



**SHEILD**  
—ASSOCIATION—

# Publication

# Introduction

Following a deep evaluation of the database collected on the status of ex-inmates and inmates families who had already benefited from the Quick Impact Projects (QIP) within "DROSOS1", which was conducted between 2011 and 2013 by SHIELD in collaboration with DROSOS Foundation to provide grants to 40 inmates families and ex-inmates in southern Lebanon, whose goal was to help them reintegrate and start being productive by creating mini-projects aimed to raise the income level of the inmates families or to create income in case where it did not exist.

Following this evaluation, we were able in the second phase of the project "DROSOS2" to continue this action by extending it to a new group of sixty people out of the 226 cases interviewed of the most vulnerable women, former prisoners, and prisoners' families in southern Lebanon, and later to create 30<sup>1</sup> new QIPs for a new group of 30 beneficiaries in a no-cost extension one year phase, then to obtain a total of 90 beneficiaries. To do this, the creation of a credit scoring system was considered, thus developing a new technique that helped to decide and select these 90 beneficiaries, in order to get a reasonable income, through the proposed conditional grants.

Through the Disqual technique, our goal was to build a credit scoring model to minimize the credit risk through a quantification and risk evaluation technique to predict the status of the new beneficiaries. We mainly treated the beneficiaries' antecedent database in order to estimate and predict the criteria of choice of the future beneficiaries. Therefore the characteristics of a new beneficiary were determined through several calculated parameters and they guided us in this choice of eligible or ineligible beneficiary.

In fact, the ultimate goal of this technique used was to say through its characteristics whether the new beneficiary portfolio is at risk or not. So we had to predict the quality of a productive proposed project if it is "eligible" or "ineligible" from 19 qualitative characteristics.

The advanced step of the Credit Scoring mechanism for the QIPs, was linked to another advanced approach that SHEILD has adopted, that is the conditional grant in which beneficiaries must return a percentage of 20% of the amount of the grants without any interest. SHEILD considered the cost of QIPs established as a conditional grant that was to be returned on a monthly basis by the beneficiaries.

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<sup>1</sup> One of the objectives of DROSOS2 project was to give the Inmates in prisons the opportunity to raise capacities and income and acquire a skill they can use after release. This **Objective** was replaced by creation of 30 new QIPs which were added to the 60 first QIPs.

# Objective

First of all, in this report, we will introduce the scoring technique that has been developed and its application in the field of microfinance. Then we will present the elaborated scoring model and explain its results.

In a second stage of the report we will represent the characteristics of the 90 beneficiaries and their correspondence with the model resulting from the score, then we will calculate the score of each of these selected beneficiaries.

Later on, we will examine and evaluate the results provided by these 90 beneficiaries chosen by SHEILD who tried to coordinate between the results of the score and the opinion of the microfinance committee, and that in order to try to evaluate the scoring model obtained as well to detect the indicators that have weakened or strengthened an established project, especially when we are dealing with a very small sample size (40 QIPs only-DROSOS1).

This step follows a certain number of field visits to follow the work progress of each of these 90 beneficiaries.

At the end we will deduct the importance of the realization of the scoring system and the conditional grant in such project.

## Application of credit scoring in microfinance

The idea of applying the credit scoring in microfinance<sup>2</sup> is very recent, especially in developing countries. Although this method is old and dated more than sixty years ago, few studies have been devoted to scoring in the field of microfinance in developing countries. (Schreiner, 2004)

In fact, this idea does not come to replace field officers and their subjective evaluation of risk factors that are not (or cannot be) quantified in a database. The scoring is just one of the few new ideas in the microcredit sector, where the objective is to reduce the risk of non-repayment.

### Statistical evaluation

Statistical scoring is the application of econometric models to databases and analyzing the frequencies of appearance of specific factors by determining their correlation with customers identification criteria recorded in the database. Scoring assumes that the performance of future loans with a given set of characteristics will be similar to the performance of previous loans with similar characteristics.

The statistical evaluation predicts the risk from quantified characteristics recorded in a database. The link between the risk and the characteristics is expressed by a set of rules or mathematical formulas that clearly predict the risk in the form of probability.

Finance is risk management, and the statistical evaluation facilitates the risk management because the risk assessment is consistent and explicit. The predictive value of the statistical evaluation can be tested before using this method. (**MARK SCHNEIDER, 2003**)

### Scoring model

In our work we applied the statistical method "Disqual<sup>3</sup>" on the database of the 40 beneficiaries already chosen by SHEILD during the first phase of the project "DROSOS1", in order to create 60 new quick impact projects then 30 other similar projects, targeting inmates and their families as well as vulnerable women in South Lebanon, then discovering the effectiveness of such method in the field of microfinance and especially when we are in the case of a small size sample.

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<sup>2</sup> **Microfinance**, in its general sense, is a financing system for the poor. It is a phenomenon of the fight against poverty, giving the chance for poor people, economically active but excluded from the formal financial system, to access financial services allowing them to increase their income, accumulate goods, and reduce their vulnerability by integrating into the labor market from its largest gate.

<sup>3</sup> Statistical method **Disqual**: This is a multidimensional statistical method whose purpose is to explain a qualitative character (belonging or not to a group of individuals) through quantitative explanatory variables describing individuals.

The scoring model shown below, allows us therefore to calculate the score of any beneficiary presented to SHEILD, while knowing the information used to build the model.

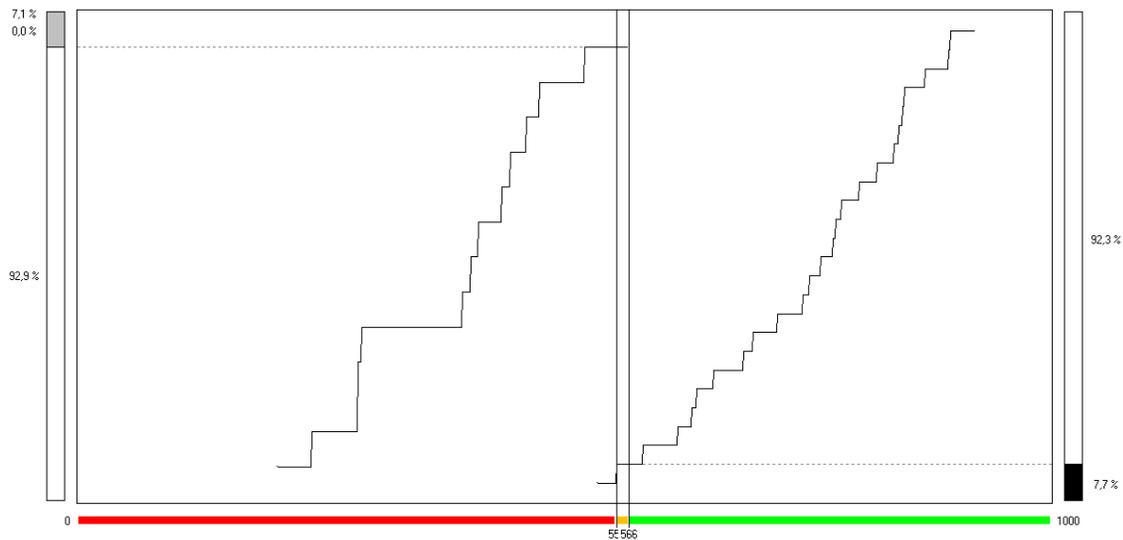
$$\begin{aligned}
 S(x) = & 135.18 * 1_{\text{District.BintJbeil}} + 113.41 * 1_{\text{Dist.Tyr}} + 49.4 * 1_{\text{Dist.Saida}} + 46.8 * 1_{\text{Dist.Nabatieh}} + \\
 & 44.19 * 1_{\text{Dist.Jezzine}} + 131.37 * 1_{\text{Sector.Transportation}} + 127.66 * 1_{\text{Sector.Agriculture}} + 107.79 * 1_{\text{Sector.handicraft}} + \\
 & 31.42 * 1_{\text{Sector.Mecan+Contruction}} + 31.14 * 1_{\text{Secteur.Trade}} + 106.19 * 1_{\text{MainProvider.Benef.}} + \\
 & 74.94 * 1_{\text{MainProvider.ParentsInLaw}} + 49.54 * 1_{\text{MainProvider.Children}} + 6.94 * 1_{\text{MainProvider.Parents}} + \\
 & 1.84 * 1_{\text{MainProvider.Party+Organization}} + 102.37 * 1_{\text{ReasonChoice.Exp}} + 1.47 * 1_{\text{ReasonChoice.UtilityforRegion}} \\
 & + 11.89 * 1_{\text{ReasonChoice.Production}} + 85.53 * 1_{\text{Exp[7,13]}} + 78.72 * 1_{\text{Exp[2,7]}} + 59.91 * 1_{\text{Exp}>13} \\
 & + 82.09 * 1_{\text{LivingWith.Family}} + 65.12 * 1_{\text{AbleToMeetDailyFoodNeeds}} + 61.98 * 1_{\text{Benef.Works}} + \\
 & 53.26 * 1_{\text{ProjectCost[3500,5500[}} + 20.73 * 1_{\text{ProjectCost}>5500}} + 50.98 * 1_{\text{NeedEmpl}} + 49.59 * 1_{\text{Benef.Education}} \\
 & + 45.43 * 1_{\text{PermanentWork}} + 30.54 * 1_{\text{AppRented}} + 22.55 * 1_{\text{App.Hosted}} + 0.37 * 1_{\text{SimilarProjectInRegion}}.
 \end{aligned}$$

For example, the score of a vulnerable woman who lives in Tyre and who proposed a project in the field of agriculture, and she is the person in charge of her household with 5 years of experience in the field, living with her own family, and not able to meet the daily needs of her family. She needs assistants to carry out her project; she does not have a level of education, and lives in a rented apartment. Her project lasts all year, and there are not similar projects in the same region. By performing the sum of her scores, we obtain:

$$113.41 + 127.66 + 106.19 + 102.37 + 78.72 + 82.09 + 65.12 + 61.98 + 53.26 + 50.98 + 45.43 + 30.54 = 917.75$$

The high score of this woman can predict that she will be a good beneficiary.

More precisely, and in order to help the decision of the choice of type of beneficiary through the sum of the scores, we represent in Figure1 the scores of the 40 individuals where their status of being eligible or ineligible is known throughout DROSOS1 project. We observe the separation between the distributions of the score according to the two groups "eligible beneficiary" (in green) and "ineligible beneficiary" (in red):



**Fig.1:** Separation between the distributions of the score according to the two groups "eligible beneficiary" and "ineligible beneficiary"

According to this graph, we can conclude that:

- If  $z < 514$ ; we have good reason to think that the applicant is an ineligible Beneficiary.
- If  $514 \leq z \leq 566$ ; applicant is in the uncertainty zone but not ineligible.
- If  $z > 566$ ; applicant is a eligible beneficiary.

**Note here that the area of uncertainty can be considered not ineligible and therefore eligible.**

Using this assignment rule, we will be able to give each project file proposed a total sum of score. So we can know from this rule if this project is eligible or ineligible to be granted or not.

## Choice of the Beneficiaries

After using the scoring model developed in the test section to be applied on the 226 new cases of ex-prisoners, vulnerable women and families of prisoners of DROSOS2, in order to predict their status as "eligible" or "ineligible" beneficiaries. The sum of scores was obtained for all 226 project applicants. Using the scoring system, it was found that  $\frac{3}{4}$  interviewees (170 interviewees, 75.2% of the total) are classified as "eligible beneficiaries", while  $\frac{1}{4}$  (56 interviewees, 24.8% of total) are classified as "ineligible beneficiaries" (Tab.1):

		Assignment Group	
		Good	Bad
Original group	Eligible	<b>170</b>	<b>56</b>
	Ineligible	<b>0</b>	<b>0</b>

**Tab.1:** Scoring results of 226 interviewees

As for SHEILD, which tried to coordinate between scoring resulting from the Disqual method, and the opinion of the committee<sup>4</sup> composed of specialists and management staff, who met to study and to evaluate the files of each of the potential beneficiaries separately, was finally able to choose 90 beneficiaries which we present their characteristics and scores according to the scoring model obtained.

After performing all the necessary assessments and scoring, 90 QIPs with a cost of up to \$ 4000 each have been established for beneficiaries, including ex-inmates, families of inmates, and most vulnerable single women.

<sup>4</sup> SHEILD committee is composed of 7 members:

Five employees from SHEILD who are:

- Ayman al-Riz: DROSOS project manager
- Ghassan Haidar: DROSOS Project Coordinator
- Ghenwa Harb: Financial Director in the DROSOS project - Experience in microcredit projects

Two specialists:

- Ali Choghri: Head of Credit Department at BLC Bank
- Fadel Burji: Branch Manager at BLF Bank-Tyre Branch

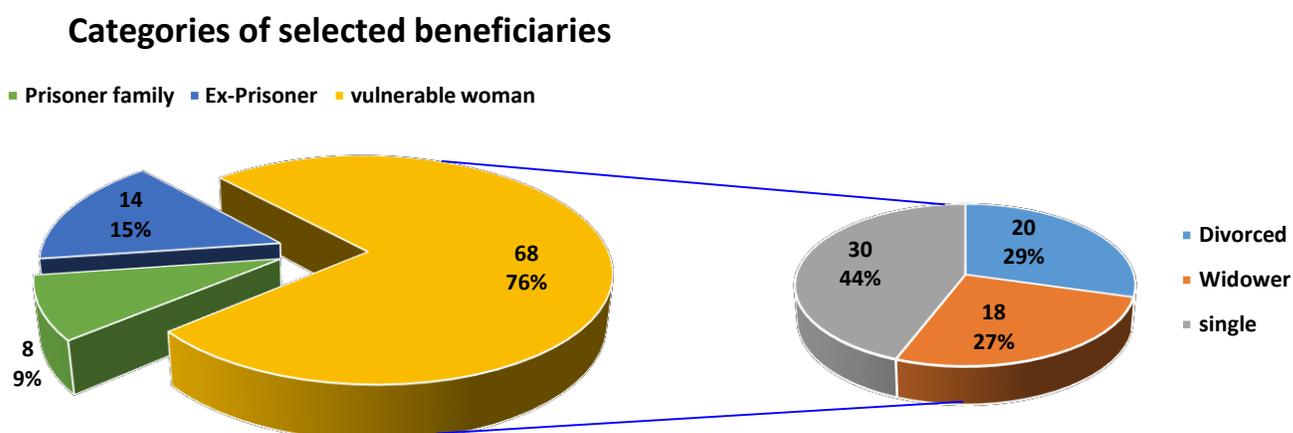
## Characteristics of the 90 selected beneficiaries

The descriptive analysis of the data helps to treat the social and economic situation of the 90 selected beneficiaries, such as vulnerable women, ex-prisoners, and prisoners families, and to examine their educational levels and their power to penetrate into the labor market and the difficulties and problems they face. Indeed, this data analysis will be able to identify the criteria of the selected people, where the results of this study interfere in the improvement of the model of score created as well as in the choice of the next beneficiaries of the productive projects.

### Categories of selected beneficiaries

The main goal of this project was to choose 90 Quick impact productive projects. The following table and graph represent the 90 beneficiaries selected among the 226 respondents who proposed quick impact projects during this second phase of the project.

We note that among the 90 beneficiaries, represented in the table below, we have 68 vulnerable women (75.6%), 14 ex-prisoners (15.6%), and only 8 families of prisoners (8.9%).



**Fig.2:** Categories of selected beneficiaries

According to the following table, we note that the majority of the chosen people are vulnerable women with a percentage of 75.6%. Prisoner families and ex-prisoners represent almost 25% of the total selected beneficiaries, 8.9% and 15.6% respectively. This is explained by the fact that in

Categories of selected beneficiaries		
Category	frequency	Percentage
Prisoner family	8	8.9
Ex-Prisoner	14	15.6
vulnerable woman	68	75.6
<b>Total</b>	<b>90</b>	<b>100</b>

**Tab. 2:** Categories of selected beneficiaries

the second phase of the project, and among the 114 prisoners visited at the prison as a first stage of work, only 29 of their families had the desire to participate in our project, on the other hand, the field workers found only 19 ex-prisoners with the necessary qualifications who give them the chance to be a part of this project, especially with regard to their behavior and interaction with their ambience.

As for the vulnerable women, we note that the number of widowed women (18 women (27%)) is approximately equivalent to the half of the number of single women over 35 years old selected and which they constitute the largest proportion, 30 of the total number of women chosen, which reflecting the increase in the rate of unmarried woman in Lebanon. 29% of the selected women are divorced, which reflects the development of the divorce rate in the Lebanese society.

### Distribution of beneficiaries by districts

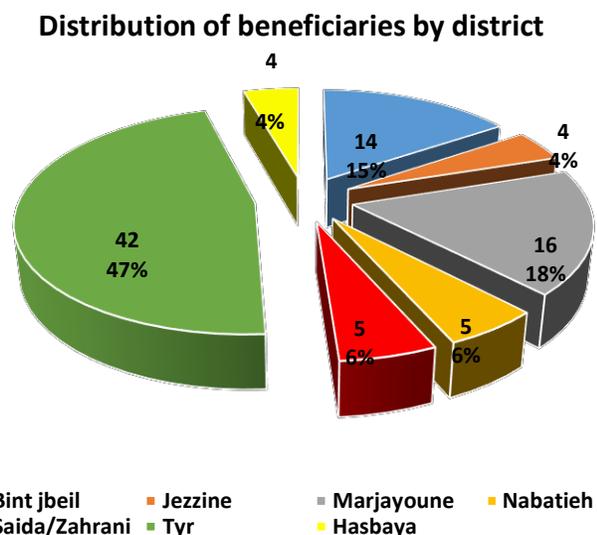
The graph below represents the distribution of selected vulnerable people in the districts of South Lebanon<sup>5</sup>. First, we notice that Tyre district represents an important part among all the regions of the South! In fact, 47% of the selected beneficiaries are located in Tyre, while 15% of beneficiaries are located in Bintjbeil. Note that these two districts received high scores by the scoring method. On the other hand, 18% of beneficiaries are located in Marjayoun (16 beneficiaries), the district whose score is zero. We note that four of them had a very low score by the disqual method, and 4 others received an average score (belong to the zone of uncertainty) but in fact they are chosen based on the opinion of the committee.

In fact, these large percentages reflect the level of vulnerability in these regions.

The number of selected beneficiaries in Jezzine and Hasbaya (4 beneficiaries each respectively) and in Saida-Zahrani and Nabatiye (5 beneficiaries each respectively) are the lowest comparing to the other 3 districts; this can be explained by different facts, we note for example that the humanitarian

organizations are more present in Saida which is considered as a city in southern Lebanon, job offers are more available to locals, which decreases in a way or in other the level of vulnerability. In Hasbaya district, regardless the high level of vulnerability like all the other districts in the south, there is no effective response since in such rural areas people

are still not familiar with this type of work.

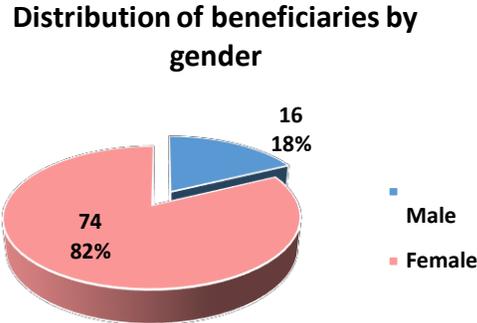


**Fig. 3:** Distribution of the beneficiaries by district

<sup>5</sup> Southern Lebanon is composed of two Mohafazats, Nabatiyeh, which is divided into four districts, Nabatiyeh, Marjayoun, Bintjbeil, and Hasbaya, and that of Al Janoub, which is divided into three districts and which are Tyre,

Jezzine, and Saida-Zahrani.

### Distribution of beneficiaries by gender



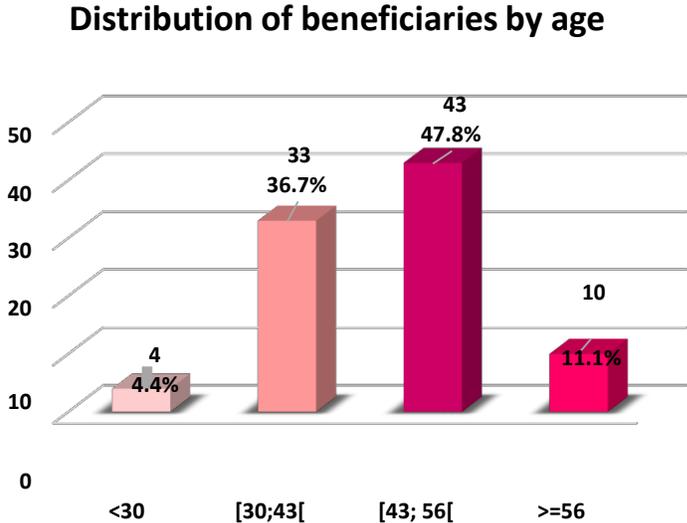
The following graph shows that the majority of the selected beneficiaries are women (82% out of the total), where in addition to the vulnerable women who represent 75.6% of the total beneficiaries, when talking about the prisoners families, the wives

intervene primarily. In other words, we can say that the majority of the 90 beneficiaries of the second phase of the project are women (74 women among 90 beneficiaries)!

**Fig.4:** Distribution of beneficiaries by gender

### Distribution of beneficiaries by age

During the data analysis phase, and in order to observe better the age of the interviewees, we grouped them into 4 different age groups. So according to this graph, we note that 84.4% of the beneficiaries (76 people out of the 90 selected) have an average age between 30 and 55 years old, indicating a good choice of beneficiaries especially when we talk about maturity, productivity, and accountability. At the same time, people who are only 30 years old (4 people) or over 56

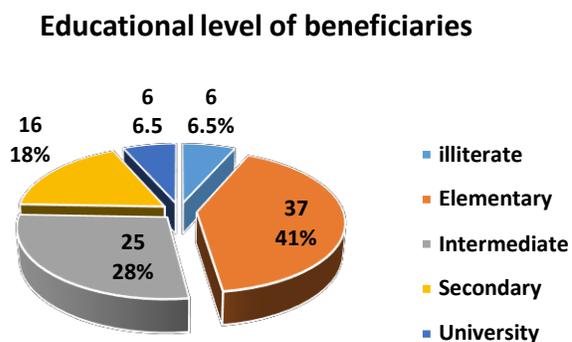


years old (10 people), who are also vulnerable, cannot be neglected. In fact, these people represent a significant part of the Lebanese society, especially when we talk about the problem of early marriage, which sometimes gives birth to vulnerable young women who are divorced, married, or widowed!

**Fig.5:** Distribution of beneficiaries by age

## Educational level of the beneficiaries

The educational level is an indicator reflecting the economic and social situation, the mentality, the cultural level, or the power to manage a productive project.



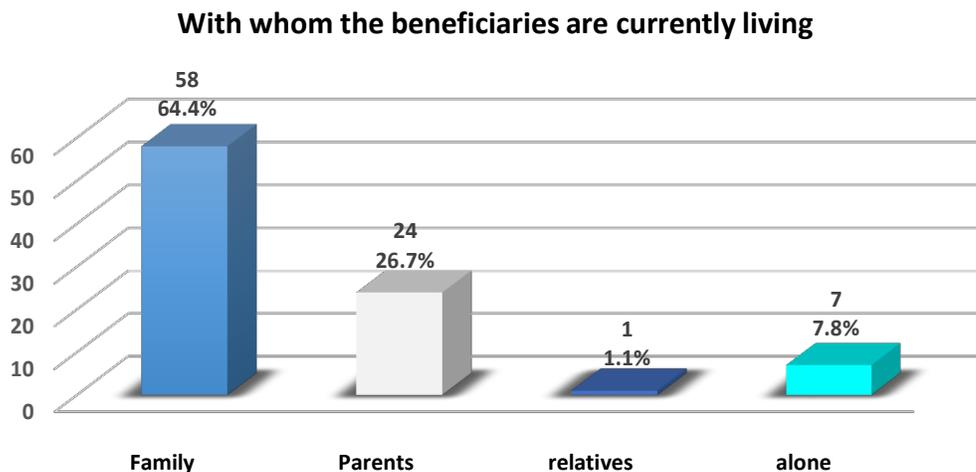
Out of the 90 beneficiaries selected, only 6 are illiterate (6.5% of the total). 87% of the total beneficiaries (78 people) are at school level, either elementary (37 people), intermediate (25 people), or secondary (16 people), the rest represent only 6 beneficiaries who are at university-level.

This is appropriate with the model of the score obtained, since the score of an educated person is high while that of an illiterate person is zero.

**Fig.6:** Educational level of beneficiaries

## With whom do the beneficiaries live?

This question is asked in order to identify with whom the selected beneficiaries live, and to identify their household<sup>6</sup> status, thus to build an idea about their social situation, economic independence, and the space of freedom and the safety they have especially when we talk about vulnerable women.



**Fig.7:** With whom do the beneficiaries live?

64.4% of the beneficiaries (58 people) live with their own families, the criteria that received a high score as it reflects independence and stability, while 26.7% of them (24 people) live with

<sup>6</sup> A household is defined as a group of people who regularly eat the same pot, live in the same compound (or physical location), and share the same budget that is managed by the head of the household. It is possible that they can live in different structures. (UNHCR, 2011)

their parents, with a low score. A difference between these two terms is explained by the fact that a "family" is composed of two parents and their children, in other words they can be for example the husband and the children of a vulnerable married woman or the wife and children of an ex-prisoner, they may also be the father, mother, and unmarried siblings of a single woman or ex-single prisoner. However, "parents" are the father, mother, or siblings of a married man or his wife. In fact, the term of social and economic independence varies according to the case, from a person who is independent of his parents and lives with his own family to another one who lives with his parents.

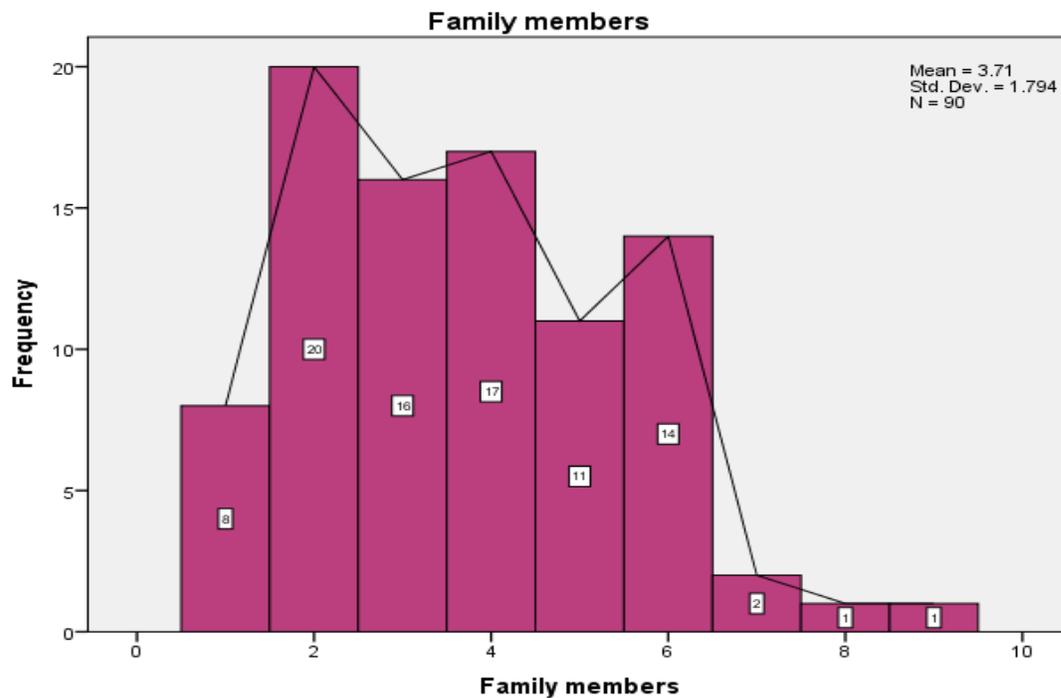
Only one beneficiary is hosted from her relatives, which limits her freedom and independence. 7 beneficiaries live alone. These people are completely independent; they are responsible for themselves.

### Beneficiary household members

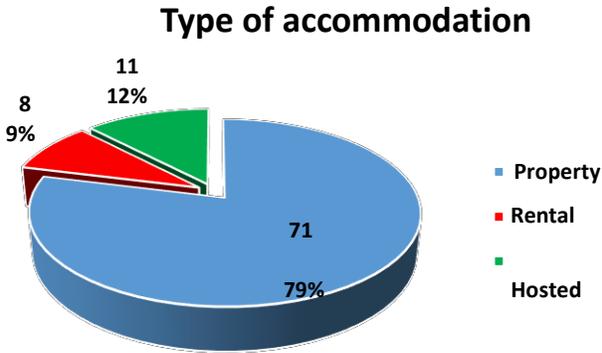
Although the household members of the selected beneficiaries vary between 1 and 9 people, we note that the variance (3.219) is very close to the average (3.7), which indicates that for most families interviewed, their household members vary around the average, which mean that it is about 2 to 4 people. It appears clearly in the histogram which shows that the observed values are well concentrated around the average, with a high number for household members who vary between 2 and 4 people.

Description						
	N	Minimum	Maximum	Mean	Standard Deviation	Variance
Family members	90	1	9	3.7	1.794	3.219

**Tab.3:** Beneficiaries household members



**Fig.8:** Histogram of Beneficiaries household members

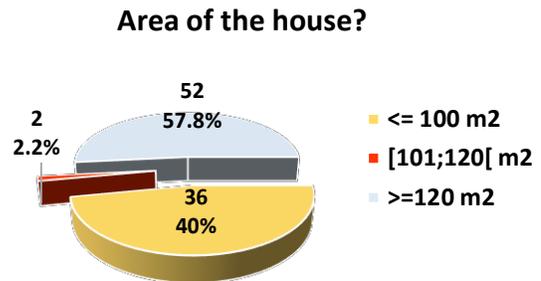


Despite the fact that the characteristic “property of apartment” had a score zero, we note that the majority of beneficiaries live in their own homes (71 people); indeed in the villages the majority of the inhabitants have their own houses with mostly bad conditions.

Only 8 beneficiaries rent apartments while 11 others are accommodated; usually by their relatives.

**Fig.9:** Accommodation type of beneficiaries

We note that 36 out of the 90 selected beneficiaries (40% ut of the total) live in apartments with an area of 100 m<sup>2</sup> or less, while 57.8% live in apartments with an area of more than 120 m<sup>2</sup>. Only 2 people live in apartments of average surface which varies between 100 and 120 m<sup>2</sup>.



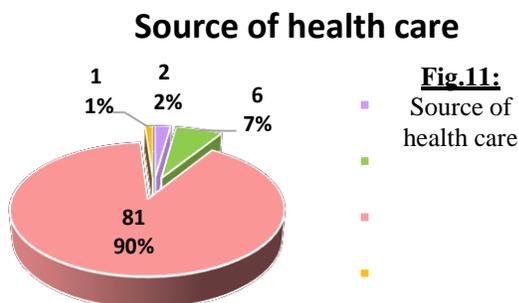
**Fig.10:** House area

Although that the half of the beneficiaries live in big apartments, it seems that the half of the total apartments are in need of repair (50 apartments). Actually, it should be noted that in the rural areas, large area of an apartment never reflects a good economic situation; in fact it is a sign of the Lebanese tradition.

Does the shelter require reparation?		
Reparation	Frequency	Percentage
Yes	50	55.6
No	40	44.4
<b>Total</b>	<b>219</b>	<b>100</b>

**Tab.4:** Situation of the beneficiaries’ apartments

### Source of health care



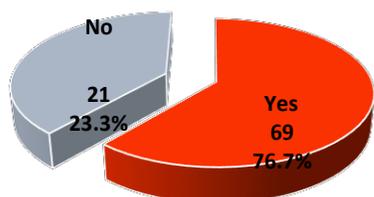
It is noted that 82% of the total beneficiaries do not

Social Security Solidarity Fund None governmental organization

have any source of health care (81 persons) which affirms their vulnerability. Only 7 people have a Solidarity fund (7% of the total), while only 2 people benefit from the social security (2% of the total), where the Lebanese government is obliged to provide social security for all citizens, this is not the case for most of citizens!

## Beneficiaries work

### Does the beneficiary work?



**Fig.12:** Beneficiaries work

The graph below shows that 21 beneficiaries did not have a job before the launching of the project (23.3% out of the total). This can be related to several factors, starting from the absence of the

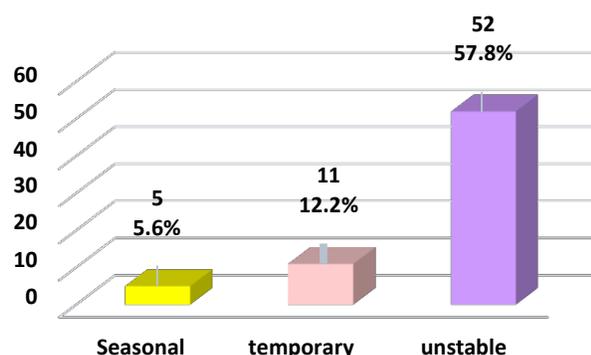
necessary capital to launch a project, passing to the lack of work opportunities in South-Lebanon, thus arriving at the social situation and the relation with the entourage, especially when we are talking about ex-prisoners who find many difficulties to get involved again with the community.

So 69 beneficiaries among the 90 selected were doing simple work, while the remaining 21 do not work, 8 of them were chosen by the committee and have received a bad score by the Disqual method, also 5 others received an average score (belong to the area of uncertainty). However according to this last method, the score of the person who works is better than who does not work, since usually a person who works has an experience in his field.

Monthly salary of beneficiaries		
Salary in USD	Frequency	Percentage
<300	43	47.8
[300;334[	16	17.8
≥334	25	27.8
<b>Total</b>	<b>84</b>	<b>100</b>

**Tab.5:** Monthly salary of beneficiaries

### Beneficiaries work type



**Fig.13:** Beneficiaries work type

Among 69 selected beneficiaries who had a job before starting this project, half of them had unstable work (57.8% out of the total), while 5.6% had seasonal work, especially when we are talking about the agricultural sector. 12.2% of the total beneficiaries were daily workers, mostly in the construction sector.

We note that almost the half of the workers (47.8% out of the total) receive a low salary (<USD 300), while 16 of them receive a salary that ranges between USD 300 and USD 334.

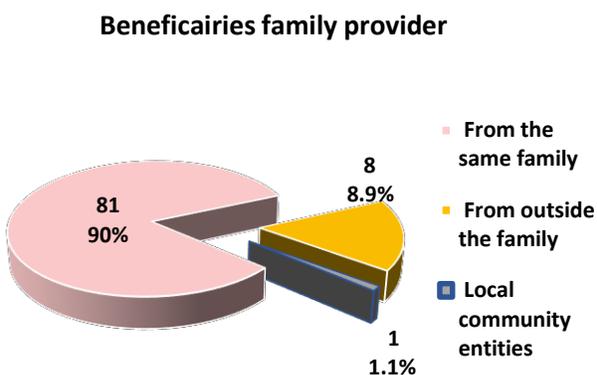
In fact, only 15% of the workers receive a salary above the SMIC<sup>7</sup> in Lebanon, which reaches USD 450.

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<sup>7</sup> SMIC: Minimum Inter-professional Growth Salary

## Beneficiaries' Household main provider

This question is usually proposed in order to identify whether the beneficiaries are the main supporters of their families, and to know, if not, the main economic source of the household.



**Fig.14:** Beneficiaries' family main provider

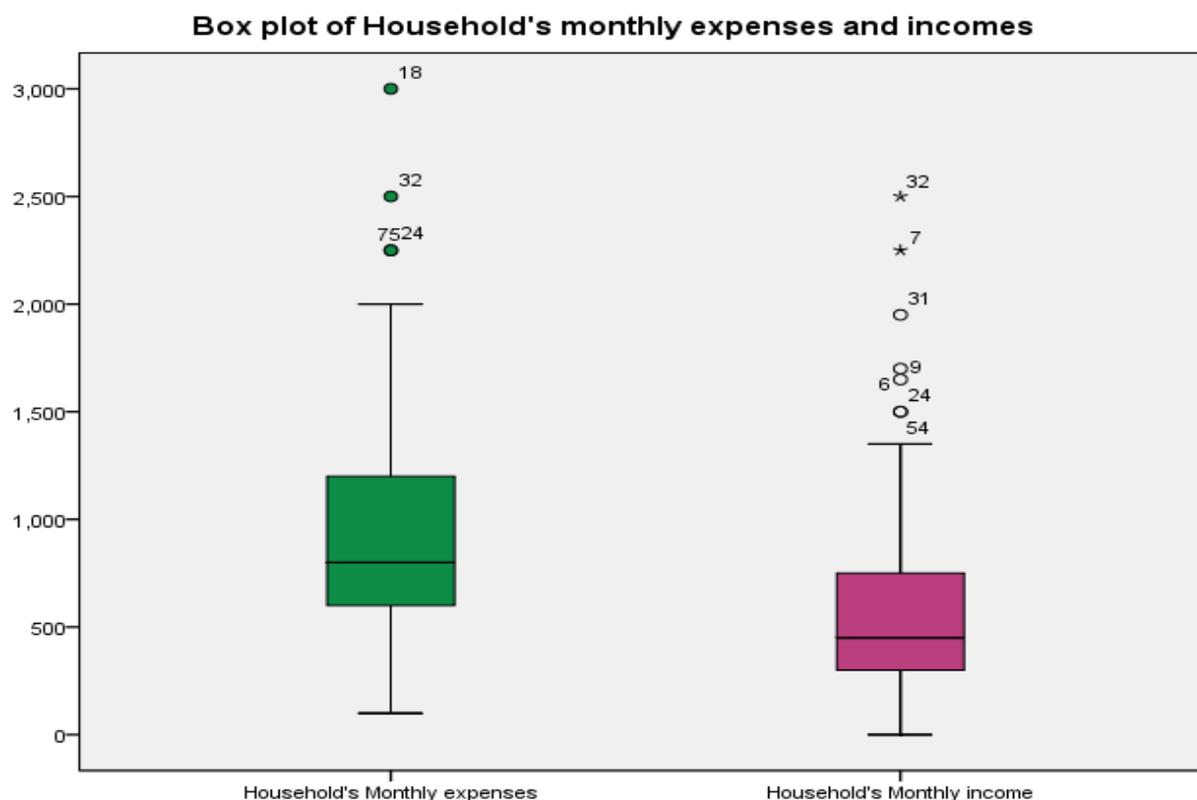
Family main provider		
Main provider	Frequency	Percentage
Beneficiary	60	66.7
Parents in law	2	2.2
Children	4	4.4
Parents	15	16.7
Relatives	8	8.9
local humanitarian organization	1	1.1
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Tab.6:** Beneficiaries' family main provider

We note from the results that for the majority of the selected beneficiaries (90% of the total), the main provider comes from their families, 66.7% of them are the beneficiaries themselves as shown in the table above; this criteria had the highest score. For the rest, we note that the provider is one of their parents (16.7% out of the total), or one of their children (4.4% out of the total) with an average score for this characteristic, also they could be their parents in law (2.2% of the total), with a good score also for this criteria.

8 people receive an economic support from their relatives (8.9% out of the total), while only one selected beneficiary receives help from a local humanitarian organization.

## Monthly incomes and expenses of the beneficiaries' families



**Fig. 15:** Box plot of the household monthly expenses and incomes

The box-plots as well as the table show that the average monthly expenses (USD 655.19) exceed well the average monthly income (USD 416.67).

On the other side, a significant disparity in monthly expenses as well as in monthly incomes is observed and confirmed by the value of the high variance, which strongly depends on the work of household members, the diversity of the types of work of household members, number of children, sources of help, type of apartment, and many other factors. This diversity means that monthly expenses range between USD 66.67 and USD 2,000, with an average monthly expenses

Statistics	Monthly Expenses (USD)	Monthly Income (USD)
Mean	655.19	416.67
Median	566.67	300.00
Variance	181,653.97	149,900.79
Std. Deviation	348	316.12
Minimum	66.67	0.00
Maximum	2,000	1666.67

of USD 655.19 and that monthly incomes are between USD 0 and USD 1,066.67 with an average monthly income of USD 416.67 which is almost close to the SMIC in Lebanon (USD 450).

Indeed, we notice that the monthly expenses of the selected beneficiaries always exceed their monthly income regardless of whether the beneficiaries are working or not.

**Tab.7:** Households monthly expenses and incomes

## Debts of the households of the beneficiaries

As for the majority of beneficiaries, the monthly expenses of their households exceeds well their incomes, the use of borrowing money is an essential result in the absence of social assistance from the government. So we see from the results above that the majority of the beneficiaries have debts with a percentage of 85.5%.

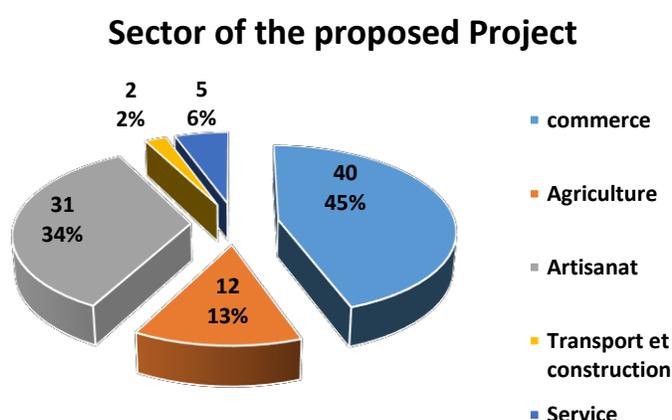
Debts	Frequency	Percentage
Yes	77	85.5
No	13	14.4
<b>Total</b>	<b>90</b>	<b>100</b>

**Tab.8:** Debts of the households of the beneficiaries

## Sectors of the proposed productive projects

Sector of the proposed Project		
Project sector	Frequency	Percentage
Trade	40	44.4
Agriculture	12	13.3
Handy craft	31	34.4
construction	2	2.2
Service	5	5.6
<b>Total</b>	<b>90</b>	<b>100</b>

**Tab.9:** Sector of the proposed project



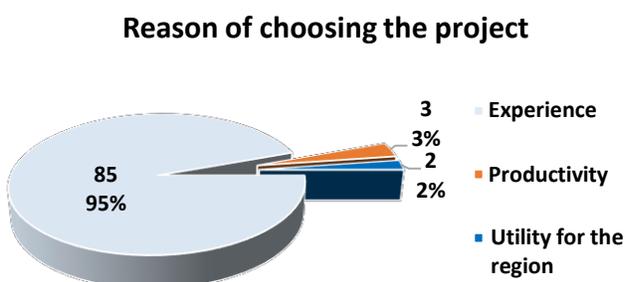
**Fig.16:** Sector of the proposed project

34.4% out of the selected beneficiaries proposed projects related to the handicraft sector, which is received a high score, such as sewing, painting, food production, baking, and others. 44.4% of the selected people proposed commercial projects such as clothing stores, grocery stores, food stores, and others. 13.3% of the selected people proposed projects belonging to the agriculture sector such as agriculture tents, cow keeping, beekeeping, and others, with a very good score obtained for this sector by the Disqual method. On the other hand, 5.6% of the selected people proposed projects belonging to the service sector such as cafes, kindergartens, car wash, and others. It is noted that the score of this sector by the Disqual method used is null.

Only 2 selected people proposed projects belonging to the construction sector (2.2% of the total).

## Reason for choosing the proposed productive projects

It should be noted that the main reason for the choice of the productive projects proposed by the beneficiaries is the experience with a rate of 95% out of the total, which indicates that work



experience is a factor which has been mainly involved in the choice of the 90 beneficiaries, noting that this criteria received the highest score through the statistical method. 3% of the total beneficiaries chose projects thinking that they are productive while only 2% of them think that the region where they live needs such projects they have chosen.

**Fig.17:** Reason of choosing the project

## Years of experience of beneficiaries

Most of the interviewed beneficiaries who have proposed productive projects mentioned that they have an experience in the domain of work proposed, and this differs from person to another especially when we talk about the number of years of experience that vary between 1 year and 30 years! Indeed, only one of the 90 selected beneficiaries does not have an experience in the field of work proposed; this is the project of ice cubes making and selling, in Rmeich village (Bint- jbeil district), noting that this project is specifically chosen by the committee since it received a low score by the statistical method. This beneficiary stated that he proposed such project because of its utility in the area.

Years of experience	Frequency	Percentage
<2	2	2.2
[2;7[	21	23.3
[7;13[	33	36.7
>=13	34	37.8
<b>Total</b>	<b>90</b>	<b>100</b>

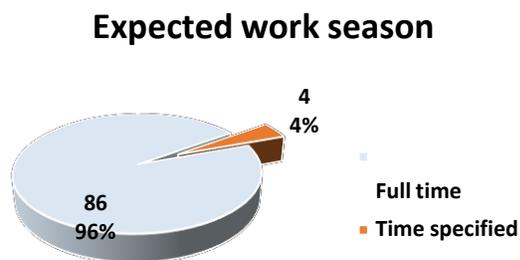
On the other hand, 23.3% of the beneficiaries have an experience related to the domain of the proposed projects that varies between 2 and 6 years, almost 36.7% of the beneficiaries have an experience that varies between 7 and 12 years; which received a high score compared to the others.

**Tab.10:** Years of experience in the domain of proposed projects

It should be noted that 37.8% of the beneficiaries have an experience that reaches 13 years or more. Usually this is due to the fact that age, marital status, social and economic situation are the basic of a person's career formation. It is important to know here that some people have work skills in several fields.

In fact, a person with experience in a specific domain has the tendency to succeed more than another who does not.

## Expected Work Seasons for Proposed Projects



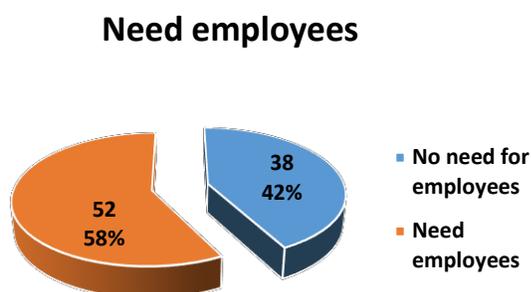
Almost all of the selected beneficiaries assumed that their projects will be productive throughout the year (96% out of the total), while 4% of them assumed that their projects are productive in

specific seasons of the year, especially when we talk about agriculture projects.

We notice that the score of permanent work is high, compared to that of seasonal work which is zero.

**Fig.18:** Expected work season

## Need for employees for proposed projects



The graph shows that almost half of the beneficiaries assume that they will need to employ during their work (58% of the total) and this varies from one to two employees depending on the volume of the proposed project. On the other hand, 42% of them assume that they can manage their proposed projects by themselves alone.

**Fig.19:** Need Employees

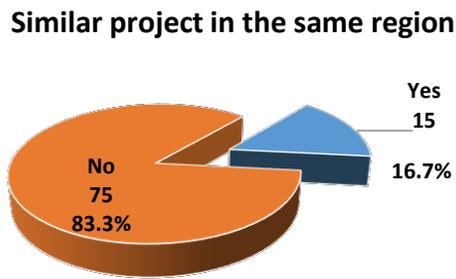
## Expected cost of proposed projects

35 beneficiaries who proposed productive projects assumed that the cost of their projects does not exceed USD 2334 with a low score for this criterion through the Disqual method, while 41 beneficiaries assumed that the cost of their projects varies between USD 2334 and USD 3667 with a good score for this criterion. 14 beneficiaries assumed that the cost of their projects will exceed USD 3667.

Expected cost of proposed projects		
Cost in (USD)	Frequency	Percentage
<2,334	35	38.9
[2,334; 3,667]	41	45.6
> 3,667	14	15.6
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Tab.11:** Expected cost of proposed projects

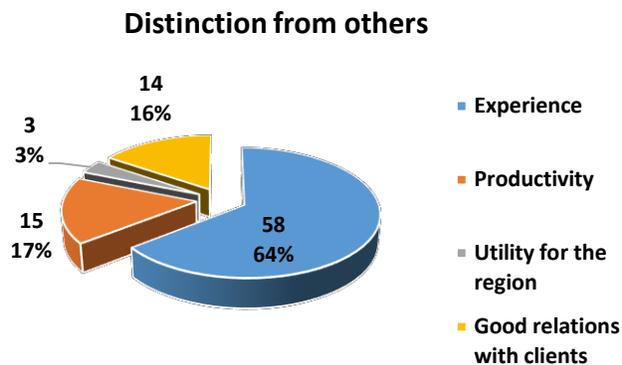
## Presence of a similar project in the same region



Most of the selected beneficiaries indicated that the projects they proposed are unique in the regions where they live (75 beneficiaries), these beneficiaries are selected despite the fact that the score of this characteristic is zero. Only 15 recipients said that there are similar projects in the same area where they live.

**Fig.20:** Presence of a similar project in the same region

## Distinction of beneficiaries from others



Among the 90 selected beneficiaries, 58 of them stated that experience in the domain of proposed projects gets them apart from others. On the other hand, 14 beneficiaries believe that the good relationship with their entourage distinguishes them from others. Similarly, 15 recipients believe that productivity is the essential indicator of the importance of their projects, while only 3 selected recipients believed that the utility of their proposed projects for the region where they live distinguishes them from others.

**Fig.21:** Distinction of beneficiaries from others

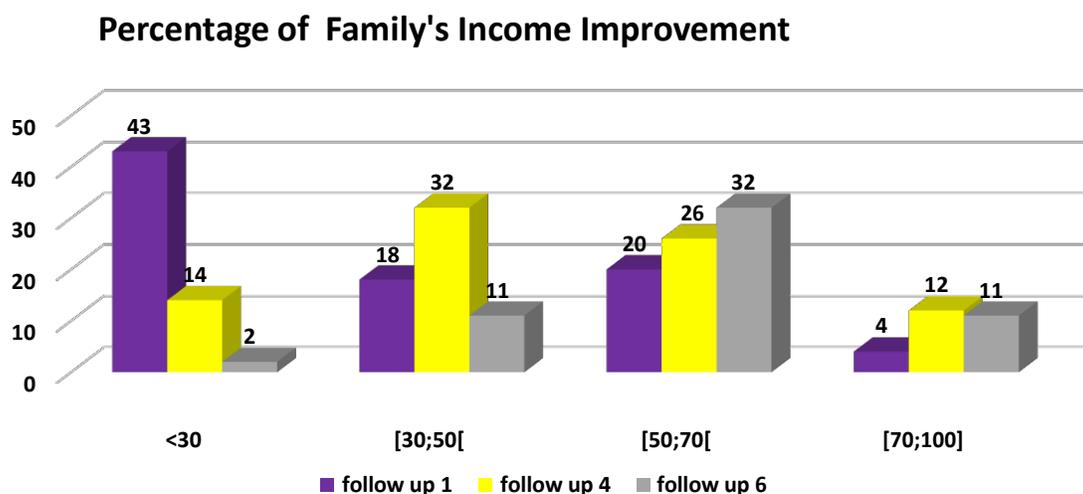
## Analysis of established projects results

After ending of the period that SHEILD gave to the 60 beneficiaries to return the amount of the conditional grant which is 20% of the cost of the QIP divided on a case by case scenario and which ranged between 12 and 18 monthly payments, it was possible to collect complete data concerning payments progress as well as their situations, and this was done through periodic field visits, arriving at a visit every 30 to 40 days.

Regarding the 30 new beneficiaries, it was not possible to collect final results, since the economic situation of these projects is not well developed yet, where the period to return 20% of the cost of these 30 QIPs developed was not finished yet by the time of finishing this report.

So in this report we tried to create a general view on the approach of these 90 projects, concentrating mainly on the behavior of the beneficiaries and the degree of their satisfaction, as well as their needs to develop their work to insure the success of their projects.

In general, all 90 established projects were realized, a progress either economically or socially to the beneficiaries; where all of them had reflected a positive impression about their projects. Taking into consideration that the progress insured in the relevant projects differ from a follow up visit to another between the beneficiaries, usually by location, type of project, the project owner's performance, and several other factors.



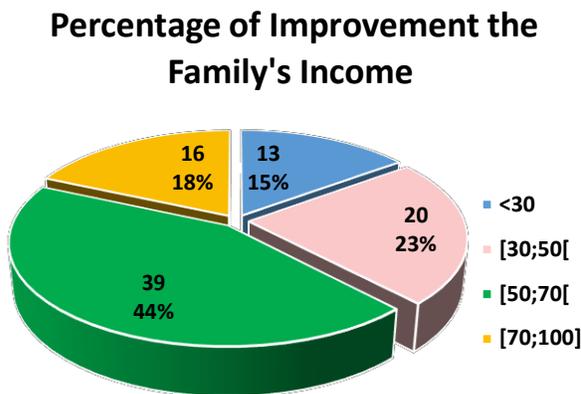
**Fig. 22:** Development of the Percentage of family's income improvement

Actually, all the visited beneficiaries stated that the projects helped them to improve the income of their families. Note that normally, for the 30 new projects, the development is still timid. The graph above represents the percentage of beneficiary income development since the launching of projects (follow up 1), going through the phase where the projects were in development phase (follow up 4), arriving to the phase where the period of reimbursement of 20% of the cost of QIPs is expired especially for the first 60 projects developed.

As it appears in the graph above, during the first follow-up, the development of most projects was still weak where the percentage of development of the beneficiaries' income does not exceed 29%, for 43 projects out of 90 established. During follow up 4, we note that the percentage of development of the beneficiaries' income has increased to become between (30%; 50%) for 32 beneficiaries, and between (50%; 70%) for 26 beneficiaries. Note that during this 4th follow up, 12 beneficiaries were able to ensure an income development that exceeds 70%.

In follow-up 6, especially for the first 60 projects, the development of beneficiaries' income exceeds 50% for most beneficiaries, where 32 of them have been able to ensure an income development varies between (50%; 70%), while 12 others were able to increase their income by more than 70%.

The graph below represents the percentage of income development of each beneficiary during the last follow up realized. It shows that this improvement does not exceed 29% for beneficiaries whose projects are realizing a timid development rate (15% out of the total), we are mainly talking about recently established projects during the no-cost extension phase whose income generation process requires more time; some sewing workshops are mentioned (6 projects), in addition to the few artisanal bread preparation projects (4 projects).



**Fig. 23:** Percentage of improvement the family's income

An income improvement which varies between 30% and 49% for 20 beneficiaries (23% out of the total) takes place especially when we talk about sewing projects (6 projects), and several other handicraft projects like cosmetology projects(3 projects) and traditional food production (2 projects). What is noticed, that almost half of the beneficiaries (44% of the total) reported that their income has improved from 50% to 69% since the start of their projects to date, especially the homemade bread preparation projects (12 projects), sewing projects (10 projects), agriculture projects (3 projects), two cow milking projects, and several handicraft projects such as furniture painting, chocolate decoration, plumbing, and aluminum.

On the other hand, 16 beneficiaries (18% of the total) stated that they were able to make progress that exceeds 70%, and that reaches 100% in the case of 7 beneficiaries such as two artisanal bread preparation projects, a chicken shop, a food preparation project for the occasions, a cafeteria and two hairdressing salons where the owner of one of them in Jezzine district (File number 9), said that this project was able to double her income.

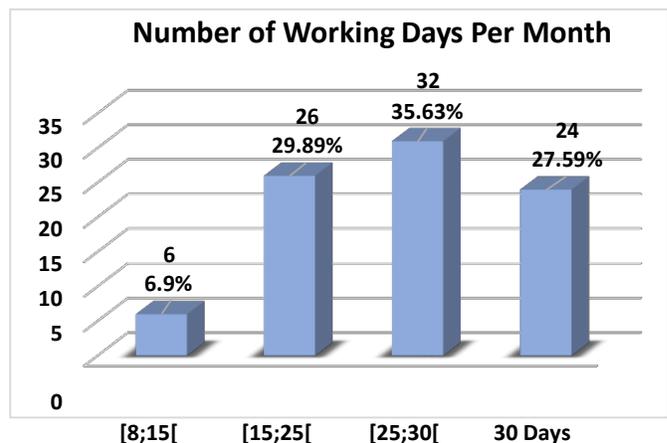
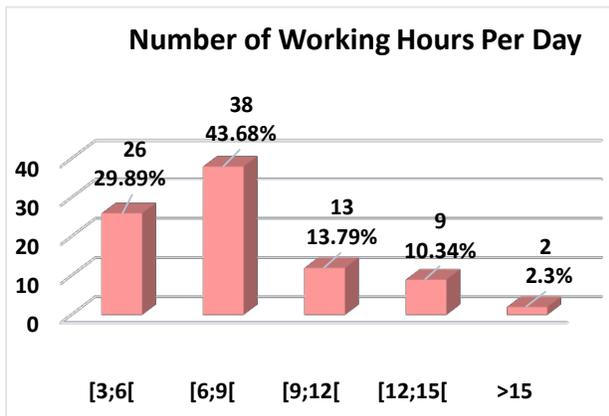
## Load of work

The graphs below show that 26 beneficiaries work between 3 and 5 hours a day, among them we specifically note the agriculture projects, some bakeries projects (7 projects) and some sewing projects whose work is timid and their incomes too (9 projects). The beneficiaries who work between 6 and 8 hours per day are mainly the owners of artisanal bread projects (13 projects), there are also 8 hairdressing salons and 5 sewing workshops, one ice cube making machine project and others.

These beneficiaries have a good income and they have a medium density of work. As for those who work between 9 and 11 hours per day we note especially the sewing factories (8 out of 12 projects), and two cafeteria projects since customers pass to take coffee either in the morning or in the evening.

We also note that 9 beneficiaries work up to 14 hours per day, they mainly belong to trade sector (vegetable shop and grocery shop), and belong to services like the cafeterias (2 projects), car wash (1 project), chocolate decoration project and others. As for those who work more than 9 hours a day, they mostly have an important load of work and therefore they earn the highest

incomes.



**Fig. 24:** Working hours per day of beneficiaries

**Fig.25:** Working days per month of beneficiaries

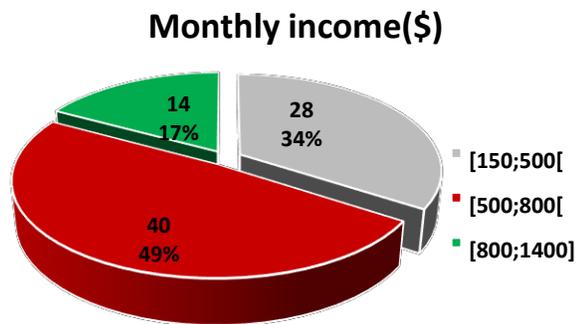
On the other side, we note that more than the half of the beneficiaries work more than 25 days per month, those who work less than that are almost all among the 30 new beneficiaries since their work needs more time to develop. We note especially the projects of preparation of artisanal bread (5 projects) and the sewing projects (9 projects).

## Monthly expenses and income of beneficiaries

We note that 19 of the 90 established projects realized a timid development, since their income increased from \$150 to \$500. Most of them are among the 30 new selected projects. There are 12

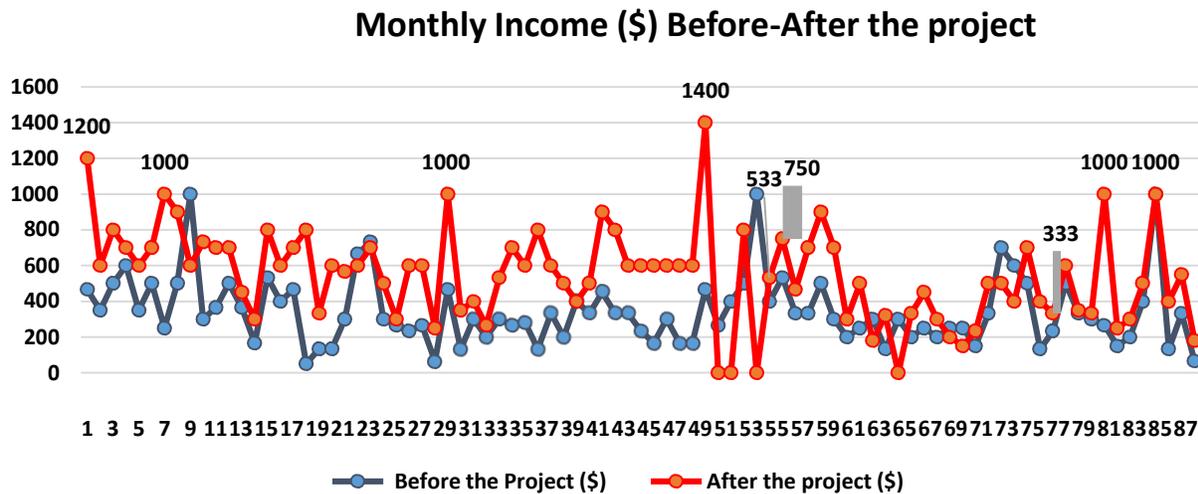
sewing workshops and 5 baking projects. While almost the half of the selected projects (44 projects, 52% of the total) were able to ensure an average development since their income varied from \$500 to \$799. We are mainly talking about 13 projects for the preparation of artisanal bread, 10 sewing workshops, two agriculture projects, 4 cow milking projects, two service projects (Espresso machine, car wash), two projects of traditional food production, a furniture painting project, the chocolate decoration and others.

What is important to mention is that the income of the remaining 24 beneficiaries has increased by more than \$800 per month!! These have especially ensured an unexpected success. Especially, we mention four artisanal bread preparation projects, two agriculture projects, a furniture painting project, a cafeteria, three hairdressing salons, a photography project, and others.



In general, we can say that the beneficiaries' incomes are progressing, especially for those that the phase of reimbursement of 20% of the CGs has finished; they have had sufficient time to develop their projects which have become well known in their regions.

**Fig. 26:** Monthly income of beneficiaries



**Fig.27:** Comparison of beneficiaries' incomes before and after the establishment of projects

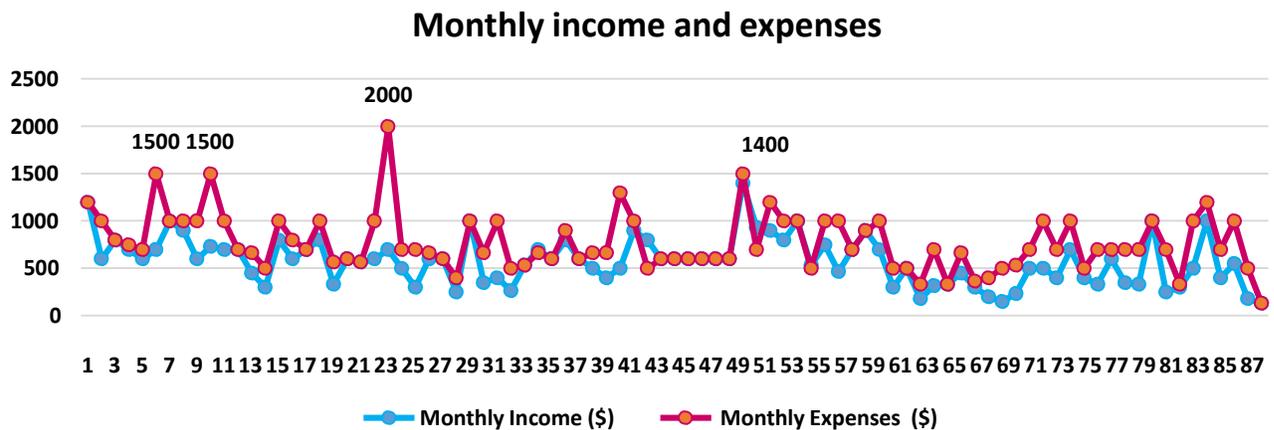
We notice from the graph above that in general the income of the beneficiaries recognize an important progress especially for those who finished their monthly payments (the 1<sup>st</sup> 60 cases), where their work has been enhanced and the projects became well known in their regions.

5 excepted cases among the 90 established projects were detected, where their income is canceled a few months after their start. Actually, three of these beneficiaries were able to ensure an income at 2<sup>nd</sup> or third follow up, but their projects were stopped later due to uncontrollable factors, in 2 cases the cows got sick and died (one or two months after start) and in 3 cases were ex-inmates who got back into prisons (see part “**score of the selected beneficiaries**”)

On the other hand, and during the last field visit, many interesting cases were detected, especially those that their incomes reached USD1000 and more (6 cases in the graph), where for example, the income of Mrs. Fatima Kurayani, owner of a bakery localized in Borj Rahal (Tyre District), reached USD 1200 per month, after the end of the phase of 20% repayments (beneficiary number 1 in the graph). Actually this project is still realizing an important progress in the income since the second follow up and until now. In fact, Mrs. Fatima Krayani is well known in her region by her tasty Markouk bread and “Manakich”.

Moreover two other projects of bakeries (Markouk bread): number 49 established in Tairdebba and number 84 established in Abbassiye, both in Tyre district, were also realized an important progress in their income. (\$1400 & \$1000 respectively)

The project of hairdressing salon established in Jezzine, allows her owner Mrs. Cherine Aoun to make an income of USD 1000 per month (beneficiary number 8 on the graph).



**Fig. 28:** Comparison between the income and expenses of beneficiaries

The above graph represents the difference between the expenses and the incomes of each household of the selected beneficiaries during the last follow up. Note that the red curve representing the monthly expenses is higher than the blue curving which representing the monthly income for most of these vulnerable persons. The expenses curve reaches a maximum of USD 2000 per month in a unique point indicating the household expenses of a selected person. This is the case of Mrs. Jackline Boulos the owner of traditional food products project in

Jezzin. It is noted that this curve is high in several points, which shows that the expenses of these selected persons are higher than the incomes. Actually, this is a normal situation, since the goal of these projects is to help these vulnerable families to improve their standard of living and to become able to support even a part of their expenses.

The blue curve of the revenues reaches a noticeable maximum of USD 1400 per month in only one point. This is the case of Mr. Ahmad Chafik the owner of a bakery in Tairedebba (Tyre district).

### Products, services, and needs

The projects of bakeries present mostly bread and markouk bread which are mostly sold. Regarding the projects of cafeteria (espresso machines), they actually present all kinds of coffee, juice, and ice cream, but espresso coffee is the most requested. As for cow milking projects, they sell all kinds of dairy products, but milk and yoghurt are the mostly requested.

Concerning sewing projects, they fix clothes, designing and make all types of sewing but the fixing clothes are mainly requested since people usually prefer the ready-made clothes. As for the projects of hairdressing, they present hairstyling, make-up, tattoo, but the make-up and hairstyling are the frequently requested. The furniture painting projects essentially paint furniture and wood. The only project of ice cube making and selling is essentially sell ice cubes for the restaurants and markets.

All beneficiaries stated that the projects have a positive impact, since they have been able to ensure economic independence for some, and have been able to improve the economic situation of others.

Now all micro-entrepreneurs can do their work faster due to the tools provided, and most of them have asked for the possibility of getting additional machines needed for their work as a mixer and a larger bakery, mainly in the case of artisanal bread preparation projects, and as an electric chisel, a steam iron, a sewing table and a carpet sewing machine in the case of sewing projects. The owners of the hair salons asked for some cosmetics, an air conditioner, and an IPL machine.

Beneficiary think that if they have these machines they can increase the production thus to answer the needs of all the customers which thus allows them to develop their projects and to increase their incomes, since the variety and the good quality of the products and services are important and help to create a customer network, in addition to marketing through customers and social media that can help them to be better known in their workplaces.

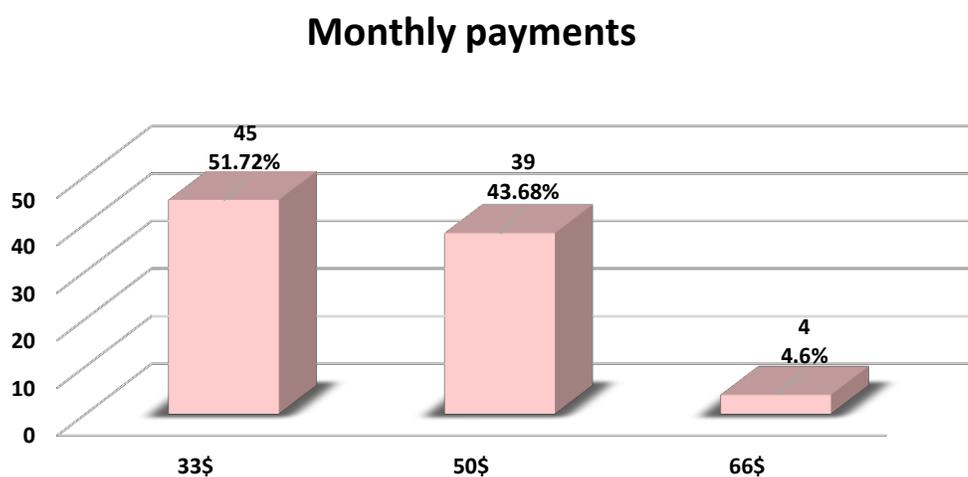
The problems they faced are mainly related to the need for repairing the machines and tools used, and the need for new products and machines that they do not have.

One beneficiary stated that her workshop needs rehabilitation.

## Monthly payment & Bills

As known before, SHEILD adopted a new advanced approach to the project, which is the conditional grant. Actually the beneficiaries have to return something back which is 20% of the grants amount without any interest or legal liability as in the case of a loan, getting into consideration the cost of QIPs established as a conditional grant which have to be returned on a monthly basis by the beneficiaries.

After the end of the period that SHEILD gave to the initial 60 beneficiaries to reimburse the 20% of the conditional grant amount, and after that the 30 remaining beneficiaries established in the no-cost extension phase started to pay their monthly payments, we will try to explore from the graphs below the results of this new step and its impact on the beneficiaries especially that we are targeting vulnerable people and not those who have an acceptable standard of living as in the case of a bank or microfinance institution loan.



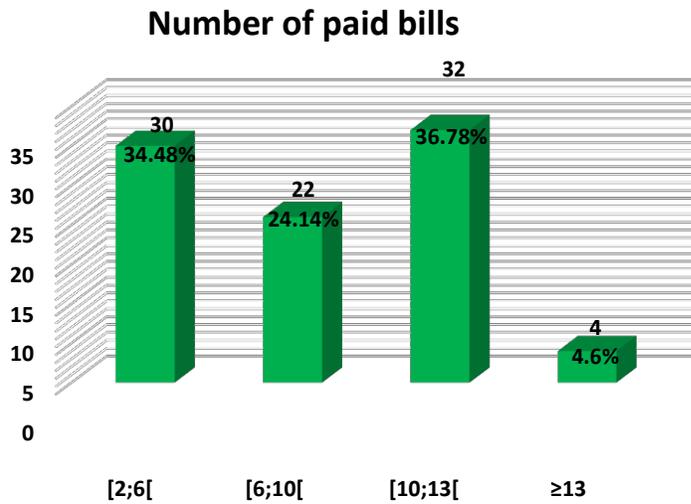
**Fig.29:** Beneficiaries monthly payments

First, we note that all 90 beneficiaries said that they could pay between \$ 33 and \$ 66 as a monthly payment of 20% of the amount provided.

45 selected beneficiaries (51.72% of the total) chose to pay a monthly amount of \$33 per month; while another 38 (43.68% of the total) preferred to pay \$50 per month.

Only 4 beneficiaries could pay \$66 per month.

It is important to mention that after the second follow-up, all 88 (excluding the 2 cow milking cases who stopped after 1-2 months of QIP establishment) beneficiaries paid their installments on time without any delay with the exception of 5 among them who did not start paying (2 beneficiaries), and after the fourth follow up (3 beneficiaries). However, as shown in the graph below, 30 beneficiaries (34.48% of the total) have been able to pay 2 to 5 installments till date;



mainly they are the owners of the new projects developed and those

who stopped paying. 21 beneficiaries (24.14% of the total) paid 6-9 installments, while the rest (36 beneficiaries) paid 10 or more payments till date (41.38% of the total)

**Fig.30:** Number of payments paid by the beneficiaries up to the sixth follow up

## Score of the selected beneficiaries

Score table of 90 selected QIPs						
# Dossier	Beneficiary Name	Project Type	Score (Disqual)	Ȳ Disqual	Ȳ committee	Y
1	Ahmad Thini	Car wash shop	889.53	1	1	1
2	Mahmoud al-Daoud	Agricultural Tent	885.83	1	1	1
3	Norma AbdelNour	Cosmetology	853.045	1	1	1
4	Ali al-Natour	Blacksmith	847.46	1	1	0
5	Husein Balhas	Agricultural Tractor	843.419	1	1	
6	Abir Skafi	Bakery	843	1	1	
7	Najlaa Atallah	Cosmetology	839.19	1	1	1
8	Zeinab Abou Yehya	Sewing	838.81	1	1	
9	Manifa Khreis	Sewing	836.24	1	1	
10	Zahraa Safiya	Bakery	833.62	1	1	
11	Mohamad Moustapha	Plumbing	828.41	1	1	1
12	Zeinab Mouanah	Bakery	823.173	1	1	1
13	Afifa Trad	Bakery	819.88	1	1	1
14	Susan Jawad	Bakery	819.88	1	1	1
15	Bassem al-Jammal	Concrete carpenter	819.27	1	1	1
16	Amal Mohsen	Sewing	819.27	1	1	
17	Naama Jamil	Bakery	817.88	1	1	1
18	Samar Muslem	Agricultural Tent	811.945	1	1	1
19	Fidaa Chouayb	Bakery	796.48	1	1	1
20	Rana Rahme	Chocolate Decorating	796.113	1	1	1
21	Dalal Darwich	Sewing	793.887	1	1	1
22	Husein Krayani	Butchery shop	788.94	1	1	0
23	Wissam Hallal	Cafeteria	784.04	1	1	1
24	Naama Dakdouk	Sewing	783.7	1	1	
25	Kamila al-Alam	Cow keeping	782.533	1	1	0
26	Siham Ghassana	Hairdresser salon	773.67	1	1	1
27	Zeinat Zayoun	Sewing machine	770.49	1	1	1
28	Amal Mahdi	Bakery	763.103	1	1	
29	Kawkab Kteich	Cow	754.99	1	1	
30	Yasmine Chahin	Sewing	749.42	1	1	
31	Mariam Srour	Bakery	749.16	1	1	
32	Mariam el-Khaled	Cow	744.299	1	1	1
33	Jackline Boulos	Homemade Products	740.072	1	1	1
34	Rabab Kansa	Cosmetology Salon	739.38	1	1	
35	Saada Daher	Cosmetology Salon	733.68	1	1	
36	Cherine Aoun	Cosmetology	731.608	1	1	1

37	Ahmad Chafik	Bakery	725.66	1	1	1
38	Fatima Bakri	Bakery	721.27	1	1	
39	Husein Darwich	Bakery	720.73	1	1	
40	Aliya Bark	Bakery	715.41	1	1	
41	Samira Salman	Sewing	711.792	1	1	1
42	Amina Asfour	Bakery	711.792	1	1	1
43	Rabab Soueid	Bakery	710.96	1	1	
44	Joumana Faraj	Photography	709.37	1	1	1
45	Amal Balhas	Agriculture work	707.21	1	1	
46	Samira Sleiman	Bakery	707.171	1	1	1
47	Mervat Ali Amin	Sewing	694.638	1	1	1
48	Hanan Kassem	Bakery	693.26	1	1	1
49	Dalal MazeH	Bakery	690.19	1	1	
50	Samira Orbiya	Cosmetology Salon	688.77	1	1	
51	Georgette Jreis	Sewing	681.009	1	1	1
52	Mountaha al-Chami	Sewing	680.23	1	1	
53	Ali Moughniyeh	Alluminium	679.81	1	1	1
54	Badiaa Maki	Tuck shop	679.54	1	1	1
55	Souad Alhadj ali	Homemade cooking	674.977	1	1	1
56	Manal Choufani	Bakery	672.39	1	1	
57	Souad Hanna	Bakery	656.89	1	1	1
58	Hamida al-Khaled	Cow	647.409	1	1	1
59	Therese Khoury	Bakery	637.611	1	1	1
60	Dalal Sanan	Cow	636.41	1	1	0
61	Ali Kasem	Furniture Painter	635.428	1	1	1
62	Salma Zeidan	Sewing machine	635.14	1	1	1
63	Fairouz Dhayni	Sewing	626.15	1	1	
64	Hayat Najem	Factory Sewing	623.985	1	1	1
65	Roula Mheich	Sewing	618.197	1	1	1
66	Samir Daher	Cow	608.77	1	1	1
67	Zeinab al-Dorr	Sewing	598.14	1	1	
68	Fatima Sueidan	Bakery	595.868	1	1	1
69	Hayla Amer	Sewing	595.26	1	1	
70	Khadija Saad	Espresso Machine	590.02	1	1	1
71	Mira Daher	Factory Sewing	558.78	1	1	1
72	Georgette Risk	Factory Sewing	558.599	1	1	1
73	Hamida Darwich	Vegetable Shop	536.848	1	1	1
74	Yousra Karim	Bakery	526.98	1	1	1
75	Smaher Awala	Espresso machine	523.64	1	1	1
76	Husein Zaraket	Cows Keeping	520.346	1	1	
77	Carla Habib	Factory Sewing	514.658	1	1	1
78	Lara Karam	Factory Sewing	509.083	0	1	1
79	Rajaa Mahdi	Product Manufacturing	497.69	0	1	1
80	Fatima Krayani	Bakery	486.787	0	1	1

81	Mona al-Zein	Sewing	479.56	0	1	
82	Maha Atoui	Cow keeping	468.062	0	1	1
83	Mohsen Wehbi	Furniture Painter	464.161	0	1	1
84	Laudi Salloum	Ice Machine	443.719	0	1	1
85	Heba Jouhayr	Chicken Shop	428.917	0	1	1
86	Chadi Joulani	Cafeteria	383.873	0	1	0
87	Samira Youness	Cosmetology	371.109	0	1	1
88	Samira al-Husainy	Agricultural Tent	346.231	0	1	1
89	Diana Abou Rahal	Factory Sewing	311.384	0	1	1
90	Alia al-Achi	Bakery	285.982	0	1	1

**Tab.12:** Score of 90 QIPs

The table above represents the beneficiaries score obtained by the Disqual method (Disqual score,  $\hat{Y}_{Disqual}$ ), as well as the opinion of SHEILD committee ( $\hat{Y}_{committee}$ ), and the actual results ( $Y$ ) which is considered the final result of the QIPs especially for those who have already completed the period to pay the 20% of the total amount provided. So for  $Y$  equal to 1, we can consider that the QIP created had a success and the beneficiary was able to return the 20% of the total amount provided on time and continues to generate income so far. For those with  $Y$  equal to 0, we can say that the QIP is unsuccessful and the beneficiary could not continue paying his monthly bill, or the project is canceled immediately after the launch for different reasons.

First of all, **70/90** of the selected beneficiaries received a positive score and were considered as eligible beneficiaries according to the score model obtained (the cells in green), while **7** beneficiaries obtained an average score since they belong to the uncertainty zone (the cells in orange).

However, the remaining **13** beneficiaries are considered bad according to the latter model (the cells in red).

So from the committee's point of view, all of these 90 projects are considered good since the  $\hat{Y}_{committee}$  is equal to 1 for all selected projects as shown in the table below.

Final Results of 60 QIPs/ after loans maturity				
		Effective Results		Total
		Good beneficiary	Bad beneficiary	
Results according to the score model	Good beneficiary	43	5	48
	Bad beneficiary	11	1	12
Total		54	6	60

**Tab.13** Table of final results of the 60 QIPs comparing to the Scoring model results

In fact, we note in the last column of the scoring table above that 5 beneficiaries had a score '0', which means that these projects were unsuccessful, while 4/5 of them have obtained a good score according to the scoring model, for the following reasons:

1. **Kamela el-Alam:** age 55 from Rmeich village in Bintjbaïl district, she was married to a physically handicapped husband (legs cut due to cancer and died after two months of the project). The project was related to cow milking. SHEILD support was mainly purchasing the cow. After two months of the project, Kamela's cow was infected by a disease and died (despite that SHEILD offered her a veterinary). During the first month of the project, Kamela succeeded to pay her monthly fees (but she stopped later due to project failure).  
Indeed, this beneficiary had a good score by the disqual method (score = 782.533), since she is the main person in charge of her family with whom she lives, and what differs her from others in her entourage is the very good experience that she has and which exceeds 15 years in the field of the project that she proposed with an affordable cost. (Project cost: 3000\$)
2. **Dalal Sanan:** 45 years old, from Ain Kenya in Hasbaya district. The project was related to cow milking. SHEILD support was mainly purchasing the cow. After one month of the project, Dalal's cow was infected by a disease and died (despite that SHEILD offered her a veterinary). Dalal did not pay any fee. (Project cost: 3000\$)  
Also this beneficiary received a good score by the disqual method (score = 636.41), since she chose a project belonging to the field of agriculture with an affordable cost and in which she has 15 years of experience. This differs her from the others in her entourage.
3. **Hussein Krayani:** ex-inmate (financial crime – not paying back his debt), from Borjrahal in Tyre. SHEILD supported Hussein with his butchery project. The project was going well and Hussein was paying the reimbursement fee regularly for around one year. After one year of the project, Hussein was arrested for committing financial crime (paying through fake checks). (project cost: 4000\$)  
This beneficiary had a good score by the disqual method (score = 788.94), since he proposed to develop his work in his own butcher shop located in Tyre, so he has a good experience of 15 years which differs him from the others in his field. And since he lives with his own family and provides the essential income, so this criteria gave him more chance to have a good score.
4. **Ali al-Natour:** ex-inmate (street fight crime), from Tyre city. SHEILD supported Ali with his ironing project. After 8 months, Ali was arrested again due to street fight and drug use crimes. Despite his arrest, his brother continued to pay the reimbursement fee (Ali paid during the first 8 months). (project cost: 2330\$)  
This beneficiary had a very high score by the disqual method (score = 847.46), since he proposed to develop his blacksmith work in Tyre and he proposed the need to have an employee who help him in his work, noting that Ali has 7 years of experience in this field which differs him from the others as he stated. This beneficiary lives with his mother and insures the income of his family, which gave him more chance to have a good score.

5. **Chadi Joulani:** ex-prisoner (for fighting and drug crimes), from Tayrdebba village in Tyre district. The supported project was a cafeteria. In the beginning, the project was going well and Shadi was paying the reimbursement fee regularly for around one year. After one year of the project, Shadi closed the cafeteria and escaped the village due to a lawsuit charge against him for drug use. (project cost: 3570\$)

This beneficiary had a very low score by the disqual method (score = 383,873), since he lives with his parents whose father provides the main income of the family. He proposed to develop his cafeteria in Tairdebba (Tyre District) without any need of an employee. The latter believed that a good number of friends is sufficient for the success of his project, without taking into consideration the importance of responsibility, commitment to work, and the remoteness of bad actions.

Indeed, all these characteristics have weakened Chadi's score, which actually failed in his project.

It is important to note that 3 out of these 5 bad beneficiaries attended the financial training that was conducted by SHEILD.

On the other side, an analysis of a few projects that received low scores, but were able to refund the entire amount requested on time without any delay and continue to manage income till now and are consequently considered as good beneficiaries, was realized in order to detect the bad characteristics that have weakened the score of these projects. So this analysis shows that:

The ice cubes making and selling project, which is considered bad according to the scoring, has really been able to ensure excellent results! The beneficiary Laudi Salloum who works and her son in this project were able to ensure a very good income in a short period, which could reach \$ 800 per month noting that the net profit of this project could reach \$ 750 as she has declared during the last visit. This benefit allowed them to buy a freezer to conserve the ice and a car for distribution. This project is located in Rmeiche (Bintjail district) where the beneficiary lives with her own family and regardless the fact that her work is permanent but decreases during the winter season. On the other side, and before the establishment of this project, the beneficiary did not have a job and as a result she was not the income main provider to her household also she doesn't have any experience in this domain, and the cost of her unique project in the area was high, and the beneficiary did not ask the need for an employee since her son help her as mentioned before.

Therefore the success of this project is related to the utility of such project in the region and the absence of a similar competitive project in this area. (File number 84)

The chicken shop project insured an average income of \$500 per month. The beneficiary Heba Jouhayr lives with his own family but since she is a widow and does not work; her children are the family's main income providers. His project belongs to the commerce sector and is not unique in her region. The beneficiary has an experience in this domain but at the same time she needs an employee. (File number 85)

As for the beneficiary Mohsen Wehbi, who proposed a furniture's painting project and who was able to insure an average income of \$750 per month and continues to implement different projects, he lives with his family in Marjaayoun district, he did not have a work before the start of his project and therefore he was not the income main provider to his household, he is not educated and his project is unique in his region, however the strengths of this project are: the handicraft sector that has received a high score, the low cost, 10 years of experience in the field of work, the need for an employee, and the ability to work all the year.

Thus its success may be due to the fact that this project is established in a far region (Kham, Marjaayoun district), where such a similar work is limited, note that the beneficiary has an experience of 10 years in this field, so he is known in his area and earns the trust of people. (File number 83)

Among the projects that have received good scores by the disqual method and have succeeded, it is remarkable that:

- The five projects of cow keeping have not all been able to make good profits, as their work is seasonal and it needs time for results to appear. In other words, these beneficiaries paid on time without any delay but their work and their development are timid. These projects did not fail, but they are not improving as the ones mentioned above. In other words those beneficiaries are not working hard to move their small businesses from a village oriented projects to become district or regional base one. But the most important surprise detected is that the beneficiary Hamida al-Khaled was able to make a \$700 income from the sale of dairy products. (File number 58)
- Most of the sewing projects (9 projects) could not insure a profit that exceeds USD 400, despite that they have returned the entire requested amount on time. Exceptionally, We noted that the beneficiary Georgette Jreis was able to ensure an income of \$1000 per month (File number 51) and the beneficiary Rola Mheich was able to insure a high profit of USD700 (File number 65, case 31 on the graph), which allowed her to rent a larger workshop, and she designed student costumes in several schools.



**Fig. 31:** Sewing workshop at Burj Rahal (Tyre)



**Fig. 32:** Sewing workshop at Qlaiaa (Marjaayoun)

- Some projects for the preparation of artisanal bread (8 projects) with good scores have not been able to ensure a good income or the maximum benefit provided by one of them does not exceed USD 450. This result mainly related to the decrease of their activities during the winter season especially when talking about the project taking place in Debbine; Marjaayoun district (File number 43) and that which takes place at Rmeich, Bint jbeil district (File number 56), since in such rural areas the work decreases in winter because of the timid presence of the inhabitants.

Exceptionally, it is noted that the income of the owner of the traditional bread preparation project in Burj Rahal (Tyre district) reached \$1000, seven months after the start of the Project (File number 8). Indeed, the latter is well known in its region by its delicious “Markouk” bread and its good “Manakich”.



**Fig. 33:** Markouk bread preparation project



**Fig. 34:** The fresh manakich

On the other side, we note that most of the projects of the hairdressing salons which received high scores could insure an important success, although they started with a timid development, but now their incomes vary from average to good. Indeed it could be returns to the fact that in such projects it depends on the time to gain the trust of the customers, note that the competition is strong in the presence of many similar projects especially in Tyre district which is a very populated area and considered as a city in southern Lebanon.

Certainly, the hairdressing salon established in Jezzine by Chérine Aoun can be considered among the best projects realized, since this beneficiary could ensure a profit of \$1000 where before the launch of the project, her income was almost \$250 which she received it as a help from her mother. So now this beneficiary has become the main provider of her family since she is divorced, and she has been able to enroll in a professional institute to develop her skills in her career. (File number 36)

As a result, the change in the daily life of all these beneficiaries appear clearly, where some of them have bought new machines such as Ms. Rola Mheish the divorced mother of 3 children who works in sewing. As for Ms. Hiba Jaher<sup>8</sup> her situation changed drastically. Before the grant she was jobless. Being illiterate and widow woman, it was impossible to find a job. This shop has helped her improve her financial and household situation drastically. It goes without saying that almost all the cases fit within the same description<sup>9</sup>.

1. Ms. Rola Mheish (divorced woman) who owns a sewing shop and succeeded to buy new machines and attracted clients from outside her district.
2. Ms. Hiba Jaher (widow woman) who owns a poultry shop succeeded to build for herself a good reputation.
3. Chérine Aoun (divorced woman) who owns a hairdressing salon and succeeded to generate a very high income comparing to her bad economic situation before the project.
4. Ms. Naameh Jamil (single woman) who owns a traditional bakery shop succeeded to raise her bread production to become well known not only in her village but also in her district.
5. Ms. Georgette Geryis (single woman) who succeeded to turn her small sewing shop to become very well known in the South with hundreds of clients.
6. Mr. Ahmad al-Shakif (ex-prisoner) who succeeded to turn his small bakery shop to be known not only in his village but also in Tyre district.<sup>10</sup>

What is important to say is that regardless the variation of the monthly income insured by beneficiaries between good, average, and low, but indeed all those who have been successful did not make any delay during the reimbursing period of the monthly payments but on the contrary most beneficiaries have paid extra installments in advance which reflects a good sign about the choice of these projects.

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<sup>8</sup> Widow women and mother of two children who own a poultry shop in Nakoura area. Her husband died during 2006 war. Thanks to SHEILD, she was able to open her shop.

<sup>9</sup> SHEILD-Evaluation Report-13Dec2017

<sup>10</sup> SHEILD-Evaluation Report-13Dec2017

## Efficiency of the Scoring model

In order to evaluate the effectiveness of the scoring model used, we resorted to the calculation of the refund error rate for the beneficiaries who received a good score by the statistical method but could not return the money after the end of the repayment schedule.

Indeed, for the first 60 beneficiaries chosen, 4 of the 5 projects that failed had already received good scores. Then the error rate of the realized model is equal to:

$$r = \frac{\sum_{i=1}^n a_i P_i}{\sum_{i=1}^n a_i} = \left( \frac{4}{60} \right) = 6.66\%$$

This low error rate of 6.66% can confirm the effectiveness of the developed scoring model. The analysis of the results of the 60 selected beneficiaries as well as the statistical study assert that the default in the scoring model that took place is mainly due to the small size of the basic sample used during the construction of the model (40 observations only) and which has the reason to decrease the robustness of the model, on the other side this small size of the sample prevented us from making a validation of the model obtained, since we took the whole base for the creation of this model.

In fact, when the size of the available sample is small, it is not possible to separate the data into two subsets, the learning part and the test part, which consequently prevents the ability to test the predictive ability of the score model obtained<sup>11</sup>.

Another view shows that sometimes some eliminated factors may be useful but the small size of the sample hides their importance, besides that the analysis of the results showed that a market study in the different regions of application of the projects is requested.

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<sup>11</sup> Saporta (2011)

## Conclusion

The purpose of using the scoring system in this project was to develop a statistical model to determine the profile of good beneficiaries based on the results of the first phase of the project “DROSOS1”. This model will then be applied in the process of the help in the decision if it is a eligible or ineligible beneficiary, among the 226 most vulnerable women interviewed, the ex-prisoners, and the prisoners families in South Lebanon, in order to develop quick impact projects in the form of conditional grants in which the 90 selected beneficiaries must return a percentage of 20% of the amount of the grants without any interest and this in the context of the second phase of the project “DROSOS2”.

So according to the data analysis as well as the use of the specific statistical methods it was possible to detect 15 indicators that have an important influence on the type of a beneficiary, including the target variable and which were selected for the construction of the scoring model by the use of discriminant factorial analysis method on qualitative variables (Disqual), through it we could identify a good or a bad beneficiary.

As for the SHEILD which used the coordination between the results of the scoring model obtained and the opinion of the microfinance committee, in the choice of these 90 new beneficiaries, the results of the score were used as a tool to help in the decision to create the new QIPs of DROSOS2 without significant risk, especially when 77.7% of these 90 selected projects received a good score according to the Disqual model realized, which means that SHEILD referred to the scoring system results as a main pillar in the selection of these beneficiaries.

Finally, we have been able to collect essential results on the behavior and the work progress of the selected beneficiaries, especially for those where the period to return the amount of the conditional donation which is 20% of the cost of the QIPs is finished (60 beneficiaries). Indeed 55/60 beneficiaries have paid back the requested payment without any delay and therefore they are considered good beneficiaries despite that 11 of them received bad scores by the developed scoring model.

On the other side, it can be said that up to the moment, 5 QIPs among the 90 created are failed either directly or after a period of time, for different reasons. We note that 4/5 of them received good scores by the method of score (Disqual). This indicates that as for SHEILD the error rate up to the moment is 7.77%.

As for the scoring model created, we can announce its good quality based on the calculation of the error rate which is equivalent to only 6.66%, indicating that 4/5 of the failed projects among the 60 selected projects received a good score by the Disqual method.

Further, we tried to analyze the characteristics of these beneficiaries in order to discover the indicators that weakened the score of beneficiaries who can actually be considered “eligible”, as well as the indicators that reinforced the score of a beneficiary who can actually be considered “ineligible”.

Knowing the risk that join the work with ex-prisoners, we could note that the behavior of these ex-prisoners and their responsibility, commitment to work, are key factors that must be taken into consideration as well as considering alternative rehabilitation services must be considered for some cases to reduce the risk of re-imprisonment and failing of cases.

As for the livestock projects, it seems that they are risky since 2 out of 8 failed projects belong to this type of work. So it is recommended to contract with a veterinary for the full period of project in order to follow up on the livestock on a monthly basis and advice the beneficiaries accordingly.

And finally, we note that a market study in the different regions of the projects' establishment is necessary in order to detect the need of the market thus avoiding the duplication of similar projects in the same region which weakened the productivity of some of them in favor of others, as in the case of the sewing projects at Tyre, or the preparation of artisanal bread in the same region, and several other examples mentioned before. In fact, diversity in established projects is an important factor should be considered in the choice of beneficiaries.

Finally, we consider this project as a peer success one. Actually, the positive change that this project has made in the targeted societies is highly noted. In fact, this project has changed the life of around 85 extremely vulnerable individuals and families and moved them away from poverty line. It changed also the life of their families and surroundings. Needless to say, that the social impact of this project is great. Prior to this project some of those beneficiaries were either marginalized or discriminated by their respective societies.

## Perspective

Through this study we were allowed to determine a group of variables that could significantly explain the type of beneficiaries. The scoring system was based on a small number of cases (DROSOS1, 40 beneficiaries) which obliged us to reduce the number of indicators influencing the model obtained to 15.

In the rest of this project, and based on the results obtained from DROSOS2 project assignments, it is more than desirable to repeat this study after the end of the duration of reimbursement of the 20% of the conditional grants that beneficiaries must pay, since the volume of information will be more consistent and then that data base will be composed of one hundred thirty beneficiaries (40 cases (DROSOS1) +90 cases (DROSOS2), to improve our scoring system by trying several others methods such as logistic regression<sup>12</sup> and neural networks<sup>13</sup>, which also allows us to

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<sup>12</sup> Schreiner (2004), initiated a pilot project in microfinance by developing a scoring model based on the logistic regression method for a Bolivian microfinance institution.

<sup>13</sup> Blanco A. et Al., Credit scoring models for the microfinance industry using neural networks: Evidence from Peru, Elsevier, Vol. 40, pp. 365-364, Janvier 2013.

validate our model that we will obtain since the small size of our basic sample (40 beneficiaries only) prevented us from separating the data in two subsets, the learning part and the test part, which consequently prevents the ability to test previously the predictive ability of the obtained scoring model.

Technically, despite that almost all beneficiaries have experiences and knowledge in their professions and businesses, but still technical support such as technical training (ex: sewing courses, carpeting courses, etc....) is highly needed. The main aim behind engaging beneficiaries with technical trainings is to empower their skills in order to be eligible to compete in the market and expand their production to outside their villages. In their reply to our question about their needs for technical supports, only beneficiaries from successful projects were positive about such kind of supports. Others have resisted the idea of technical support<sup>14</sup>.

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<sup>14</sup> SHEILD-Evaluation Report-13Dec2017

# Annex 1

## The benefits of credit scoring in microfinance

### **Statistical evaluation quantifies risk as probability**

A statistical evaluation can precisely estimate the risk of late repayment of a loan. In contrast, the subjective assessment can only estimate that a loan is below the average risk level, and this, based on qualitative impressions. The product of a statistical evaluation is a probability, the product of a subjective evaluation is a feeling, and normally it is easier for the beneficiary to manage the probabilities than the feelings.

### **Statistical evaluation is consistent**

The evaluation sheet treats all identical applications identically. Two people with the same characteristics will have the same estimated risks. While in a subjective appraisal system, one could obtain variations depending on the responsible loan officers or even the mood of a particular manager.

### **Statistical evaluation is explicit**

The exact procedure used to predict risks with statistical evaluation (the evaluation sheet) is known and can be communicated. On the other hand, subjective evaluation depends on an unclear process that even users (loan officers) will have trouble explaining.

### **Statistical evaluation takes into account a large number of risk factors**

The guidelines of the subjective assessment manuals may specify that an application must correspond to certain financial indices and other rules of principles, but contrary to the statistical evaluation, the subjective evaluation cannot take into account 30 to 50 characteristics. .

Statistical evaluation allows a risk assessment - and after the evaluation, a risk management - much more precise than the subjective evaluation.

### **Statistical evaluation can be tested before use**

One way to see how the statistical evaluation would have worked is to use a freshly developed scorecard to forecast the risks of the loans in progress, using only the characteristics that the beneficiary knew at the time of disbursement. This predicted risk can then be compared to the risk observed until the current test day. On the other hand, having to put the subjective evaluation to the test on historical data, entails an excessive expenditure

### **Statistical evaluation reveals the trade-offs involved in different rating policies**

Statistical evaluation improves risk management. In fact, statistical evaluation can give an idea of the possible consequences of particular choices and reveals what would happen if the policies were different; information that is precisely what is needed to improve risk management.

## **Statistical Assessment Reveals Linkages between Risk and Characteristics of Borrower, Loan and Lender**

Statistical evaluation uses statistical science to find the real link between risk and characteristics from their historical relationship in the micro-entrepreneur's electronic database. In general, statistical evaluation confirms the general direction of subjective judgment. In contrast, subjective evaluation is based on experience-based beliefs and / or misconceptions about the relationship between risk and characteristics, but these beliefs and popular pearls of wisdom may be wrong or - for the least - imprecise.

## **The statistical evaluation does not require any readjustment during the evaluation process before the meeting of the credit committee**

The management information system presents the risk prognosis to several usual usage reports in the agency, for example, the list of cases that the credit committee must review daily, the daily list of arrears of all loan officers, and the weekly list of outstanding loans in each loan officer's portfolio. The management information system will also automatically produce certain monitoring and monitoring reports that enable the agency manager to monitor the long-term results of the statistical evaluation on a monthly basis and to verify the stability of the characteristics of the applications.

## **Statistical Assessment Reduces Time Spent for Loan Officer**

The major virtue of the statistical evaluation for the loan officer is that he will spend significantly less time recovering.

Indeed, the evaluation of the application reduces the number, the value, and the duration of the loans disbursed to the very risky candidates. This reduces the number of loans that are in arrears and saves the credit officer time during recovery.

## **Statistical evaluation affects financial benefits, and early effects can be estimated**

Knowing the results of the statistical evaluation sheet in a historical test, the beneficiary could estimate (at first glance) the effects on the financial benefits of a hypothetical policy of denying all candidates a risk predicted of over threshold of "very risky".

## **The risk prognosis for the statistical evaluation is higher than the "automatic" score**

The statistical evaluation is more useful than the "automatic" rating for three reasons.

First, the "automatic" rating assumes the relationship between past arrears and future risk; the statistical evaluation derives this relationship according to the evidence in the historical database.

Second, the "automatic" rating does not exist for new debtors because they do not have a historical repayment record. In contrast, statistical evaluation can predict the risks for these new debtors.

Thirdly, the "automatic" rating is based solely on the arrears of previous repayments; the statistical evaluation takes into account past repayment arrears but also a number of other risk- related characteristics.

An "automatic" rating may be useful, but the risk of prognosis for statistical evaluation is more reliable.