Success Factors in Agricultural Enterprises. 88 Mexican Greenhouses

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Abstract

The purpose of this research was to analyze the success factors in agricultural enterprises. 88 Mexican greenhouses were studied. General Managers completed the questionnaire on seven success factors: Businessperson Profile, Human Resource Management, Quality Certification, Technology, Financial Resources, Governmental Tax-Subsidies and Internationalization. The respective greenhouses were successful because they have survived four years or more, recovered their initial investment and increased their production capacity. The results indicate that success was based just on four aspects: Internationalization, Technology, Financial Resources and Governmental Tax-Subsidies. This paper discusses the theoretical framework, each one of the success factors and data analysis was made by means of testing the null hypotheses and Pearson correlation between survival years, years of recovering their initial investment, production capacity growth and the categories of the seven factors.

Keywords: success factors, agricultural enterprises, Mexican greenhouses

1. Introduction

Small and Medium Enterprises (SMEs) in Mexico every day, require greater efforts to ensure their success in a competitive world. According to data provided by the Secretaría de Economía (2011), SMEs represent 99% of the companies, generate 72% of employment, and contribute with 52% of the Gross National Product (GDP). The SMEs in the Guanajuato State represent 54.58% of the firms and contribute 3.9% of GNP as part of the national total (Secretaría de Economía, 2014). However, the agricultural SMEs are more vulnerable because of the risks it imposes to the environment and other factors that influence their success. In the agricultural sector, the principal concern is to survive at a competitive market (FAO, 2009). The agricultural sector is important for the Mexico´s, because it produces most of the foods, contributes to the cost of living and to the real income of the population. This sector also contributes to industrial and commercial activities. There is global concern for climate change, the conservation of natural resources, and the ability to generate food for the world's growing population (FAO, 2009). Although agriculture is essential, there are problems in Mexico, particularly in the Guanajuato state, including climate-change, the high cost of supplies and services, the loss of soil fertility, difficult access to credits, and major infrastructure problems, being the climate changes the main problem (INEGI, 2007).

Other problem is many agricultural SMEs are not profitable and the failure rate is high, like in other sectors of the economy. These survival rates by the Secretaría de Economía (2011) reported that 70% of companies do not survive for more than two years. So, in order to protect crops, efficient use of water and supplies, preserve natural resources and meet the feeding needs of an increasing population, is necessary, especially in Guanajuato, to use new agriculture production systems to protect crops' environment. A greenhouse is the most efficient technology that protects plants from the environment and improves their growth (Bastida, 2006). A greenhouse is a building used for cultivation and protection of plants, it has a steel structure, a translucent plastic film cover that does not allow the passage of rain inside and that aims to reproduce or simulate the most suitable climatic conditions for the growth and development of plants (Asociación Mexicana de Constructores de Invernaderos AMCI, 2008). Mexican farmers need to improve their business and crops management to ensure their survival and long-term growth (FAO, 2002; Bastida, 2006).

To improve the success rate, it is important to understand the factors that contribute to success versus failure. While success factors have been studied (Aragón, Ballina, Calvo-Flores, García & Madrid 2004; Aragón & Rubio, 2005; Lussier et al. 2000; 2001; 2010; Mahmood, Asif, Imran, Aziz & I-Azam, 2011),neither of the prior researches have studied agricultural success factors. Thus, the objective of this study was to analyze the greenhouses in the state of Guanajuato, Mexico. To investigate the relationship between business success and their determinants and to suggest certain actions to stakeholders for the growth of greenhouses in Guanajuato.

2. Literature Review

The contribution of SMEs in the development of a country is very important, however there are few studies about the success of agricultural SMEs, most of those studies focus on the technical aspects of production or on the use of irrigation systems (Gallardo, 2005; Ortega, et al., 2010) and on pepper plants (Gómez, Rodríguez, Enrique, Miranda & González, 2009; Urrestarazu, Castillo & Salas, 2002). This investigation is a pioneer study to focus on success factors in agricultural enterprises and more specifically on green houses. The success factors are defined by Rockart (1982:2) as "those few key areas of activity in which favorable results are absolutely necessary for a particular manager to reach his or her goals". The main factors are means to achieve success, which can be conceptualized of different forms such as survival, growth, profitability, as well as personal and the customer satisfaction, among others (Gorgievski, Ascalon & Stephan, 2011). However, survival is considered as the most essential measurement for the success of a business (Cowling, 2007, quoted in Toledo, Jiménez & Sánchez, 2012). In Mexico, the survival of SMEs depends on a 24 months period (Gómez & Fernández, 2007). González, Correa and Acosta (2002) suggest to improve profitability and anticipate the insolvency or the opposite, business success, i) avoid dependence on external finance, ii) limited capacity to pay debts with resources generated from the operation, iii) have a low profit margin, among others. Also, Brown (2013) suggests preferentially promote economic growth in the agricultural and rural sectors instead of the non-agricultural sectors to reduce poverty effectively in developing countries

So, the importance of profitability is established as crucial to the success and survival of the company's long-term factor. In this article, success incorporates three economical and financial elements: Years for recovery ROI, Capacity Growth and years of survival in the market. To better understand factors that contribute to the success of SMEs in Pakistan, Mahmood, Asif, Imran, Aziz and I-Azam (2011) found that the financial resources, technological resources, government support, marketing strategy and entrepreneurial skills such as leadership and decision making, management and professional affiliation with the business are also resources that have a positive and significant impact on business success. Additionally, Lussierand Halabi (2010) studied success versus failure prediction in three countries: United States, Croatia and Chile. Their model included15 variables on success or failure. Small businesses that start with adequate capital in good economic times, that keep updated and accurate records and adequate financial controls, develop specific plans, receive professional advice, can attract and retain quality employees, select good products or services and also with owners that have a higher level of education, age, marketing skills, parents that owned a business, and the number of years of management experience and industry are factors that increase their chances of success.

Some factors that have a positive influence in the success of agriculture SMEs identified by The Secretaría de Agricultura, Ganadería, Pesca y Alimentación(2002) (Department of Animal Farming, Rural Development, Fishing, and Food) quoted by Food and Agriculture Organization of the United Nations [FAO] (2002), identified as success factors in agriculture, financial support, technical support and academic consultancy, organization and the interests of the producers through partnerships, capacity for innovation and improvement of existing proposals, constant communication, continuity and commitment to the project, commercialization and agriculture climate conditions. The studies discussed above expose a number of factors that influence positively for the success of the SMEs. Among the key aspects identified in Mexico and other countries, seven success factors were established. 1. The businessperson profile, experience and training are important to succeed (Lussier & Halabi, 2010; SAGARPA, 2002 cited in FAO, 2002). 2. Human resources, permanent job and flexible working days are important for success (Aragón et al., 2004; Estrada, García & Sánchez, 2009; Lussier & Halabi, 2010). 3. Technological resources play an important role in the production process improvement (Aragón, et al., 2004; Estrada, et al., 2009; Mahmood et al., 2011; SAGARPA, 2002 cited in FAO, 2002). 4. Products quality that satisfy customer requirements (Aragón et al., 2004; Estrada, et al., 2009).

5. The financial resources have a vital importance for a business to run operations profitably and businesses that start undercapitalized have a greater chance of failure that those which start with adequate capital (Aragón, et al., 2004; Lussier & Halabi, 2010; Lussier & Pfeifer, 2001; Mahmood et al., 2011; SAGARPA, 2002 cited in FAO, 2002). 6. Internationalization, the bonds of cooperation contribute to extend their activities beyond national market (Mahmood et al., 2011). 7. The subsidies and VAT returns, that promote business investment to reduce the effective tax rate (Pennings, 2005, cited in Danielova & Sarkar, 2011).

3. Hypotheses

The conceptual framework is developed in line with the evidence available in literature. It establishes the relationship between seven variables and business success. The general tested hypothesis was: Businessperson Profile, Human Resource Management, Quality Certification, Technology, Financial Resources, Subsidies and VAT returns and Internationalization are contributing factors to greenhouses success.

3.1. Businessperson Profile

The first success factor is related to the businessperson profile, characteristic of entrepreneur play an important role on ensuring the business success in SMEs. Several previous studies found that the level of education and training (Lussier & Halabi, 2010; Lussier & Pfeifer, 2001; Simpson, Tuck & Bellamy, 2004; Zimmerman & Chu, 2013), dedication & perseverance at work (García Crespo, Marti & Crecente, 2007; Islam, Aktaruzzaman Muhammad & Alam, 2011),adequate knowledge and experience (Arasti, Zandi & Talebi, 2012; Van Praag, 2003; Lussier & Halabi, 2010) are factors that positively influence success.

H1: A positive businessperson profile is a contributing factor to greenhouses success.

3.2. Humans Resource Management

The second success factor refers to the efficient management of human resources, mainly having the ability to retain skilled labor (Chiavenato, 2007), labor flexibility in the enterprise as an instrument of attraction and employee´s retention (Cervantes, 2005), decreases absenteeism and turnover, reduces the level stress and the productivity is improved, and increases the commitment to the company (Carnicer, Martinez, Pérez & Vela, 2002; Cervantes, 2005; Galinsky, Matos & Sakai-O'Neill, 2013; Mañas & Garrido, 2008). Businesses that can attract and retain quality employees have a greater chance of success.

H2: Positive human resource management is a contributing factor to greenhouses success.

3.3. Quality Certification

The third success factor is determined by the set of attributes or characteristics of a food product, as well as how those attributes and characteristics are assured and communicated to consumers (Ivancevich, Lorenzi, Skinner & Crosby, 1997). These features are enhanced by the implementation of quality systems. Irechukwu (2010) found that 91.4% of organizations in Nigeria were successful in TQM implementation. The quality systems can ensure food safety and have been implemented because it is a requirement to gain access to markets, as the greenhouses get a quality certification from Good Agricultural Practices (GAP) and Primus Lab(Agus & Hassan, 2011;Caswell & Joseph, 2008),

H3: Having quality certification is a positive contributing factor to greenhouses success.

3.4. Technology

The fourth success factor refers to technology, this is understood like a package of techniques whose elements cannot be separated neither used individually, but together they can get an optimum performance (Stewart, 1978). The efficiency of the production sector can be increased by using new technology. The technological resources have a positive and significant impact on business success (Bressler, Bressler & Edward, 2011; Mahmood, Asif, Imran, Aziz & I-Azam, 2011).

H4: Technology is a contributing factor to greenhouse success.

3.5. Financial Resources

The fifth success factor is constituted by the financial resources. It is the capacity that a business owns to pay its obligations; they have to adequate budget control system. Lussierand Halabi (2010) found an important factor of success is to start with adequate capital, keeping record and financial control.

Entrepreneurs should also avoid excessive debt and generate sufficient internal resources to pay debts (Aragón & Rubio, 2005; Silva & Santos, 2012; Vivanco, Aguilera & González, 2011), this is vital for the survival and growth of firms.

H5: Having financial resources is a contributing factor to greenhouses success.

3.6. Subsidies and VAT Returns

The sixth success factor is established by incentives or subsidies that reduce the effective cost of investment (Pennings, 2005, cited in Danielova & Sarkar, 2011). Hence the government support is one the major variable that ensures business success of the SME´s (Cotti & Skidmore, 2010; Resvani, Gilaninia, Mousavian &Shahraki, 2011).

H6: Getting subsidies is a contributing factor to greenhouses success.

3.7. Internationalization

The seventh success factor, internationalization, is a route for business growth where businesses seek to expand their activities beyond domestic markets (Chelliah, Sulaiman & Mohd, 2010; Hynes, 2010). Chelliah (et al., 2010) found that internationalization can improve performance and motivate firms to continuously capture foreign markets.

H7: Internationalization is a contributing factor to greenhouses success.

4. Method

4.1. Data Collection

Non-probability sampling method was made by convenience and cost. Convenience sampling was used for being drawn from that sector of the population which is closer versus ones is in faraway communities. In other words, general manager or owners were selected because they were readily available and appropriate to answer the test on success factors. The sample was made through a previous meeting with the general manager or owner including in the sample when they were chosen by finding them through internet and phone. Also, snowball sampling was used to recruit more general managers or owners of greenhouses into the sample. This sampling was used for exploring relationships between success and seven factors. The total sample size were 88 general managers or owners of greenhouses, in the municipalities of Apaseo el Alto, Acámbaro, San Felipe and 12 other municipalities in the Guanajuato State, Mexico. The questionnaires were applied to them

4.2. Instrument

The questionnaire included seven success factors: (1) the businessperson profile, (2) human resource management, (3) quality certification, (4) technology, (5) financial resources, (6) subsidies and VAT return, (7) Internationalization. This questionnaire had 39 items: seven items measured the profile of the entrepreneur, recording career at the company, training, education and demographics; eight items measured humans resources, as employment practices including temporary staff, permanent and flextime; six item measured quality certification; four items measured innovation and technology; five items measured financial aspects, such as initial investment, budgeting, finance and controls; two items measured subsidies and VAT returns; and seven items measured internationalization. Each of the variables and their measures are discussed with the results. Furthermore, success was established by three items: survival years, years to return of the investment (ROI) and growth.

4.3. Statistical Analysis

Data analysis was made by SPSS software, descriptive statistic was run for each of the seven variables measuring success factors of the 88 greenhouses. Also, inferential statistic was run for testing the null hypotheses, the medians of the survival, the return of investment and the capacity growth are the same among the different categories of the seven success factors. Finally, Pearson correlation between success elements and the categories of the seven factors was executed.

5. Results

5.1. Overall Success in Greenhouses

The overall results showed that the 88 greenhouses were successful, because more than 80% (83.9%) survived 4 years or more and they had a mean of almost 9 years (8.85) in business (see Table 1). Also, 45 (51.1%) of the 88 already recovered their initial investment and their mean was of a little more than one (1.39) year (see Table 1). Also, all of them reported a growth in production capacity, only 9.1% had very low growth, the rest had from low to very high capacity growth (see Table 2). These survival rates are far greater than that those recorded by the Secretaría de Economía (2011), where 70% of businesses do not survive for more than 24 months.

5.2. Businessperson Profile

Results of Hypothesis 1. A positive businessperson profile is a contributing factor to greenhouses success, was not supported. This was demonstrated as following: The 88 business managers/owners' profile of the greenhouses was as following: they had a mean age of 48.27 years, most of the managers/owners, 57 of 88 (64.8%) were male, the daily hours of dedication were 7.41, weekly days of dedication were 5.85 (see Table 3). All tests of null hypotheses were done, the medians of the survival, the ROI and the capacity growth, are the same between the categories of every variable of the businessperson profile. Only the categories of hours of dedication and of education level showed the rejection of their null hypothesis. Hypotheses tests of the medians of the survival, ROI and capability growth, among categories of dedication hours were done. For a significance value of .33 the null hypothesis was rejected: the medians of survival are the same between the categories of hours of dedication; the null hypotheses were accepted: the medians of ROI with a significance value of .331, and the growth of capacity with a significance value of .672 are the same between categories of the hours of dedication (Table 4). Consequently the hours of dedication had a difference in the survival, but although there is no correlation (-.158), the negative sign could indicate that at higher hours of dedication lower survival. Thus the hours undertaken by the entrepreneur profile did not mean a key success factor for the 88 greenhouses (Table 4).

Thus labor hours neither working day in the greenhouses imply that these were factors to get success. Owner/mangers worked more than 43 hours per week, averaging 7.41 hours per day for almost 6 days (m =5.85) a week (see table 3). This detracts the findings of Islam, Aktaruzzaman, Muhammad and Alam(2011) and García Crespo, Martí and Crecente (2007) who found the importance of constant willingness to personally participate in the work, but this did not mean that the amount of labor hours and working days determined success. The educational level of the general manager or the owner of the greenhouse had a bimodal distribution (34.1%) with educational level of elementary and bachelor (see Table 5 and 6). The first element of success is survival, education were distributed as follows: 30 managers with elementary level had 7.42 mean years, 12 with middle education had 7.38 mean years; 11 with high school had 12.73mean years, 30 with bachelor degree had 8.27 mean years and 5 with master degree had 17.75 mean years; the second success element, the return on investment ROI was distributed: the manager with elementary education had 2.1 means years, with middle school had 0.91 mean year, with high school had 1.1 mean years, with bachelor had 0,93 mean year and with master degree had 1.57 mean years; capacity growth, showed that: the elementary grew moderately, almost as high as those of the high school and college grew high, and higher whose had master degree (see table 6).The null hypothesis testing was applied. The median of the survival, ROI and capacity growth, are the same between the categories of education. For a significance value of 0.462 the null hypothesis was accepted: the median survival are the same between the categories of education; rejecting the null hypothesis: the median of ROI with a significance value of 0.029, and the growth of capacity with a significance value of 000, are the same between the categories of education (Table 7). Thus, the educational level implied an element of success for the ROI and growth capacity, but not for survival. However, on first place, the ROI has a negative correlation (-.227) and secondly, the capacity growth had a positive correlation (.462) with educational level. Thus, to higher ROI lower education and to higher education higher capacity growth (Table 7). Then, educational level affects negatively to the ROI and positively to the capacity growth of the 88 greenhouses, and does not affect survival. So, this implied that the educational level was not a success factor for them. This could be by the sample; the groups were not homogeneous at the different educational levels, because there were 12 participants with middle school, 11 with high school and only 4 with master degree. The profile of the businessman in his different categories, the educational level, labor hours, days of work commitment, gender and age did not show a positive effect in reliability of survival, on the ROI neither on the capacity growth; success elements of the 88 greenhouses.

5.3. Human Resource Management

Results of Hypothesis 2 Positive human resource management is a contributing factor to greenhouses success, was not supported. Permanent work and flexible working are important to employees. Permanent workers have agricultural activities that are not just vegetable harvesting. In contrast, temporary workers are hired just for the vegetable harvest. Flexible working refers to employees 'ability to select the time they work and they can change their day off (Table 8).The mean results are the followings: 14 permanent employees by 7 temporary, a 2:1 ratio, proportionally distributed among both genders and counted with flexible working hours in most companies (50/88).The scheduling flexibility benefits mainly the females to combine household activities, so they contribute to family income and are recognized by their social activities (Shmite, 2009; Rodríguez, 2012). This may be reinforces to the findings of Manzanoand Garcia (2009), they consider that the maintenance of the agricultural sector depends largely on staff. But it is necessary to do median tests to accept or reject the null hypothesis on the impact of the categories of the flexible working hours and of the worker orientation on the success of the 88 greenhouses The survival and capacity growth of the greenhouses obtained a higher mean with a rigid workday and only the ROI had a higher mean in those that had a flexible workday. The mean survival of 36 greenhouses with a rigid time was 9.60, while for the flexible 50 was 8.41; the mean capacity growth for rigid was 3.49 and 2.90 for flexible; the mean ROI for the rigid 36 was 0.611 and for the flexible 47 was 2.02 (see table 9).The medians tests to accept or reject the null hypothesis on the impact of the categories of the flexible working hours and of the worker orientation on the success of the 88 greenhouses were made. Only two null hypotheses were rejected: equal medians of the ROI between the categories of flexibility in working hours (significance 0.006) and survival between categories of time oriented worker (significance .028) (see table 10). In this regard, the provisions of that labor flexibility and orientation to worker of the working day in the success of the 88 greenhouses were rejected.

5.4. Quality Certification

Results of Hypothesis 3. Having a quality certification is a contributing factor to greenhouses success, was not supported. In the sample, 90% of the 88 companies' did not have any quality certification; Good Agricultural Practices (GAP) and Primus Lab, implying that certification is not a success factor of greenhouses (see Table 11). This was also confirmed by testing null hypothesis of equal median survival (significance .642), ROI (significance .084) and capacity growth (significance .633) between the categories of certification, resulting in the acceptance of the null hypothesis (see Table 12).Showing that quality certification is not a success factor of the 88 greenhouses. The results coincide with those found by Aragon et al. (2004), quality was not a success factor for SMEs in the state of Veracruz, Mexico.

5.5. Technology

Results of Hypothesis 4. Technology is a contributing factor to greenhouses success, was supported. Greenhouses use technology but most of them do not have it. The successful agricultural enterprises had technological innovations, the mean results show more than 2 innovations, the majority (56/88), with some improvement in the irrigation system (see Table 13) and 39 had more than two general innovations (see Figure 1). The results are consistent with Hernández and Castilla (2000), where the introduction of various innovations is gradual, allowing the owner/manager to acquire sufficient knowledge about the operation of the different equipments. The median tests to accept or reject the null hypothesis on the impact of the categories of technology on the success of the 88 greenhouses were made. Specifically about technological improvements, applied and irrigation improvements. Five of the nine null hypotheses were rejected, these being: The median of capacity growth are the same between categories of technological improvements (significance .006) and although it has a positive correlation (0.157), the positive sign indicates that, at a very low level, to greater number of technological improvements higher capacity growth; The medians of survival are the same between the categories of implemented improvements (.006), with positive correlation (.215), inferring that the implemented improvements cause greater survival; The medians of capacity growth are the same between the categories of implemented improvements (significance 0.019), with a positive correlation (.225), inferring that the implemented improvements cause greater capacity growth; The medians of survival are the same between the categories of irrigation improvements (significance0.005), without correlation (-0.191), deducing that irrigation improvements affect survival but very slowly and negatively; The medians of capacity growth are the same between the categories of irrigation improvements (significance 0.008), with a positive correlation (.222), deducing that irrigation improvements affect positively capacity growth.

Thus, it was demonstrated that technology affected positive and moderately to the success of the 88 greenhouses, because five of nine null hypotheses were rejected (see table 14).

5.6. Financial Resources

Results of Hypothesis 5. Having financial resources is a contributing factor to greenhouses success, was lowly supported. Starting with adequate capital is necessary for success. The greenhouses were successful because the majority (76.1%) started with regular initial capital, enough and more than enough to begin their business, the 20 greenhouses with little and almost zero of their own capital were practically financed by external funding (see Table 15). In addition, 28 did not require external funding, 43 had between 20% and 50%funding, and only 17 companies financed more than 50% of their initial investment (see Figure 2). The results are partially consistent with those of the Lussier and Halabi (2010) who found that a business must start with adequate capital. Six tests of null hypotheses about equal medians of survival, ROI and capacity growth between categories of initial capital and financing were made. Only two of the six null hypotheses were rejected: The medians of capacity growth are the same between the categories of initial capital (significance 0.033), with a positive correlation (0.246), implying that the initial capital positive and proportionately affects the success; the medians of ROI are the same between the categories of financing (significance 0.024), without correlation (.099). Nevertheless the survival has an inverse correlation (-.226) with the financing, to greater financing lower survival. Thus, we conclude that financial resources have a low effect on the success of the 88 greenhouses because only two of the six null hypotheses were rejected (see table 16).

5.7. Subsidies and VAT Returns

Results of Hypothesis 6. Getting subsidies is a contributing factor to greenhouses success, (subsidies and VAT Returns) was not supported as a success factor for greenhouses because more than 70% (n=63 72%) of the business did not receive any government support in their last five years (see Table 17). The results contradict the findings of Hall and Jorgenson (1967) that indicated that tax devices to stimulate investment and frequent use of this resource. Three tests of null hypotheses on equal medians of survival, ROI and capacity growth between categories of tax rate were applied. Rejecting only a null hypothesis: The medians of growth capacity are the same between the categories of tax rate (significance .006), with a positive correlation (.348), indicating that the tax positively affected the success of the 88 greenhouses. Furthermore, only a little more of half of the 88 greenhouses (see table 18) make a statement annually or are also registered, besides more than 70% have no support from the government, so we can say that subsidies and government support in a very low degree determined the success of the 88 greenhouses (see table 19).

5.8. Internationalization

Results of Hypothesis 7. Internationalization and channels of commercialization are a contributing factor to greenhouses success, was partially supported. Internationalization was not supported as a success factor in greenhouses because 59 (67%) of the participating companies did not export. But almost all of them sell their production (80 of 88) through a trader (wholesale), become their own trader or directly sell retail to customers (see Table 20). The lack of participation in other markets may not require quality certification that allows them access to premium markets and a lack of connection with other agricultural enterprises and internationalization strategy (Islam, Aktaruzzaman, Muhammad & Alam, 2011; Ojeda, 2009; Spence, 2003).The null hypothesis tests, the medians of survival, ROI and capacity growth between categories of export were completed, only the null hypothesis of capacity growth was rejected (significance .013) between the categories of exportation and this had a positive correlation (.465) with the capacity growth, establishing that exportation is a partial factor of the success of the 88 greenhouses (see table 21).The null hypothesis tests, the medians of survival, ROI and capacity growth between categories of commercialization were done, resulting that the three null hypotheses were rejected (significances: .008, .006, .014), showing (see table 22) that survival and capacity growth are higher in those that commercialize compared to those that do not and thus, commercialization was an important factor on the success of the 88 greenhouses. The most important success factor was internationalization and commercialization, for the survival and the capacity growth, and in a lower level the ROI. In this factor, 4 of the 6 null hypotheses were rejected and it was observed a strong positive correlation between the export and capacity growth.

6. Discussion and Conclusions

Three factors not shown to be success factors of the 88 greenhouses studied. The quality certification, management of human resources and the businessman profile did not determine the survival, the capacity growth neither the ROI, success elements. In contrast, only four factors were partially proved as successful factors of the greenhouses: internationalization-commercialization, technology, the financial resources and the governmental supports-subsidies. These last findings are similar to those in the literature factors, like the Mahmood et al.'s model (2011) in Pakistan, financial resources, marketing strategy, technological resources and government support and entrepreneurial skill are success factors. Statistical tests, means, hypothesis tests of medians and Pearson correlations analysis of survival, ROI and capacity growth, elements of success, established in the surveyed greenhouses that: the internationalization-commercialization was the most important success factor in the three elements of success, with an intermediate impact. Second in importance as a success factor, is technology, where to a greater number of innovations greater capacity growth and survival, this means most success, emphasizing irrigation improvements. Third, the financial resources involved a minor impact on the success of the 88 greenhouses because the initial capital positively impacted on the capacity growth without any further rejected the null hypothesis and observing an inverse correlation between financing and survival. Fourth, governmental subsidies and support occasioned in a minimal degree the success of the 88 greenhouses.

Regarding human resources, interpersonal relations between owners and their employees are an important feature for organizational success and it is possible to consider the organizational purpose and, at the same time, be socially responsible to others in the community and equitably distribute the work and benefits (Giraldo, 2010). A higher educational level doesn´t imply the success of the surveyed companies, this contradicts the provisions of the Mexican government, with the importance of small business, there is a need for higher education of entrepreneurs (Secretaría de Economía, 2011, 2014).The Manager's educational level is not a success indicator, so future researches must dedicate to study other skills, as leadership, decision making skills and professional affiliation, like the Mahmood's findings (Mahmood, Asif, Imran, Aziz& I-Azam, 2011).This study has an important implication for public policy. In Mexico, like other countries, the government does not have a lot of economical funds to provide much assistance for agricultural enterprises. The Support Fund for Micro, Small and Medium Enterprises (SME FUND, Secretaría de Economía, México) does not provide enough support. Thus it is suggested that its role should be enhanced by providing resources on the corroborated successful factors, commercialization and technology. The provision of such a policy should be the starting point to coordinate efforts to enhance an agricultural-entrepreneurship in Mexico. With the importance of economic growth coming from small businesses, understanding business success is a critical issue in Mexico and globally. With the high failure rate, research is needed to increase the odds of SMEs success. The results of this study can help government agencies and institutions to do a better job understanding why some business succeed and others fail, and teach this to new entrepreneurs. More importantly, these institutes can help entrepreneurs get the proper training and resources they need to succeed and avoid failure. Thus, this study can be used to help formulating strategies to increase business success and economic development in Mexico. This research contributes to the body of literature because it is the first study to focus on the success of greenhouses in Mexico. It also has implications as it can benefit current and future agricultural entrepreneurs, as well as a variety of other stakeholders including parties who assist and advise them, investors, financial public institutions, who provide them with capital (Dennis & Fernald, 2001), communities and main society. Finally, there are limitations to this study, such as including greenhouses from one state only; allowing only generalizing for greenhouses in the state of Guanajuato and other states should become the focus of future studies.

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Table 1: Survival and years for ROI

	Years in Business-Survival	Years to recover ROI
Mean	8.85	1.39
N	84 (83.9%)	45 (51.1%)
	≥4 years	0 years

Table 2: Growth in Production Capacity

	Frequency	Percent
Very Low	8	9.1
Low	18	20.5
Regular	25	28.4
High	27	30.7
Very High	10	11.4

Table 3: Age, Gender Work Commitment of the Agricultural Manager

	Age	Dedication Hours	Dedication Days	Gender	Frequency	Percentage
Mean	48.2651	7.4148	5.8523	Female	31	35%
				Male	57	65%

Table 4: Dedication Summary of Median Testing

Null hypothesis	Significance	Decision	Pearson Correlation
The medians of survival are the same between the categories of hours of dedication.	0.33	Reject the null hypothesis	-.158
The medians of ROI are the same between the categories of hours of dedication.	.331	Accept the null hypothesis	-.148
The medians of growth capacity are the same between the categories of hours of dedication.	.672	Accept the null hypothesis	-.048

Table 5: Education

	Frequency	Percent	Percent cumulative
Elementary	30	34.1	34.1
Secondary	12	13.6	47.7
High School	11	12.5	60.2
Bachelor	30	34.1	94.3
Master	5	5.7	100.0

Table 6: Survival, Return of Investment, Capacity growth Versus Education

Education		Survival (years)	Return on investment (years)	Capacity growth (very L/H-5 scale)*
Elementary	Mean	7.4167	2.1000	2.5000
	N	30	30	30
	Standard Deviation	3.90420	2.09021	.82001
Middle	Mean	7.3750	.9091	3.0000
	N	12	11	12
	Standard Deviation	3.45836	1.64040	1.12815
High school	Mean	12.7273	1.1000	3.3636
	N	11	10	11
	Standard Deviation	16.26094	1.52388	.67420
Bachelor	Mean	8.2667	.9310	3.6000
	N	30	29	30
	Standard Deviation	6.60686	1.57958	1.16264
Master	Mean	17.7500	1.5000	4.2000
	N	4	4	5
	Standard Deviation	17.30848	3.00000	1.78885
Total	Mean	8.8506	1.3929	3.1477
	N	87	84	88
	Standard Deviation	8.32659	1.88857	1.15011

*. 1= very low, 2= low, 3=medium, 4= high, 5= very high

Table 7: Hypothesis Testing: Survival, Return of Investment, Capacity growth Versus Education

Null hypothesis	Significance	Decision	Pearson Correlation
The medians of survival are the same between the categories of education.	.462	Accept the null hypothesis	.159
The medians of ROI are the same between the categories of education.	.029	Reject the null hypothesis	-.227*
The medians of capacity growth are the same between the categories of education.	.000	Reject the null hypothesis	.462**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 8: Human Resources Management Summary

	Permanent	Female temporary	Male temporary	Permanent female	Permanent male	Flexible working	
Mean	13.9545	3.5465	3.2069	6.5114	7.4886	Yes	50
Standard deviation	38.914	9.5358	6.29902	17.42174	23.3971	No	38

Table 9: Time and Success Element

Success element	Horary	N	Mean
Survival	Rigid	36	9.5972
	Flexible	50	8.4100
ROI	Rigid	36	.6111
	Flexible	47	2.0213
Capacity growth	Rigid	37	3.4865
	Flexible	50	2.9000

Table 10: Hypothesis Testing: Survival, Return of Investment, Capacity growth versus Flexible Working

Null hypothesis	Significance	Decision
The medians of survival are the same between the categories of flexible working hours.	.459	Accept the null hypothesis
The medians of ROI are the same between the categories of flexible working hours.	.006	Reject the null hypothesis
The medians of growth capacity are the same between the categories of flexible working hours.	.248	Accept the null hypothesis
The medians of survival are the same between the categories of journey oriented to worker.	.028	Reject the null hypothesis
The medians of ROI are the same between the categories of journey oriented to worker.	.466	Accept the null hypothesis
The medians of growth capacity are the same between the categories of journey oriented to worker.	.650	Accept the null hypothesis

Table 11: Quality Certification

	N= 88	Percentage
Neither	79	90%
Global GAP	5	6%
Primus LAB	4	4%

Table 12: Hypothesis Testing: Survival, Return of Investment, Capacity growth versus Name of Certification

Null hypothesis	Significance	Decision
The medians of survival are the same between the categories of name of certification.	.642	Accept the null hypothesis
The medians of ROI are the same between the categories of name of certification.	.084	Accept the null hypothesis
The medians of growth capacity are the same between the categories of name of certification.	.633	Accept the null hypothesis

Significances are shown. The significance level is 0.05.

Table 13: Mean of Improvements and Innovations in Irrigation

	technological improvements	Amount of irrigation improvements	
Mean	2.1705	Zero	32
Standard deviation	6.41518	One	56

Table 14: Hypothesis Testing: Survival, Return of Investment, Capacity growth versus Technology

Null hypothesis	Significance	Decision	Correlation of Pearson
The medians of survival are the same between the categories of technological improvements.	.363	Accept the null hypothesis	-0.056
The medians of ROI are the same between the categories of technological improvements.	.060	Accept the null hypothesis	0.117
The medians of growth capacity are the same between the categories of technological implemented.	.006	Reject the null hypothesis	0.157
The medians of survival are the same between the categories of improvements.	.006	Reject the null hypothesis	.215*
The medians of ROI are the same between the categories of implemented.	.073	Accept the null hypothesis	-0.148
The medians of growth capacity are the same between the categories implemented.	.019	Reject the null hypothesis	.225*
The medians of survival are the same between the categories of irrigation improvements.	.005	Reject the null hypothesis	-0.191
The medians of ROI are the same between the categories of irrigation improvements.	.459	Accept the null hypothesis	-0.019
The medians of growth capacity are the same between the categories of irrigation improvements.	.008	Reject the null hypothesis	.222*

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

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

Table 15: Initial Capital

	Frequency	Percentage
Almost zero	10	11.4
Little	10	11.4
Regular	30	34.1
Enough	32	36.4
More than enough	5	5.7

Table 16: Hypothesis testing: Survival, Return of Investment, Capacity growth versus Financial Resources

Null hypothesis	Significance	Decision	Pearson Correlation
The medians of survival are the same between the categories of initial capital.	.446	Accept the null hypothesis	.144
The medians of ROI are the same between the categories of initial capital.	.068	Accept the null hypothesis	-.271*
The medians of growth capacity are the same between the categories of initial capital.	.033	Reject the null hypothesis	.246*
The medians of survival are the same between the categories of financing.	.830	Accept the null hypothesis	-.226*
The medians of ROI are the same between the categories of financing.	.024	Reject the null hypothesis	.099
The medians of growth capacity are the same between the categories of financing.	.178	Accept the null hypothesis	-.129

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

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

Table 17: Subsidies Amount and VAT Returns in the Last Five Years

VAT returns	2013	2012	2011	2010	2009	Mean
000	62	59	61	67	67	63
1.00	12	12	11	9	9	11
2.00	2	5	6	3	2	4
3.00	11	12	10	8	8	10

Table 18: Medians of Survival, ROI and Capacity growth between Categories of TAX

Subsidies TAX		Survival	ROI	Capacity growth
Notrecorded	Mean	8.9048	1.3000	2.7727
	N	21	20	22
	Standard eviation	11.94008	1.75019	1.15189
Once a year	Mean	6.6250	1.8718	2.8750
	N	40	39	40
	Standard eviation	3.13530	2.16648	.96576
Twice a year	Mean	14.4286	1.0714	4.0714
	N	14	14	14
	Standard eviation	7.62298	1.54244	.73005
Monthly	Mean	9.6667	.2727	3.6667
	N	12	11	12
	Standard eviation	10.99862	.64667	1.43548

Table 19: Hypothesis Testing: Survival, Return of Investment, Capacity growth versus Subsidies Tax and VAT Returns

Null hypothesis	Significance	Decision	Correlation de Pearson
The medians of survival are the same between the categories of SubsidiesTAX.	.068	Accept the null hypothesis	.140
The medians of ROI are the same between the categories of Subsidies TAX.	.131	Accept the null hypothesis	-.183
The medians of growth capacity are the same between the categories of Subsidies TAX.	.006	Reject the null hypothesis	.348**

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

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

Table 20: Internationalization and Commercialization

Success	Internationalization		Commercialization			
	No exporting	10 to 100% of products exported	Neither	Direct/ Retail	Trader/ wholesale	Own trader
N	59	29	8	45	30	5
Survival	7.1271	12.4821	8.000	8.548	9.767	10.750
ROI mean	1.7143	.7500	2.429	1.524	0.741	1.000
Capacity G. mean	2.7627	3.9310	2.143	3.071	3.467	4.000

Table 21: Hypothesis Testing: Survival, Return of Investment, Capacity growth between the Categories of Exportation and Commercialization

Null hypothesis	Significance	Decision	Correlation de Pearson
The medians of survival are the same between the categories of exportation.	.582	Accept the null hypothesis	.225*
The medians of ROI are the same between the categories of exportation.	.358	Accept the null hypothesis	-.252*
The medians of growth capacity are the same between the categories of de exportation.	.013	Reject the null hypothesis	.465**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 22: Medians of Survival, ROI and Capacity growth whit Categories of Commercialization

Null hypothesis	Significance	Decision
The medians of survival are the same between the categories of commercialization.	.008	Reject the null hypothesis
The medians of ROI are the same between the categories of commercialization.	.006	Reject the null hypothesis
The medians of growth capacity are the same between the categories of commercialization.	.014	Reject the null hypothesis

Figure 1: Agricultural Business with Technological Innovations in General

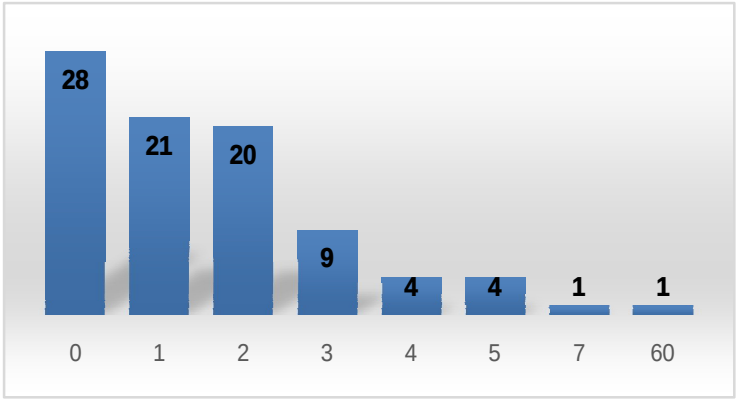

Figure 2: Percentage of Funding From the Owner/ Equity Financing