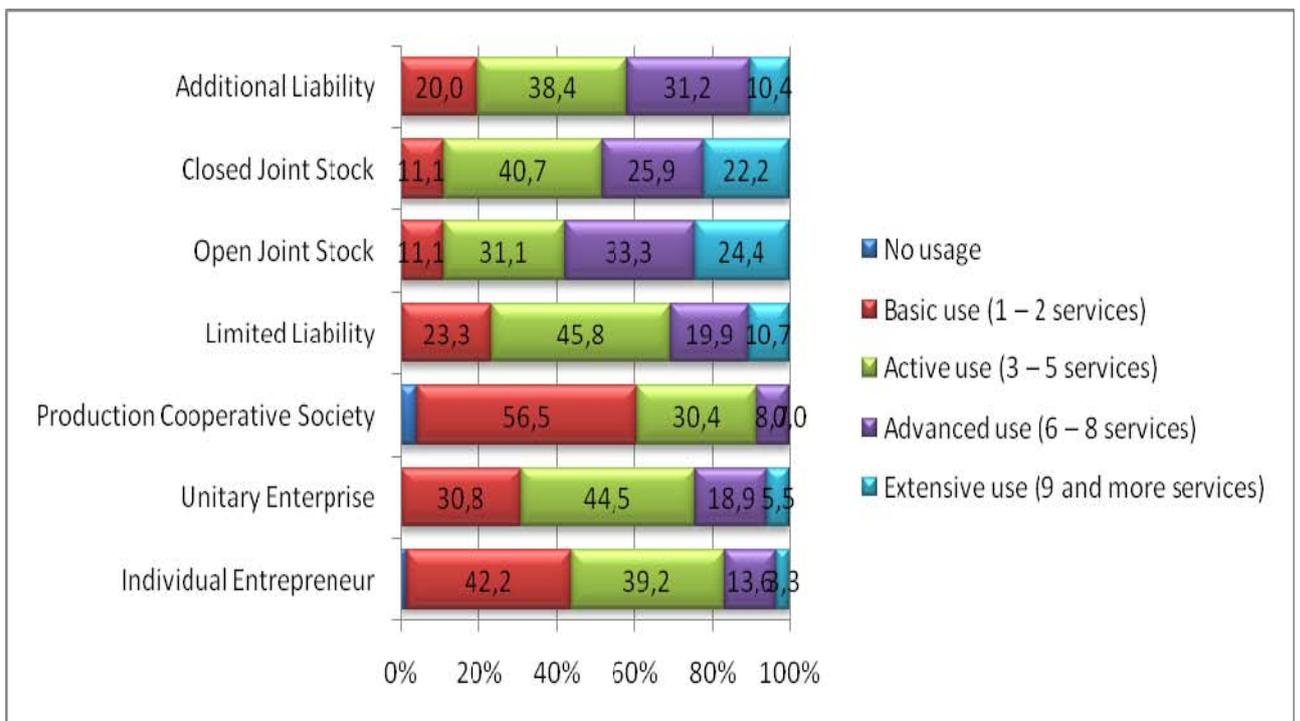
Figure 13 Use of financial services by type of business

The proportion of financially excluded is highest among individual entrepreneurs (69.2%). No instances of financial exclusion were reported among limited liability, closed joint stock, or additional liability companies. The share of basic users was highest among individual entrepreneurs (38.2%) and unitary enterprises (34.7%). The highest proportion of active users (38.1%) was recorded among unitary enterprises. Unitary enterprises also had the highest share of advanced users (36.2%). Extensive use was the most common among limited liability companies (33.1%) and unitary enterprises (28.3%).

Industry/sector Small businesses across all sectors were typically using 3 - 5 services, including 41.1% in industry, 35.8% in agriculture, 40.6% in construction, 42.2% in trade and marketing, 49% in public catering, and 42.9% in research and development (Figure 14).

SMEs in the trade sector form the largest share of non-users of services (46.2%). Among SMEs active in the trade sector, basic users represent 47.4%, active users 42.4%, advanced users 35.9%, and extensive users, 31.5%). This can partly be attributed to the high percentage of trade SMEs in the initial sample (42%).
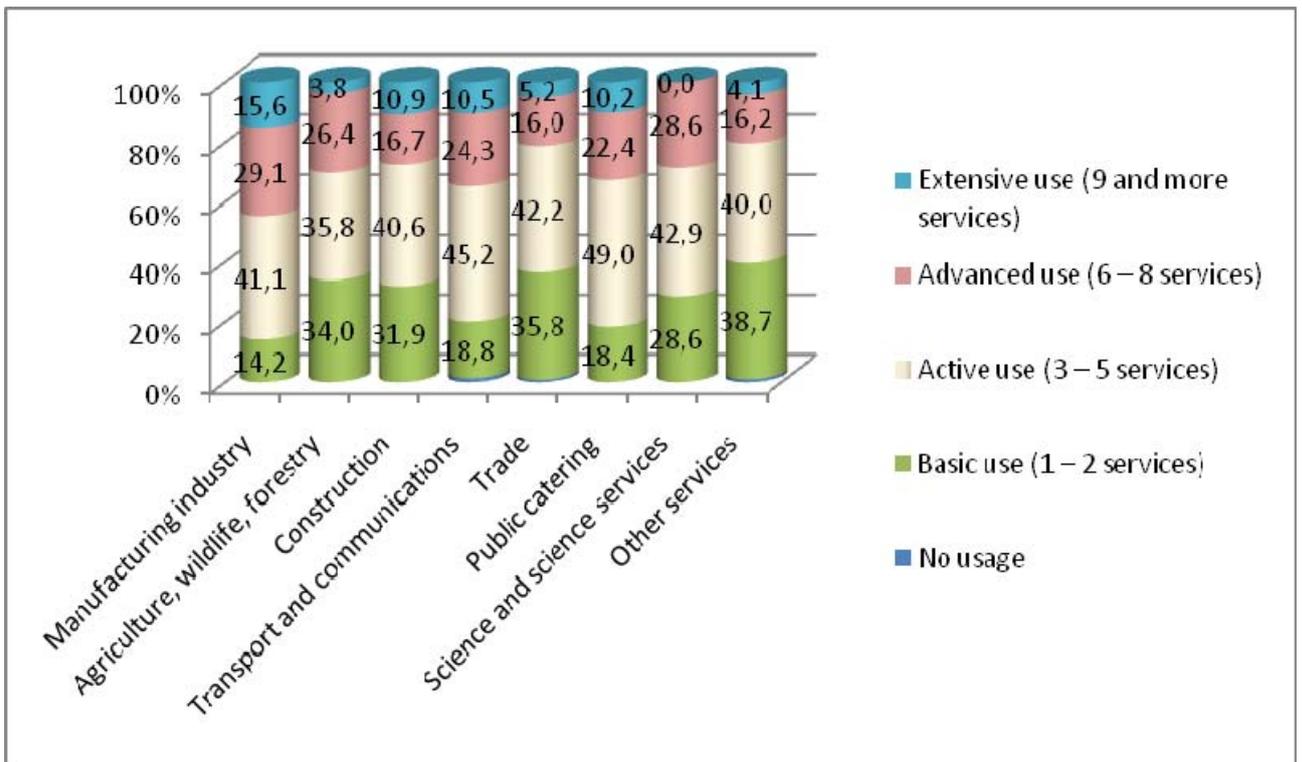
Figure 14 Respondent use of financial services by sector

Age of enterprise 49.6% of small firms with less than one year in business were basic users of financial services, while those with 1 - 3 years in business were typically using 3 - 5 services (42.2%) or 1 - 2 services (38.1%). Active use was the most typical among small firms with 4 - 5 (40.9%), 6 - 10 (43.5%), 11 - 15 (45.3%) and over 15 years in business (41%) - Figure 15.
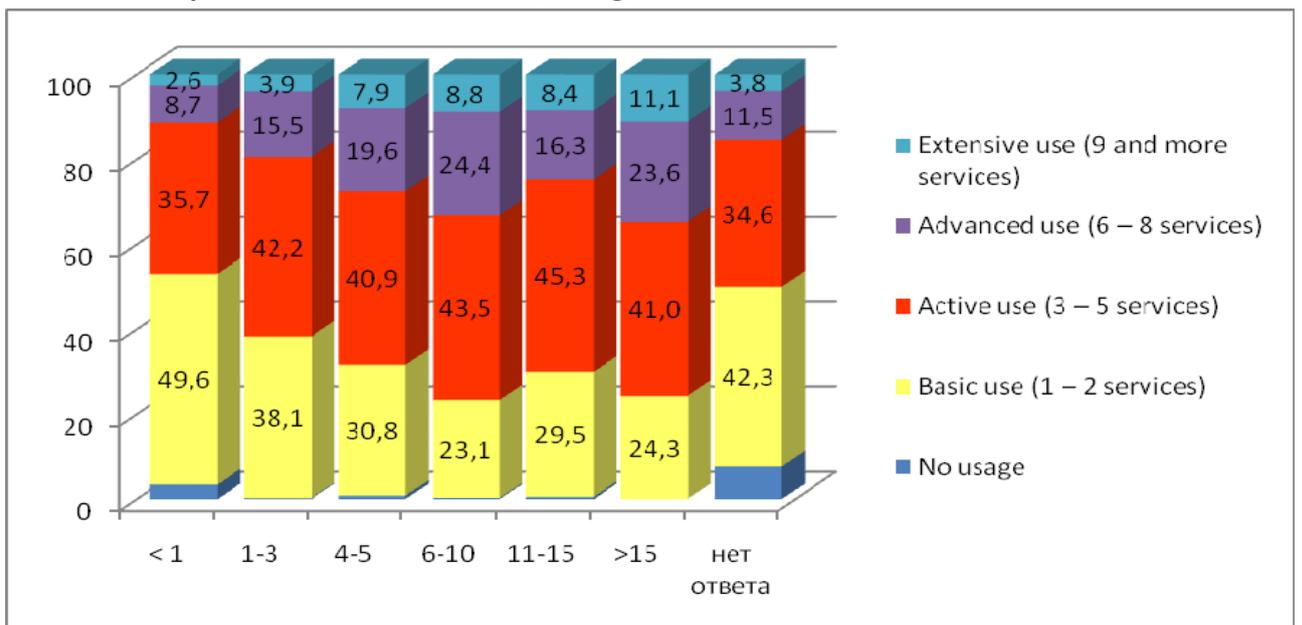
Figure 15 Respondent use of financial services by age of enterprise

Financially excluded enterprises were the most numerous among SMEs with less than one year, and 4 - 5 years on the market (30.8% in each group). The proportion of basic users was 49.6% among companies with less than one year on the market, and 38.1% with 3 - 5 years on the market. Companies with 4 - 5 and 1 - 3 years on the market are typical active users (27.3% and 25.4%, respectively). Advanced use was the most common among companies with 4 - 5 years (29.1%) and 6 - 10 years in business (27.1%), while the proportion of extensive users is highest among enterprises aged 4 - 5 years (31.5%).

Number of employees Small firms with 1 - 9 employees were generally active (42.1%) or basic users (38.7%), and those with 10 - 20 and 21 - 50 employers were typically using 1 - 2 services (45.4% and 39.7%, respectively). Advanced and active use were the most prevalent among small firms with 51 - 100 employees (32% each).

Nearly all financially excluded enterprises (92.3%) have fewer than 9 employees. Companies with fewer than nine employees are also prevalent among basic (80.6%), active (66.5%) and advanced users (53.2%). The share of extensive users is 29.1% among companies fewer than nine employees, and 29.9% among those with 10 - 20 employees. The proportion of companies with fewer than nine employees in the total sample was 66.1% (Figure 16).
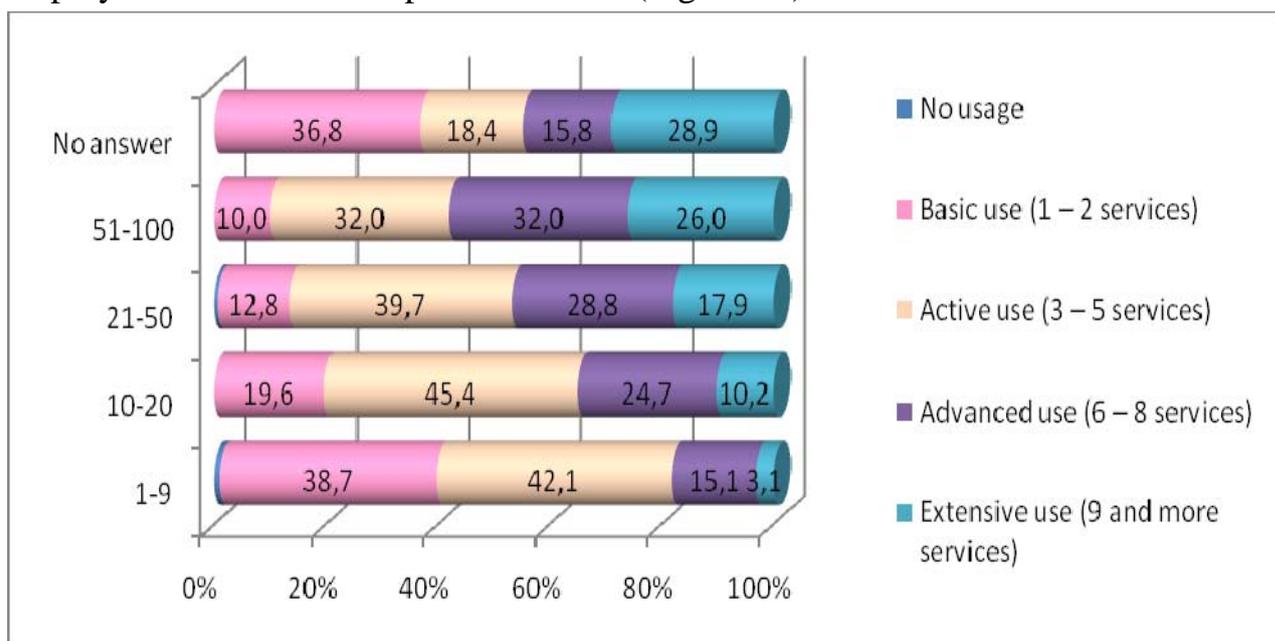
Figure 16 Respondent use of financial services by number of employees

Annual turnover Active users represented 44.1% among companies with an annual turnover of less than 1 billion BYR, and 42.2% among those with a turnover of 1 - 5 billion BYR (Figure 17).
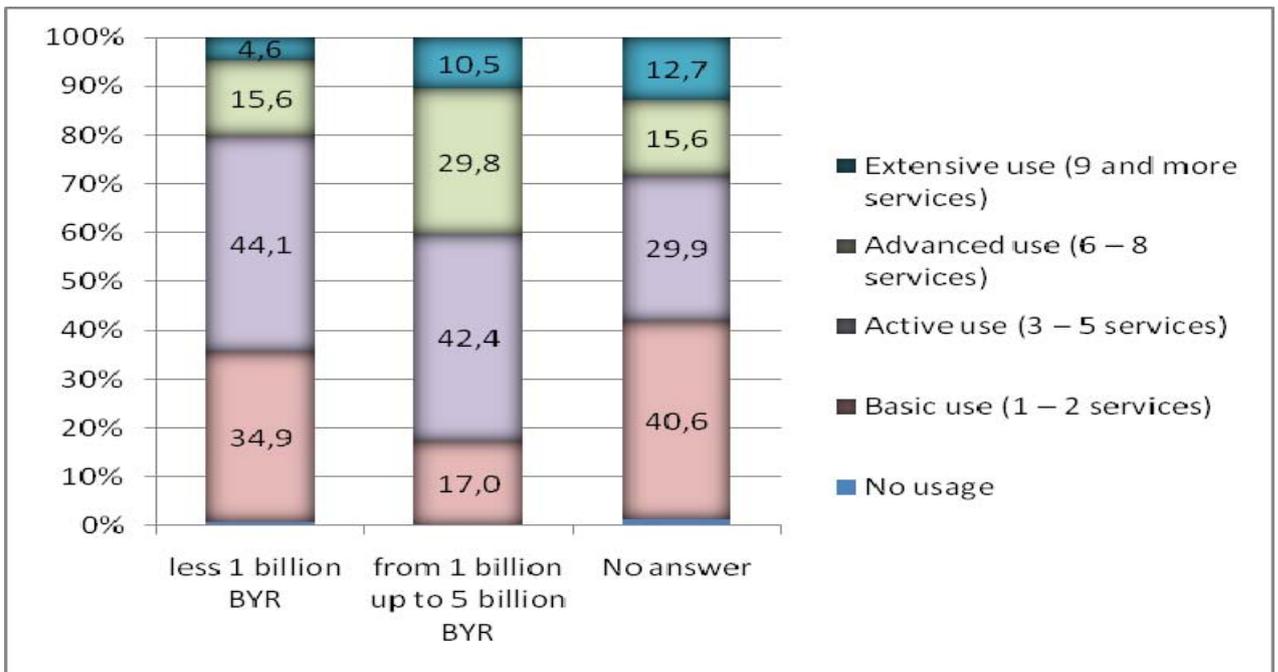
Figure 17 Respondent use of financial services by annual turnover

Companies with annual sales of not exceeding 1 billion BYR represent 69.2% of financially excluded respondents, and also a significant proportion of basic users (71%), and extensive users (42.5%). The share of these companies in the total sample was 64.9%.

Enterprise location The proportion of active users among small firms was 36.6% in Brest Oblast, 43.7% in Vitebsk Oblast, 42.2% in Minsk Oblast, 46.6% in Mogilev Oblast, and 43.1% in Minsk City. In Gomel Oblast, most small firms were using 3 - 5 services (42.5%) or 1-2 services (37.6%). In Grodno Oblast, the largest proportion of small firms (42.1%) reported using 1 - 2 services.
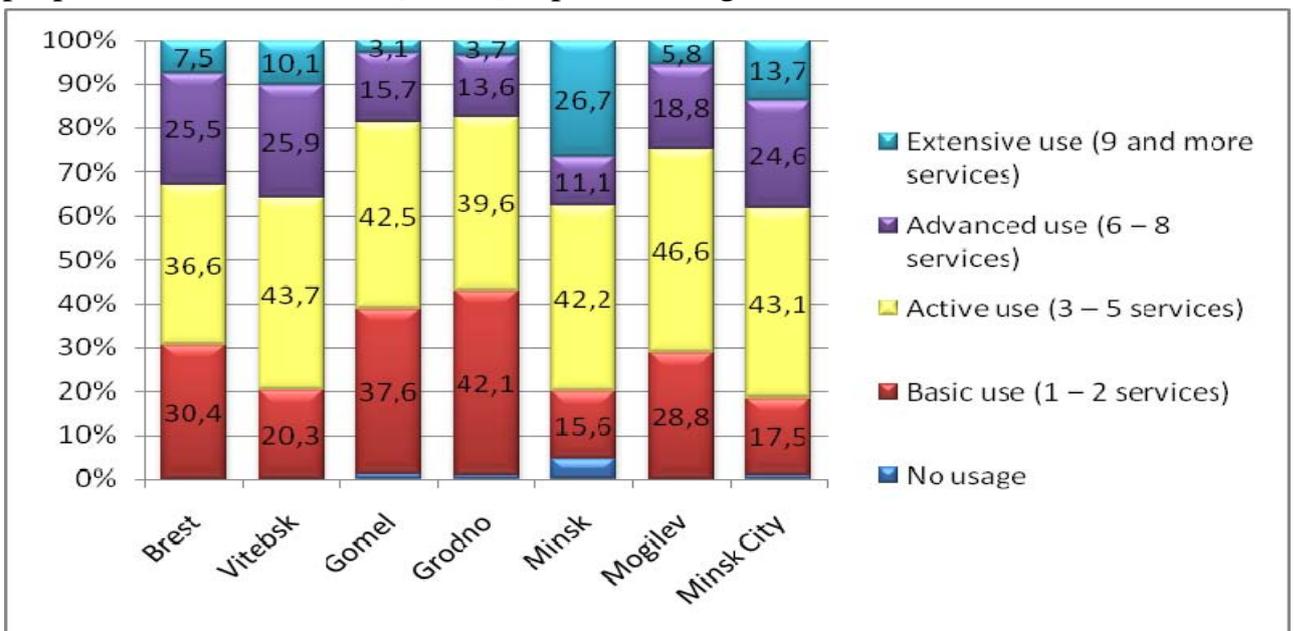
Figure 18 Respondent use of financial services by location (Oblast)

The largest share of financially excluded SMEs (38.5%) was recorded in Grodno Oblast. Grodno Oblast also had a large proportion of SMEs with basic (41.3%), active (29.3%) and advanced use of services (22.6%). SMEs from Grodno Oblast contributed 31.1% of the survey sample. In Vitebsk Oblast and Minsk City, 22.8% of SMEs were extensive users.

Market of operations Basic and active use prevail among small firms serving local markets (41.1% and 39.7%, respectively). Active users are the most prevalent among small firms serving regional (44.8%), national (45.7%) and international (39.6%) markets.

The rate of financial exclusion was highest among companies operating in local markets. Companies operating in the local markets represent a large proportion of users at all other levels, including basic (64.6%), active (47.3%), advanced (37.1%), and extensive use (32.3%). The proportion of these companies in the general sample is 49.9%.
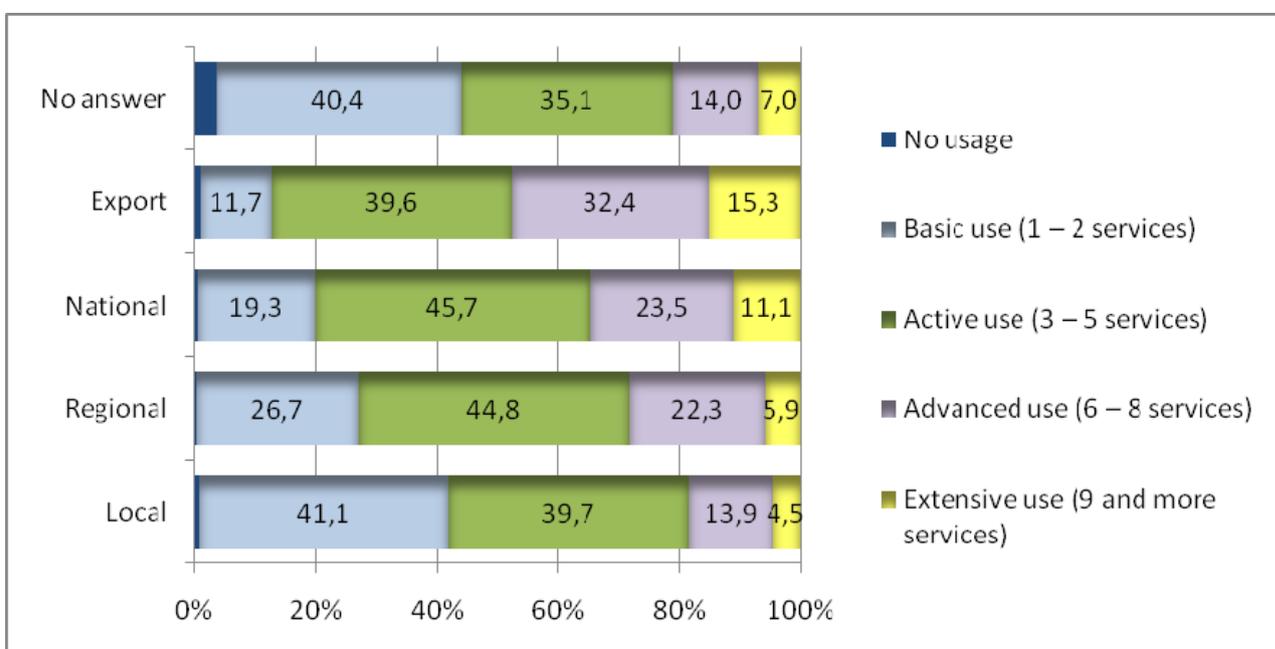
Figure 19 Respondent use of financial services by market of operations

Owner's age Small firms with owners aged 16 - 25 years were typically using 1 - 2 services (46.9%), while those with older owners were mostly using 3 - 5 services. The largest proportion of advanced and extensive users was recorded among small firms with owners aged 36 - 45, 46 - 65, and over 65 (Figure 20).
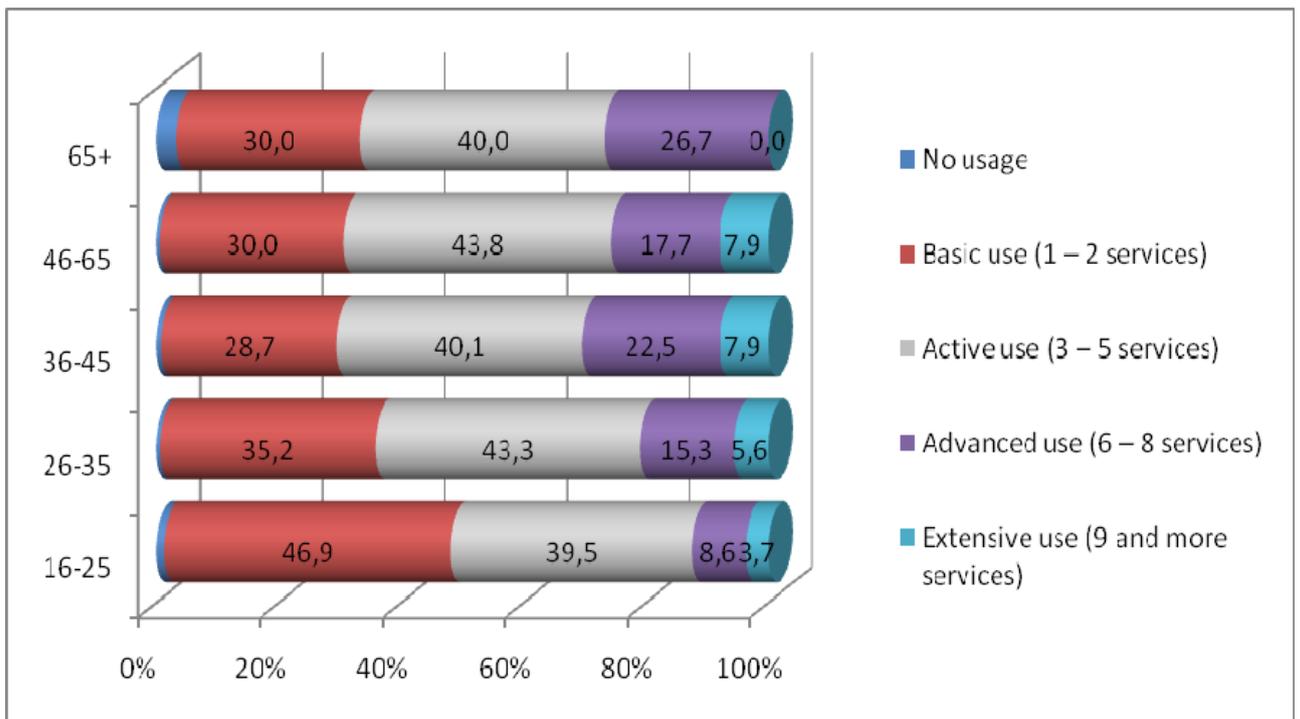
Figure 20 Respondent use of financial services by owner's age

The prevalence of financial exclusion was highest among SMEs with owners 36 - 45 years of age (38.5%). Basic use was most common among companies with owners aged 36 - 45 (32.3%) and 26 - 35 (29.5%). Active use is most common among companies with owners aged 36 - 45 (34.3%) and 46 - 65 (30.6%). Extensive users represented 42.9%, and advanced users 40.2% among companies with owners aged 36 - 45.

Owner's educational attainment The proportion of active and advanced users among small firms whose owners had secondary basic education appeared very high (33.3% in each category), but this finding is inconclusive, owing to the small number of respondents with basic secondary education (only 6) included in the sample. General secondary, incomplete higher, higher and postgraduate education of the firm owner was associated with the active use of services (active use of services was reported, respectively, by 42.3%, 48.6%, 43.7% and 40.8% of firms with these characteristics. Active use and basic use of services was typical among companies owned by holder of a vocational school diploma (43.5% and 39.6%, respectively. Firms owned by graduates from secondary special education were mostly using 1 - 2 services (43.6%) - Figure 21.

53.8% of SMEs owned by graduates from higher education were financially excluded. Companies owned by graduates from higher education numbered 45.8% of basic, 57.2% of active, 61.2% of advanced, 63.8% of extensive users. The proportion of companies in the general sample was 54.8%.
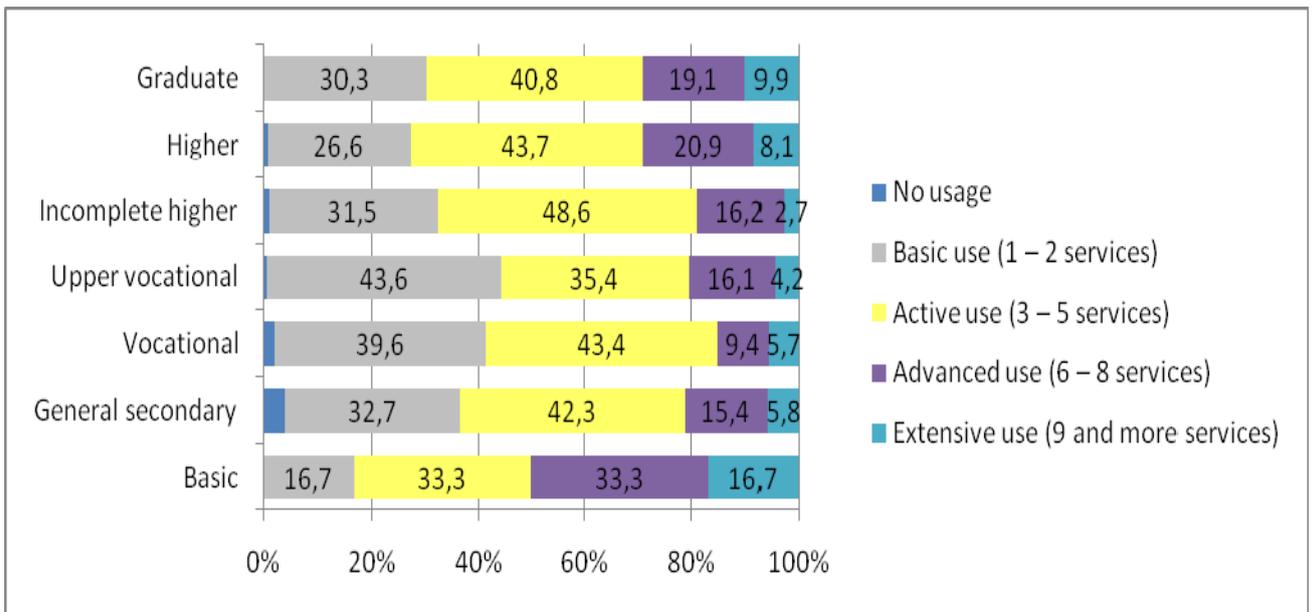
Figure 21 Respondent use of financial services by owner's educational attainment

Owner's years in business Owners with 1 - 2 year of business experience mostly reported use of 1 -2 services (50.5%). Active use was most commonly reported by owners with 4 - 5 (43.2%), 6 - 10 (40.1%), 11 - 15 (43.9%) and over 15 (43.9%) years in business. Owners with 1 - 3 years in business mostly reported basic (41.4%) or active use of services (40.1%) - Figure 22.
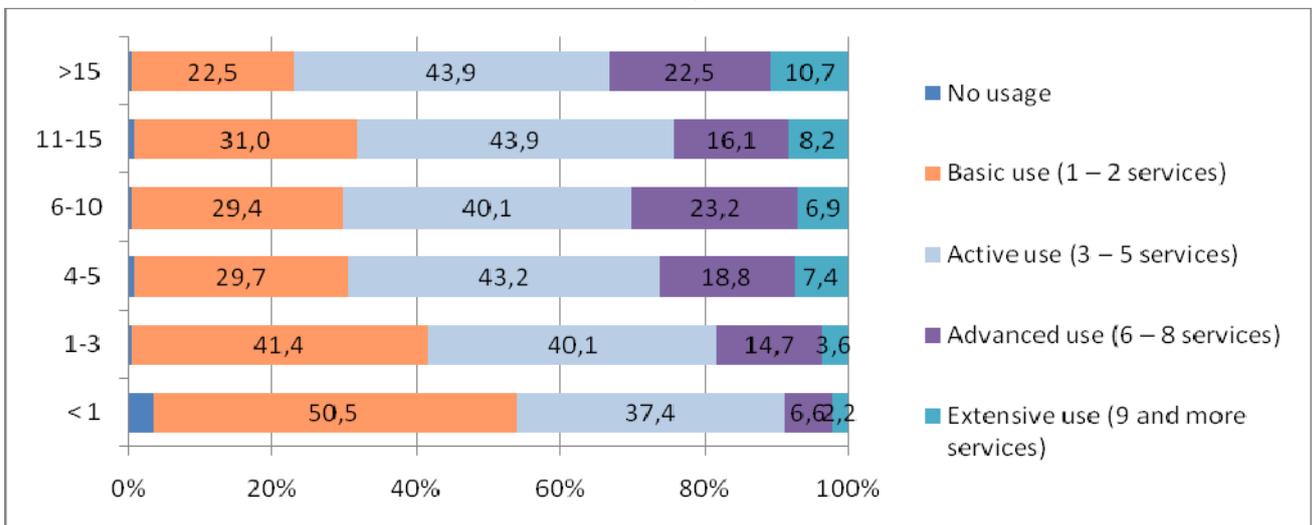
Figure 22 Respondent use of financial services by owner's years in business

Financially excluded enterprises were the most numerous among SMEs whose owners had less than one year, and 4 - 5 years of business experience (23.1% among each group). Companies with owner's business experience of 6 - 10 and 1 - 3 years were typical basic users (22.2% and 22%, respectively). Active use was most

common among companies owned by individuals with 6 - 10 (23.1%) and 4 - -5 years of business experience (21.5%). Advanced use was the most common among companies with owner's business experience of 6 - 10 years (29.7%). Extensive users represented 23.6% of companies with owner's business experience of 6 - 10 years, 23.6% of 4 - 5 years (22%).

Cross-tabulation of the variable **"Included_firm"** show that the rate of financial inclusion is close to 100% with little variation by either of the variables.

Use of financial services (payment, credit, savings, insurance)

Type of business The vast majority of SMEs are financially included. The rate of financial inclusion is 96 - 100% with little variation by the type of business. Use of credit services varies from 21.3 to 89.9%. It is highest among closed joint stock companies and lowest among individual entrepreneurs. Use of credit services varies from 4.3% among production cooperative societies to 37.8% among open joint stock companies. The proportion of respondents reporting the use of insurance services ranges from 4.3 to 59.3%, depending on the type of business. Use of such services was highest among closed joint stock companies (57.8%), and lowest among production cooperative societies.

Industry/sector Use of banking services is close to 100% across all industries and sectors. Use of credit services varies from 28.3% to 58.3%, with industry reporting the highest rate of usage. Credit was used by 56.6% of SMEs in agriculture. The lowest reported use of credit was among the SMEs active in science. Savings services were used by 14.3 - 42.9% of SMEs of all types. Utilisation of such services was highest in science, and lowest in trade. The highest proportion of SMEs using insurance services was recorded in industry. Use of insurance services was also reported by 42.9% of SMEs active in science.

Age of enterprise Financial inclusion was close to 100%, with little variation by company age. The proportion using credit services was 16.5% among companies with less than one year on the market, and 48.5% among companies with 6 - 10 years on the market. The proportion using savings services was highest among companies that had been on the market for over 15 years (25%), and lowest among SMEs with less than one year of market experience (9.6%). Coverage of insurance services was lowest among companies with less than one year of business experience (35.7%), and was over 40% among companies of all other age groups, peaking at 48.4% for companies with 11 - 15 years in business.

Number of employees Coverage of financial services was close to 100% across all groups of SMEs. Use of credit services was reported by 76% SMEs with 51 - 100

employees. Among companies with fewer than nine employees, the proportion reporting the use of credit was much lower, at 29.8%. Use of savings varies from 14.4% to 38%, highest among companies with 51 - 100 employees, and lowest among companies with up to nine employees. Use of credit services showed little variation. The proportion of SMEs reporting the use of credit services was 41.5% - 51.9%, highest among companies with 21 - 50 employees, and lowest among those with up to nine employees.

Annual sales volume/turnover Banking services are utilised by almost 100% of respondents, regardless of turnover. Credit services are used by 59.9% of SMEs with annual sales volume between 1 and 5 billion BYR, and 31.7% of SMEs with sales of less than 1 billion BYR. Relatively little variation was recorded in the use of savings services. The proportion reporting the use of such services was 21.1% for companies with annual sales of 1 - 5 billion BYR, and 15.5% for SMEs with sales of less than 1 billion BYR. There was also little variation in the use of insurance services, from 47.6% for companies with sales of 1 - 5 billion BYR to 40.8% for SMEs with sales of less than 1 billion BYR.

Enterprise location Coverage of banking services was close to 100% across all regions. Use of credit services varies from 26.5% in Grodno Oblast to 62.2% in Minsk Oblast. Grodno Oblast also had the lowest proportion of SMEs reporting with use of credit services (12.6%, as compared by 27.6% in Vitebsk Oblast). Coverage of insurance services was highest in Minsk Oblast (66.7%) and Minsk City (62.6%), and lowest in Grodno Oblast (32.4%).

Market of operations Reported use of banking services was close to 100% with little variation by the market of operations. Use of credit services was reported by 53.2% of exporters and 50.1% of SMEs serving the national market. Among companies oriented towards the local market, only 28.5% were using credit services. Use of savings services varies from 13.1% to 23.5%. It is highest among companies working on the national market, and lowest among companies serving the local markets. The lowest share of SMEs using insurance services (39%) is among companies serving the local markets, and the highest (50.9%) is among companies operating on the national market.

Owner's age The use of banking services was reported by close to 100% of respondents, regardless of owner's age. Reported use of credit services was 19.8% - 43.2%, highest among companies owned by individuals aged 26 - 45 years and 46 - 65 years, and lowest among companies with owner's age between 16 and 25 years. Use of savings varies from 11.1% to 18.2%, highest among companies with owner's age between 36 and 45 years, and lowest for companies whose principle owner was

16 - 25 years of age. Insurance services are the least utilised by companies whose main owner is above 65 years of age. For all other companies, reported use of credit services was above 40%, with the highest (45.1%) for SMEs with owner's age between 26 and 35 years.

Owner's educational attainment The use of banking services was reported by nearly 100% of respondents, regardless of owner's educational attainment. Use of credit services varied from 20.8% for companies owned by graduates from basic vocational education to 43% for companies whose owners had complete higher education. Use of savings varied from 11.6% to 33.3%. It was highest among SMEs owned by graduates with basic education, and lowest among companies with owners who have general secondary education. Use of insurance services was reported by 36 - 66.7% of the general sample.

Owner's years in business Reported use of banking services was close to 100% with little variation by the owner's years in business. Use of credit services varied from 17.6% to 47%. It was highest among companies owned by individuals with over 15 years of business experience, and 6 - 10 years of such experience, and lowest for companies owned by individuals with less than one year in business. Use of savings services varied from 5.5% to 19.8%. It was highest among companies owned by individuals with over 15 years of business experience, and lowest for companies owned by individuals with less than one year in business. Use of insurance services varies from 36.3% to 49.4%. It was highest among companies owned by individuals with over 15 years of business experience, and lowest for companies owned by individuals with less than one year in business.

Use of multiple services (Multiple_type_firm)

Type of business Use of more than one service varied from 39.1% to 84.4% for SMEs of different forms. It was highest among open joint stock companies (84.4%) and closed joint stock companies (81.5%)

Industry/sector Two and more (multiple) financial services were used by 57.1% - 83.7% across all industries. Use of multiple services was highest for SMEs in the manufacturing industry.

Age of enterprise Use of multiple services was lowest for companies with less than one year in business (45.2%), and highest for companies with 6 - 10 years in business (70.3%).

Number of employees Depending on the number of employee, the proportion of SMEs utilising multiple services ranges from 57.5% to 88%. It is highest among

companies with 51 - 100 employees and lowest for SMEs with fewer than nine employees.

Annual turnover Multiple services are used by 78.9% of SMEs with annual sales of 1 - 5 billion BYR, and 58.9% of companies with sales of less than 1 billion BYR.

Enterprise location Use of multiple services by SMEs varies from 49.4% in Grodno Oblast to 82.5% in Minsk Oblast.

Market of operations Use of multiple services was highest among companies serving the national market (74.8%), and lowest among SMEs oriented towards the local markets (54.4%).

Owner's age The proportion utilising multiple services ranges is above 60% for all SMEs grouped by owner's age, with the exception of companies with owners aged 16 - 25, with 50.6%.

Owner's educational attainment Use of multiple services varied from 55.5% to 100% among SMEs grouped by owner's educational attainment. Companies owned by graduate diploma holders have some of the highest rates (71.7%). Use of multiple services is lowest (55.5%) among companies with owners who have general secondary education.

Owner's years in business Use of multiple services varies from 44% to 73.9%. It is highest for companies owned by individuals with more than 15 years in business, and lowest for companies with owners who have less than one year in business.

Conclusion

As shown by the survey data, total financial inclusion for firms is quite high, approaching 100% (99.2%).

Typical attributes of the least financially included firms include: individual entrepreneur, 1 - 9 employees, less than three year in business, supplying the local market. Typical owner characteristics of the least financially included firm are age 16 - 25 or over 65, and vocational education.

The most financially included firms are typically limited liability, closed or open joint-stock companies, operating in industry, public catering, or transport and communications, with over 6 years on the market and 50 - 100 employees, export oriented or serving the national market. The owners of these most included companies tend to have higher education.

Based on the survey outcomes, the following recommendations can be made:

increase coverage of low-level users of services;

Promote more extensive use of a larger number of financial services beyond the current account;

improve the level of financial literacy among small business owners in Belarus;

explore at greater depth the potential reasons for not using specific types of services by respondents;

improve conditions for microfinance to promote financial inclusion;

modify the questionnaire for firms: divide Item 3 ("Industry") into two sub-items - "industries in which your company operates", and "principle industry".

Annex A
Econometric modelling of total financial inclusion among SMEs

Econometric modelling tools were utilised to measure the dependence of the variable "Financial inclusion of firms" on the following covariates: firm type, industry, age of business, number of employees, annual turnover, location (region), markets served, owner's age, owner's educational attainment, owner's business record. The variables "Type of Business", "Industry", and "Location/Region" were treated as categorial. The remaining variables were treated as ordinal.

Of the entire sample of 1815 respondents, only 13 respondents indicated that they were using no financial services, which means meaning no variation in the independent variable. This can be attributed to the fact that all businesses are obliged to have a current bank account under Belarusian law. In this situation, modelling can misleading results. To avoid this, the dependent variable was regrouped. The value "0" was assigned when a respondent was using 0, or no more than 2 services, and "1" when three or more services were being used.

The number of the cases analysed, and the missing response data are shorn in Table 1.

Table 1 – Case processing summary

Unweighed cases		N	%
Selected Cases	Included in Analysis	1767	97.4
	Missing Cases	48	2.6
	Total	1815	100.0
Unselected Cases		0	0
Total		2500	1815

As seen from Table 1, the model included data from 97.4% of respondents. Response forms where the option "No Answer/Unsure" was chosen in questions concerning the respondent firm's industry, location, or type of business were excluded from the analysis.

The values of the coefficients in the initial model and their statistical significance are presented in Table 2 below.

Table 2 – Values in the initial model

	B	Standard Error	Wald	df	Significance	Exp(B)
Type of business			44.941	6	0.000	
Unitary Enterprise	0.467	0.130	12.845	1	0.000	1.596
Production Cooperative Society	-0.791	0.508	2.418	1	0.120	0.454
LLC	0.727	0.159	21.016	1	0.000	2.069
Open Joint Stock Company	1.537	0.501	9.410	1	0.002	4.652
Closed Joint Stock Company	1.464	0.637	5.282	1	0.022	4.322
Additional Liability Company	0.972	0.251	15.065	1	0.000	2.644
Industry/sector			45.617	7	0.000	
Agriculture, wildlife management, forestry	-0.229	0.458	0.250	1	0.617	0.795

	B	Standard Error	Wald	df	Significance	Exp(B)
Construction	-0.784	0.314	6.257	1	0.012	0.456
Transport and Communications	-0.053	0.302	0.031	1	0.860	0.948
Trade	-0.933	0.264	12.530	1	0.000	0.393
Catering	0.113	0.454	0.061	1	0.804	1.119
Research and Science Support	-0.303	1.172	0.067	1	0.796	0.738
Other Services	-1.036	0.273	14.396	1	0.000	0.355
Age of enterprise	0.003	0.005	0.411	1	0.521	1.003
Number of employees	0.000	0.004	0.010	1	0.922	1.000
Annual sales volume/turnover	-0.003	0.002	4.051	1	0.044	0.997
Location/region			47.381	6	0.000	
Brest Oblast	-0.548	0.260	4.442	1	0.035	0.578
Vitebsk Oblast	-0.009	0.239	0.001	1	0.970	0.991
Gomel Oblast	-0.781	0.222	12.392	1	0.000	0.458
Grodno Oblast	-0.964	0.208	21.425	1	0.000	0.381
Minsk Oblast	0.167	0.466	0.129	1	0.720	1.182
Mogilev Oblast	-0.402	0.250	2.586	1	0.108	0.669
Market of operations	0.001	0.004	0.102	1	0.749	1.001
Owner's age	0.001	0.005	0.013	1	0.908	1.001
Owner's educational attainment	-0.004	0.003	2.217	1	0.136	0.996
Owner's years in business	0.004	0.003	2.179	1	0.140	1.004
Constant	1.685	0.328	26.402	1	0.000	5.394

As seen from Table 2, the variables "Years in Business", "Number of Employees", "Markets Served", "Owner's Age", "Owner's Educational Attainment" and "Owner's Years in Business" were statistically insignificant. The following model was constructed after these variables had been excluded.

Table 3 – Values in the final model

	B	Standard Error	Wald	df	Significance	Exp(B)
Type of business			44.864	6	0.000	
Unitary Enterprise	0.448	0.129	12.117	1	0.000	1.565
Production Cooperative Society	-0.868	0.504	2.968	1	0.085	0.420
LLC	0.707	0.157	20.294	1	0.000	2.028
Open Joint Stock Company	1.490	0.495	9.075	1	0.003	4.439
Closed Joint Stock Company	1.493	0.637	5.488	1	0.019	4.448
Additional Liability Company	0.959	0.249	14.806	1	0.000	2.609
Industry/sector			46.555	7	0.000	
Agriculture, wildlife management, forestry	-0.262	0.455	0.330	1	0.566	0.770
Construction	-0.781	0.313	6.224	1	0.013	0.458
Transport and Communications	-0.045	0.301	0.022	1	0.882	0.956
Trade	-0.941	0.263	12.787	1	0.000	0.390
Catering	0.111	0.454	0.060	1	0.806	1.118
Research and Science Support	-0.293	1.168	0.063	1	0.802	0.746
Other Services	-1.038	0.273	14.495	1	0.000	0.354
Annual sales volume/turnover	-0.004	0.002	4.598	1	0.032	0.996
Location/region			47.433	6	0.000	
Brest Oblast	-0.558	0.259	4.639	1	0.031	0.572
Vitebsk Oblast	-0.028	0.238	0.013	1	0.908	0.973
Gomel Oblast	-0.775	0.221	12.264	1	0.000	0.461
Grodno Oblast	-0.970	0.207	21.964	1	0.000	0.379
Minsk Oblast	0.172	0.466	0.137	1	0.711	1.188
Mogilev Oblast	-0.427	0.249	2.941	1	0.086	0.652

	B	Standard Error	Wald	df	Significance	Exp(B)
Constant	1.723	0.324	28.226	1	0.000	5.602

As seen from the computations above, utilisation of financial services is significantly affected by the type of business. The latter variable was defined as categorial, with the value "Individual Entrepreneur" used as the basis for comparison. It was established that larger businesses tend to use more services. For example, an open joint stock company was 4.44 times more likely to use services than an individual entrepreneur. The variable "Industry/Sector" was also found to be statistically significant and was defined as categorical. The value "Industry" was used as the basis for comparison. As seen from Table 3, operation in a sector other than industry decreases the probability of using financial services, including by 0.46 times for companies operating in construction, and by 0.96 times for firms in the transport and communication sector. The value "Minsk City" was used as the basis for comparison for the categorical variable "Industry/Location" As suggested by the analysis, the probability of using services decreases if a company is located outside of Minsk Oblast. The probability of using services is inversely related to annual sales. This may be explained by the fact that companies with smaller annual sales may be more in need of credit.

The main indicators of the model fit are shown in Tables 4 and 5.

Table 4 – Omnibus test of the model coefficients

		Chi-square	df	Significance
Step 7.	Step	-2.103	1	0.147
	Block	183.096	20	0.000
	Model	183.096	20	0.000

Table 5 – Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
7	2031.597	0.098	0.138

The regression model's quality of approximation is measured by the goodness of fit. When variables were added to the model, -2LL assumed the value 2031.597, a difference of -183.096 from the initial value for the regression model consisting only of constants. This decrease in the -2LL is an improvement of the model; the difference is defined as Chi-square, and is statistically significant. Thus, the quality of the model improved when more variables were added. As seen from the value of Nagelkerke R Square, the percentage of dispersion explained by the logic regression model is 13.8% in this model.

To describe the predictive power of the model, a classification model was constructed, showing the number of true and false predictions in each line (Table 6)

Table 6 – Classification table

Observed			Predicted		
			Financial inclusion of SMEs		Percentage correct
			Not using services altogether, or using no more than 2 services	Using three or more services	
Step 7.	Financial inclusion of SMEs	Not using services altogether, or using no more than 2 services	127	438	22.5
		Using three or more services	106	1096	91.2
	Cumulative Percentage				69.2

Minimum expected count – 500

As seen from Table 6, the test correctly predicted only 127 cases of financial exclusion out of 565. The remaining 438 were erroneously defined by the test as financially included. The accuracy of prediction was 22.5%. Of the actual number of financially included (1202), 1096 cases were correctly predicted by the test. The number of correct predictions was 1223 out of 1767, or 69.2%.

As suggested by these numbers, the model includes variables that have a statistically significant effect on the endogenous variable. The model's predictive power can be improved by adding more variables. One suggestion for improving the quality of the result could be to modify the questionnaire for firms: divide Item 3 ("Industry") into two sub-items - "industries in which your company operates", and "principal industry".