

## An Assessment of Perceived Farm Financial Health of Small Scale Farmers in Egypt: Implications for Extension

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**Abstract:** The main purpose of this study was to examine farm financial health skills of farmers in Dakhalia governorate, Egypt, which used a descriptive-analytical design. The population of this study consisted of whole farmers in two villages of the governorate. 120 farmers represent approximately 5% of the universe had been selected as statistical sample. The farmers were classified into three categories depending on farm size to represent small scale farmers ( $\leq 2$  feddan,  $>2$  feddan-4 feddan and  $> 4$  feddan – 6 feddan). On quota sampling basis, 40 farmers from each of the three categories selected. The instrument used to achieve objectives of the study was a questionnaire adopted from Maryland Cooperative Extension. Findings revealed that 41.7% of respondents still need support in farm financial health skills. In addition, among the sample farm financial health skills record keeping skill was ranked lowest. Farm size and farmer-extension interaction were the important factors that predict farm financial health behavior. According to the results, it is necessary to improve farm financial health skills of farmers through extension work.

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### 1. Introduction

Management is defined as the decision making process whereby limited resources are allocated to a number of production, marketing and financing alternatives to achieve stated objectives. All farm operations start with an idea. When you have an idea that you believe could be the basis for a good farm operation, there are several things you will want to consider and explore before proceeding. These will include doing a quick assessment on the merits of the idea, and also whether operating a farm business is something you really want to do. This is critical and will lay the foundation of the farm business development process that will follow. Taking an idea and developing a farm business takes considerable resources and time. This resource and time investment step is important as it determines whether you are prepared for the journey ahead. This will also assist in deciding whether the idea truly has potential and what will be required to make it successful (Saskatchewan Ministry of Agriculture, 2011).

#### 1.1 An Overview of Agricultural System in Egypt

Egypt spreads over an area of about 1.0 million km<sup>2</sup>. However, agriculture is practiced on an area of about 8.0 million feddans (about 3.5 million ha), including recently reclaimed lands (Abdelhakam, 2005). As a heavily populated country with the population of 83 million, Egypt is an agriculturally based country. Agriculture remains a major sector and is very vibrant component of the economy. Although its performance remained relatively modest in the last

many years, it has successfully attracted substantial investments (Global Arab Network, 2009). Agriculture employs about 31% of the labor force (Kruseman and Vullings, 2007) and 17% of the GDP is generated by agricultural production (Morgan, 2010).

The country's main crops include cotton, wheat, rice, sugarcane, beet, fodders, clover, vegetables, peanut, sesame, sunflower, lentils, beans and onion, and fruits such as citrus and dates (Ministry of Agriculture, 2011). To enhance and realize maximum yields from cultivated lands, many farmers grow double-planted crops using their lands to produce more than one crop a year. Currently, greenhouses have also been introduced on new lands for producing new and high value crops on reclaimed lands (Abdelhakam, 2005).

Small landholdings with fragmented land ownership characterize Egyptian agriculture. Some 80% of the total landowners in old lands around River Nile own agricultural lands less than or equal to 5 feddans and about 50% of them cover an area equal or less than 0.5 ha (1.0 Feddan). On the other hand the average of farm size of about 50% landholders at new reclaimed areas in desert is around 15-20 feddan (Aquistat, 2005).

#### 1.2 Importance of Financial Management Skills

In the face of the recent global economic crunch and the rapid pace of the farming industry, it is impossible for producers to manage a farm enterprise the way their parents did 30 years ago (Arzeno, 2004). Poggio (2006) noted that one possible approach to

improve small-scale farming is through the use of financial management skills. Without financial management skills, a farmer will not make it very far in today's business environment. To run a business, the farmer must be a manager. This requires the ability to take new initiatives, organize production, market and assume risks. Technical expertise is not enough. Farmers must know more about farm management including how to organize, manage and plan the farm in the best possible way.

So, assessment of farmers' performance and efficiency and also their role in realizing farm management goals plays an important role, Amini, et al. (2007) argue that farmers' capacity and proficiency are very important inter-organizational components in the success of enterprises. In order for the farm manager to act with the maximum efficiency to reach to an end, they need at least one set of management skills. These managerial skills help them to correctly select the appropriate financial levels, workforce, land resources and risk taking. These skills help the farmers to access better income levels. They are required to make informed decisions about what must be produced, in which part of their farm, by what method (AL-Rimawi et al. 2006).

Farm profitability is a function of the farm type and the size of operation within a farm type and its access to farm credit. Information on how a particular farm operation is performing in relation to others in that business segment can focus management efforts on those aspects of the operation that require attention to improve profitability. As well, lenders and farm management specialists will be able to help individual operations improve the profitability of the farm business (CAPI,2009).

Preparing agricultural financial statements is a process that requires decisions about what items to include, how and when to include them, and how to value them. These decisions can greatly affect the financial picture that emerges from an analysis of financial measures and ratios derived from a set of farm financial statements. Good decisions made during this process lead to more complete financial information and more accurate financial measures (Miller et al., n.d).

### 1.3 Skills of Farm Financial Management

The assessment checklists for financial management skills provided by Purdue Extension included identify those attitudes and skills in four fundamental areas: production and operations management skills, financial management skills, general business management skills, and personal attitudes and decision skills (Boehlje et al., n.d).

The Maryland Cooperative Extension Service (University of Maryland, n.d) mentioned four categories to measure financial strength of farm

operation as follows: profitability, liquidity, solvency and record keeping and financial analysis.

According to Heney (2000) there are a range of skills that could be introduced to rural households, which would bring their financial management practices in line with the expectation and interest of formal financial service providers. These include literacy skills, analytical skills, planning skills and record keeping skills.

### 1.4 Importance of Extension Work in Egypt

The economic contributions of agricultural extension to agricultural and rural development can be seen as two conceptual themes are relevant to extension impact (Evenson,1998). The first is the awareness-knowledge-adoption-productivity (AKAP) sequence. It is convenient to visualize extension as achieving its ultimate economic impact by providing information and educational or training services to induce the following sequence: A: Farmer awareness; K: Farmer knowledge, through testing and experimenting; A: Farmer adoption of technology or practices and P: Changes in farmers' productivity. The second is the "growth gap" interrelationship between extension, education, and research. Extension programmes are designed to reduce both the practice gap and the institutions gap. Extension programmes are not the only activities that reduce these gaps. Providing market information to farmers and developing organized farm groups reduce the institutional gap. Information and teaching reduce the practice gap. Research programmes are generally required to reduce the research gap, although extension programmes can facilitate the reduction of the research gap via facilitating the importing and local modification of improved technology developed elsewhere.

Egyptian Agricultural Extension not only focuses on increasing agricultural production and transferring modern agricultural technologies, but also undertakes many activities leading to rural development. Agricultural Extension exploits and explores all possible opportunities and resources and the potential of natural and human resources. It delivers educational and awareness-raising programs and evaluates development capabilities to improve skills and ways of thinking. To this end, Extension ideally enables rural people to take full advantage of scientific and technological advances in agriculture. These initiatives result in higher standards of living and elevate the social and economic status of the communities (Shalaby et al., 2011).

A gap exists in the literature on the utilization skills of farm financial health among Egyptian farmers. This study investigates this area in order to enhance the role of extension services better meet the needs of farmers regarding their farm financial health skills.

### 1.5. Objectives and Hypothesis of the Study:

The aim of this study was to assess the perceived health financial management skills amongst small holder farmers in Dakhalia governorate of Egypt. The specific objectives were to:

- I- Describe the personal characteristics of farmers in the study area,
- II-Identify the farm financial health behavior (FFHB) of farmers,
- III-Determine factors influencing farm financial health behavior (FFHB) of farmers,
- V-Suggesting mechanisms for promoting improved financial management skills by extension work.

This study hypothesized that there is significant relationship between personal characteristics of the respondents and perceived farm financial health behavior of farmers.

### 1. Methods

The current study was carried out in Dakhalia governorate in North –East Egypt. Two villages from Talkha district were selected purposively. The total population in the area was 2,458 farmers. The farmers were classified into three categories depending on farm size to represent small scale farmers ( $\leq 2$  feddan,  $>2$ feddan-4feddan and  $> 4$  feddan – 6feddan). On a quota sampling basis, 40 farmers from each of the three categories selected. Thus the total sample of farmers was 120 representing approximately 5% of the universe. Data were collected by questionnaire through personal interviews.

To measure perceived farm financial health behavior, the study depended on a fact sheet prepared by Maryland Cooperative Extension Service (University of Maryland, n.d). This instrument consists of 10 statements represent four categories: profitability, liquidity, solvency and record keeping.

The total score of farm financial health ranged from minimum (10) points to maximum (38) points. After obtaining the responses, the respondents were categorized into five groups: very low (10-14) points, low (15-19) points, moderate (20-24) points, high (25-29) points, very high (30-38) points. The average scores of the farmers were determined for each of four categories of the instrument. Then, the score was classified into 3 levels depending on mean and standard deviation.

A pre-test, for the instrument, has been done after translation by applying it to ten farmers. A rewording of some questions was necessary to make it suit the farming system of Egypt.

The data from the questionnaire were coded. Frequencies, percentages, arithmetic mean and standard deviation were used in describing the data. However, correlation and regression were used to make inferential deductions.

## 2. Results and Discussion

### 3.1 The personal characteristics of farmers in the study area

The results of the Table 1 shows the distribution of farmers based on age, educational status, diversity of agricultural production and farmer-extension interaction.

The findings in Table 1 revealed that less than half (47.5%) of respondents were within the age group of (39-52) years with a mean of 48 years. This favors the increased rate of respondents' participation in farming since at this age they are still very actively involved with the rigorous farming activities.

The findings further revealed that the majority (61.7%) of the sampled respondents had no formal education, hence they could not read and write. An overview showed that the farming business is still left in the hands of illiterates and those with a low level of education. It was also found that respondents had diverse forms of agricultural production. In this concern, the results revealed that one third (33.3%) of respondents cultivate crops and had animals, (21.7%) cultivate crops, vegetables and had animals, while more than third (38.3%) of respondents only cultivate crops. This shows that small scale farmers depended mainly on diverse agricultural production especially animal production to maximize their profit.

**Table 1. Frequency and percentage distribution of respondents by the socio-economic characteristics**

Variables	Frequency	Percentage
<b>I-Age</b>		
24-38 year	13	10.8
39-52 year	57	47.5
$\geq 53$ year	50	41.7
Total	120	100.0
<b>II-Educational status</b>		
Illiterate	74	61.7
Read and write	20	16.7
Primary school	6	5
Secondary school	12	10
University	8	6.7
Total	120	100.0
<b>III-Diversity of agricultural production</b>		
Crops	46	38.3
Vegetables	1	.8
Crops and vegetables	7	5.8
Crops and animals	40	33.3
Crops, vegetables and animals	26	21.7
Total	120	100.0
<b>VI-Farmer-Extension interaction</b>		
Rarely	59	49.2
Occasionally	45	37.5
Frequently	16	13.3
Total	120	100.0

Source: Field survey, 2013.

Furthermore, the results also showed that only (13.3%) of the respondents had regular contact with extension agents, (37.5%) had irregular contact, while (49.2%) of them were rarely contacted. This indicates that the rate of contact of the respondents with the extension agent was low and this will influence their adoption of agricultural innovations.

### **3.2 The perceived farm financial health behavior (FFHB) of farmers**

Distribution of the farmers depending on their perceived financial health management behavior is presented in Table 2.

As seen in table 2, statements 1 to 3 deal with profitability, the measure of the amount of farm income over the expenses required to generate that income. Statement one focuses on the importance of generating a profit from a farm to survive in the long run. If a farm has been losing money for the past 5 years, it is time to seriously re-evaluate production, marketing and financial plans. The results in Table 2 showed that the majority of respondents (63.3%) had generated a profit some years and a loss others.

Statements 2 and 3 concern the returns that respondents earning on their labor, management and investment in the farm business. In calculating profit, farmers often leave out the value of their labor, management and investment. Not only must farm income cover the direct expenses of the business, but they also must cover these resources that are sometimes taken for granted. The results revealed that for more than half (51.7%) of respondents their returns on labor and management were greater than they could get if they took a job off the farm. The results further revealed that for about one third (32.5%) their investment in the farm business had earned a greater return than what they could get if invested elsewhere, while another third (33.3%) indicated that their investment in the farm business had earned a similar return as what they could get if invested elsewhere.

Statements 4 to 6 address liquidity, which measures the farm's ability to meet cash-obligations without disrupting the normal operation of the farm. Statement 4 deals with cash obligations which include family living draws, cash expenses, capital purchases, debt payments and taxes. The best way to monitor liquidity is through cash flow planning using a cash flow statement. In this concern, the findings showed that more than half (58.3%) of respondents were not preparing a detailed cash flow statement for their business.

Statement 5 focuses on liquidity reserve. Most farms have periods when they are short of cash to pay bills. Cash receipts from commodities sold rarely coincide with cash expenditures. A credit reserve for borrowing money during these periods is needed to maintain the cash flow. The results indicated that for

less than half (45%) of respondents their liquidity reserve was sometimes close to being depleted, while about one third (32.5%) of them revealed that their liquidity reserve was sufficient to cover periods of cash shortfalls.

Statement 6 focuses on monitoring debt over time and it provides an insight on cash flow problems. Through the production period, the operating loan will increase during certain times, but then it should also decrease as commodities are sold and the debt is reduced. Usually, the level of the operating loan should not increase more than the growth of the farm business over several production periods. Loan carryover that is larger with each successive production period may indicate cash flow problems. It may also indicate a more serious problem of low profitability.

The findings showed in this respect that 45.8% of the respondents said their level of operating debt had decreased in relation to the size of their operation in the past 3 years, however about for one quarter (25.8%), their level of operating debt had kept up with the size of their operation in the past 3 years.

Statement 7 and 8 deal with solvency and net worth. 'Solvency' measures the farm's financial security. 'Net worth', which is the value left after subtracting liabilities from assets, is the absolute measure of solvency. By increasing net worth over time, farm managers accumulate wealth and increase financial security. In this concern, the results revealed that for less than one third (31.7%) their net worth was more than it was 5 years ago, however 25.8% of them said their net worth was about the same than it was 5 years ago.

A relative measure of solvency can be made by comparing the level of liabilities with the level of assets. Many farm managers try to keep their level of total debt at less than half of their level of total assets. This provides a margin of safety in the event of bad years on the farm or in case of an economic downturn in agriculture. In this regard, the results of statement 8 showed that for less than half (44.2%) of respondents their total debt was less than half of their total assets. At the same time, 41.7% of respondents don't know anything about their total debit.

Statement 9 deals with record keeping. Accounting records, including enterprise budgets and financial statements, are needed to summarize information about the farm operation. Incomplete records will only result in a poor financial analysis of the farm. In this concern, results indicated that the majority (74.2%) of respondents had no records.

Statement 10 evaluates farmers' attitudes towards financial analysis. As a farm manager, any farmer has a great deal to gain by spending time in his house to review the financial condition of the farm. Time spent by farmers will help them to make

production, marketing and financial decisions. The findings showed that for less than half (44.2%) of the respondents their financial condition was assessed as being stable but had made few plans for improving

their situation. However (30%) of them were not assessing their financial condition but were determined to continue to farm the way they did now, regardless of the outcome.

**Table 2. Distribution of the farmers based on their financial health management behavior**

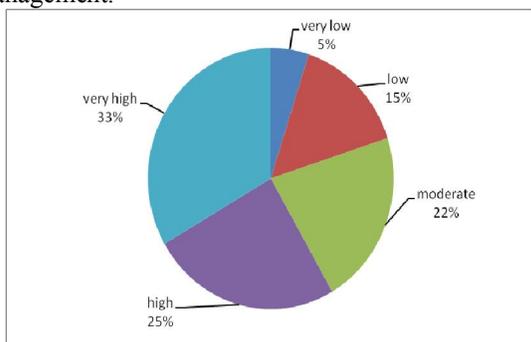
No.	Farm financial health statements	F (n=120)	%	Mean	SD
1	Over the past 5 years, I have generated a profit most of the years	31	25.8	3.12	.676
	Over the past 5 years, I have generated a profit some years and a loss others	76	63.3		
	Over the past 5 years, I have generated a loss most of the years	9	7.5		
	Don't know	4	3.3		
2	The returns on my labor and management are greater than I could get if I took a job off the farm.	62	51.7	3.29	.883
	The returns on my labor and management are about the same as I could get if I took a job off the farm.	38	31.7		
	The returns on my labor and management are less than I could get if I took a job off the farm.	13	10.8		
	Don't know	7	5.8		
3	My investment in the farm business is earning a greater return than what I could get if invested elsewhere.	39	32.5	2.88	.992
	My investment in the farm business is earning a similar return as what i could get if invested elsewhere.	40	33.3		
	My investment in the farm business is earning less than I could get if invested elsewhere.	28	23.3		
	Don't know	13	10.8		
4	I have prepared a detailed cash flow statement for my business	16	13.3	1.55	.720
	I have prepared a quick or rough cash flow statement	34	28.3		
	No	70	58.3		
5	My liquidity reserve is sufficient to cover periods of cash shortfalls.	39	32.5	2.98	.965
	My liquidity reserve is sometimes close to being depleted	54	45.0		
	My liquidity reserve is dried up	12	10.0		
	Don't know	15	12.5		
6	My level of operating debt has decreased in relation to the size of my operation in the past 3 years	55	45.8	2.95	1.194
	My level of operating debt has kept up with the size of my operation in the past 3 years	31	25.8		
	My level of operating debt has increased more rapidly than the size of my operation in the past 3 years	7	5.8		
	Don't know	27	22.5		
7	My net worth is more than it was 5 years ago.	38	31.7	2.61	1.204
	My net worth is about the same than it was 5 years ago.	31	25.8		
	My net worth is less than it was 5 years ago.	17	14.2		
	Don't know	34	28.3		
8	My total debt is less than half of my total assets.	53	44.2	2.53	1.408
	My total debt is about half of my total assets.	8	6.7		
	My total debt is more than half of my total assets.	9	7.5		
	Don't know	50	41.7		
9	I keep Complete accounting records, enterprise budgets and financial statements for my farming operation	11	9.2	1.35	.644
	I keep Partial accounting records	20	16.7		
	I keep not records	89	74.2		
10	I have assessed my financial condition as being good, and I am continually trying to improve my financial well-being.	14	11.7	2.38	1.038
	I have assessed my financial condition as being stable but have made few plans for improving my situation.	53	44.2		
	I have assessed my financial condition as being poor but have considered ways for pulling myself out of the slump.	17	14.2		
	I have not assessed my financial condition but have determined to continue to farm the way I do now, regardless of the outcome.	36	30.0		

Source: Field survey, 2013.

Figure 1 shows the distribution of the farmers according to their level in perceived farm financial health behavior. The distribution in Figure 1 shows that

the category of very high level of perceived farm financial health behavior was in the first rank in a percentage of (33.3%), followed by high level (25%);

moderate (21.7%); low (15%); and very low (5%). This result shows that 41.7% of respondents still need to enhance their knowledge and skills of financial management.

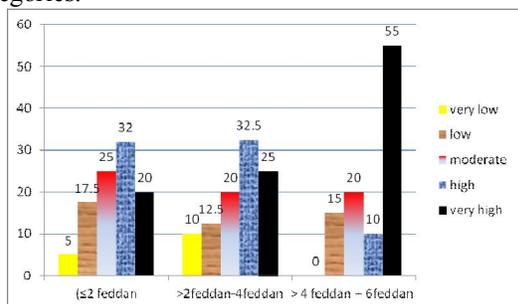


**Figure1. Distribution of the farmers according to their level in perceived farm financial health behavior**

Figure 2 compares the level of farmers’ farm financial health level and different categories of farmers. It can be clearly seen that the lowest rates of perceived farm financial health behavior are recorded in ( $\leq 2$  feddan) and ( $>2$ feddan-4feddan) categories with a percentage of 5%,10% respectively.

All farmers’ categories had very high levels of farm financial skills; the highest percentage was recorded in ( $> 4$  feddan – 6feddan) category (55%) and the lowest in ( $\leq 2$  feddan) category (20%).

In conclusion, the figure shows that farmers who have  $> 4$  feddan – 6feddan, have a higher level of farm financial health skills than those in the other categories.



**Figure 2. The level of perceived farm financial health level in different categories of farmers**

It was observed from Table 3 that the ‘profitability’ component was performed better by the farmers followed by liquidity, solvency and record keeping and financial analysis. Thus, the farmers observed profitability, liquidity and solvency under the medium category of farm financial health behavior, while they indicated their record keeping was in the low category. These findings revealed that farmers still

need to improve their skills of farm financial health especially in record keeping. As seen from the Table 1 it is indicated that 61.7% of farmers were illiterate and this means that formal education could be a key factor in conducting record keeping by the farmers.

**Table 3. Ranking of different components of farm financial health behavior of the farmers**

No.	Components	% Performance	Rank
1	Profitability	73.19	1
2	Liquidity	67.95	2
3	Solvency	64.27	3
4	Record keeping and financial analysis	53.21	4

Source: Field survey, 2013.

In conclusion, the results show the interrelation among profitability, liquidity and solvency. This result seems logical because the operation that is medium in one of these areas is often medium in the other areas as well. Profitability drives liquidity and solvency. A profitable farm will usually overcome liquidity and solvency problems in the long run, while an unprofitable farm will nearly always develop liquidity and solvency problems.

**3.3 Factors predicting perceived farm financial health behavior (FFHB) of farmers**

In order to analyze the factors predicting the farm financial health behavior of farmers, the data were subjected to correlation and regression analysis.

All independent variables hypothesized to affect farm financial health behavior in this study were continuous except for educational status. The Dummy variable takes the value of 1 if farmer holds secondary education and above and 0 otherwise and farmers-extension interaction. The Dummy, takes the value of 1 if there is regular contact and 0 otherwise.

The correlation results in Table 4 showed that age was negatively correlated with educational status and number of agricultural production activities. The implication of this is that educational status and numbers of agricultural production activities do not move in the same direction. In other words, the educational status and numbers of agricultural production activities increased when age decreased. There was also a positive correlation between age and farm size. This is means that elder famers had a bigger farm size than young famers. There was also negative correlation between educational status and farm size. This means that farm size increased when the level of education decreased. The results of table 4 also revealed that farmer-extension interaction was not significantly correlation to the independent variables. The implication of this is that no restricting factors inhabit communication between famers and extension services.

**Table 4. Correlation of variables in the model**

Variables	Age	Educational status	Number of agricultural production activities	Farm size	Farmer-Extension interaction
Age	1				
Educational status	-0.380**	1			
Number of agricultural production activities	-0.334**	-0.02	1		
Farm size	0.225*	-0.338**	0.131	1	
Farmer-Extension interaction	0.037	0.098	-0.071	0.052	1

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

Linear regression analysis was performed to test the hypothesis of this study. Tables 5 showed results of the multiple regression with perceived farm financial health behavior as dependent variable and the five personal characteristics as independent variables. The hypothesis was that personal characteristics factors would not predict levels of financial health behavior. To test this hypothesis, the five characteristics factors of age, educational status, number of agricultural production activities, farm size and farmer- extension interaction were entered into the regression model as it shown in table 5.

As seen in Table 5 all five variables except farm size and farmer-extension interaction were found to be not significant, not positive predictors of farm financial health levels. Combined, the five personal characteristics accounted for 47% of the variance in perceived farm financial health behavior. These findings provide partial support for the hypothesis, with the personal characteristics of age, educational status and number of agricultural production activities failing to demonstrate a clear factor predictor.

**Table 5: The factors that predict perceived farm financial health of farmers and independent variables**

No.	Variables	Un Standardized Coefficients		t	Sig.
		B	Std. Error		
	Constant	-.552	.800	-.691	.491
1	Age	.014	.013	1.138	.257
2	Educational Status	.139	.099	1.407	.162
3	Number of Agric.Production activities	.189	.123	1.533	.128
4	Farm size	.006	.002	2.688	.008
5	Farmer-Extension interaction	1.052	.128	8.213	.000
	R <sup>2</sup>	0.470			
		F=20.179**			

### 3. Conclusion

This study was based on analysis of perceived farm financial health amongst small scale farmers at Dakhalia governorate in Egypt. Farm financial health is a process will help farmers in developing goals that they are committed to and that will guide the management of their farm and families. The process involves preparation and analysis of financial statements to determine their potential financial ability to pursue stated goals. The process helps farmers develop a management plan to identify the activities and resources necessary to achieve their goals. So, paying attention to farm financial health skills recognizing its restricting factors and providing suitable executive ways will be a good way to improve agricultural production and effectively face the changes in agribusiness environment and allow the farmers to remain in the highly competitive of trade environment.

The results of the research indicated that 41.7% of the respondents still need support in farm financial health skills. The Agricultural Extension System is one of the important governmental support

agencies that provide technical and educational support to the farm community. In this respect, the current study suggests the benefits of the available human resources in extension work to reduce the gap of farmers' farm financial health skills. Among the recommendations that emanated from the study is that the government should support the role of extension and conduct effective monitoring and evaluation processes. The results showed that only (13.3%) of the respondents had regular contact with extension agents and (37.5%) had irregular contact.

The results of this research indicated that among the farm financial health skills studied, record keeping skills had the lowest ranking. In many cases farmers feel overwhelmed by record keeping because it takes time, and requires them to learn a new skill or software. Good record keeping requires the discipline to record each and every transaction that occurs for the farm regardless of how great or small. Without farmers having basic knowledge of their income and expenses they cannot make an informed decision about their business/farm. The Egyptian Extension system should

offer a system that includes accounting software, and assistance in determining a farm's financial health.

Regression analysis confirmed that farm size, farmer-extension interaction are some of the important determinants of perceived farm financial health behavior. Use of farm financial health skills significantly improves for farmers with more access to extension. Designing policies that aim to improve these factors for smallholder farming systems have great potential to improve farm financial health. Regarding farmer-extension interaction factor, different approaches could be used by extension services as part of a strategy to enhance the farmers' farm financial health such as: using mass media or community meetings to raise awareness and using training programs to teach new skills and provide opportunities to practice, e.g., literacy, business analysis, financial record-keeping.

Concerning farm size factor, it is known that small farm operators face a number of problems as they try to develop and operate a profitable farm business. Small farm operators need to be business smart and make sound business decisions for the farm operation. Considering the limitations under which small farms operate, small farm operators need to be resourceful. In this respect, Pool (2004) mentioned listed below on how to be resourceful.

- Need to be innovative and use the resources around them
- Use less expensive buildings, covers, fencing where possible.
- Buy used equipment.
- Buy equipment that has some flexibility for use on more than one task.
- Do not buy more than what is needed.
- It may be cheaper to have someone do the work for you.
- It may be cheaper to buy a product than to produce it (hay, grain).

On the other hand, some of the limitations facing small farm operators can be overcome by a cooperative effort of a group of small farm producers through a sharing of goals, activities, and objectives of members. Cooperatives have long been important to agricultural producers. Much of the success of today's agriculture can be traced back to the development of marketing cooperatives. Small farm operators can take advantage of the same opportunities provided to cooperative members. However only so many of the limitations of small scale farming can be overcome. A cooperative effort with other producers can help to minimize the impact of the size limitation.

One of the limitations in this paper is that the adopted checklist for measuring farm financial health still needs more adaptation to be suitable with farm characteristics in Egypt. Rewording the statements is

not enough to reflect different farming systems and may lead to more bias because the adopted checklist was designed for U.S. small farms. The average size of small farms in U.S.A is  $\leq 179$  Acres (1 Acre = 0.95 Feddan ) according to U.S. Census of Agriculture statistics, but in Egypt the average size of small farms is ( $\leq 10$  feddan). So, this checklist should be judged by farm management specialists to be a scale for measuring farm financial health at local level after testing its reliability and validity.

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