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PUBLIC POLICY ANALYSIS TO UPDATE RURAL BUSINESS POLICY

ANALISIS DE POLITICAS PUBLICAS PARA ACTUALIZAR POLITICA EMPRESARIAL RURAL

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ABSTRACT

The investigation arises in the Federation for Municipal Development Tucureño, a company located in the municipality of San Miguel Tucurú, Alta Verapaz, Guatemala where the problem of minor entry to the U.S. was identified. $1362.00 annually. Income originating from agroindustrial activities, a situation that represented an opportunity to study it and provide a technical solution with improved productivity and competitiveness, developing a business policy proposal to obtain higher income with integrated activities, consisting of production components, transformation of raw materials, negotiation of this, training, use of the administration system and financial resources. Phenomenon studied through a process based on analysis of macroeconomic public policies related to international and national development (global environment), public policies at the intermediate economic departmental and municipal level (mesoeconomic) and microeconomic (competitive environment) of the company analyzed, including in these results of a survey carried out by simple random sampling by conglomerates within the universe of 35 organizations; thus establishing the conditions and characteristics of the Federation's activity, presenting an updated commercial management policy model that generates higher income. The development of the topic offers an analysis of productivity and competitiveness and its improvement in an objective, technical manner, to make sustainable economic growth possible with the use of own resources and thus, obtain strengthening through the proposed solution of a policy as an integrated project. Expected results: Updated business policy as a technical solution through an integrated project to improve productivity and competitiveness.

Palabras clave:
política pública, política empresarial, solución técnica,

RESUMEN

La investigación surge en la Federación para el Desarrollo Municipal Tucureño, empresa ubicada en el municipio de San Miguel Tucurú, Alta Verapaz, Guatemala donde se identificó el problema de ingreso menor a U.S. $1362.00 anual. Ingreso originado en actividades agroindustriales, situación que representó oportunidad para

proyecto integrado, productividad, competitividad e ingreso.	estudiarlo y dar solución técnica con mejora de productividad y competitividad, desarrollando una propuesta de política empresarial para obtener ingresos superiores con actividades integradas, constituidas por componentes de producción, transformación de materia prima, negociación de esta, capacitación, uso del sistema de administración y de recursos financieros. Fenómeno estudiado por medio de un proceso fundamentado en análisis de políticas públicas macroeconómicas relacionadas con desarrollo internacional y nacional (entorno global), políticas públicas a nivel intermedio económico departamental y municipal (meso económicas) y microeconómico (entorno competitivo) de la empresa analizada incluyendo en este resultados de encuesta por muestreo simple aleatorio por conglomerados dentro del universo de 35 organizaciones; estableciendo así, las condiciones y características en la actividad de la Federación presentando un modelo de política de gestión comercial, actualizado generador de ingreso superior. El desarrollo del tema ofrece un análisis de productividad y competitividad y su mejora de manera objetiva, técnica, para hacer posible el crecimiento económico sostenible con el uso de recursos propios y así, obtener fortalecimiento a través de la propuesta solución de una política como proyecto integrado. Resultados esperados: Política empresarial actualizada como solución técnica a través de un proyecto integrado para mejora de productividad y competitividad.

Introduction

The income problem in the Federation for the Municipal Development of Tucureño - FEDEMT-, and in the rural area of the management environment, shows a relationship between productivity and indicators of poverty and extreme poverty, a problem that can be solved, for the federation, through a competitive business management that makes efficient use of resources to operate in the target market.

The research established an average annual income for the republic in 2017 of U.S. 3568.00, in the rural Indian area for U.S. men. $2175.00 (FUNDESA, 2018b) according to the Common Country Analysis.

In addition, "of every one hundred indigenous people employed in rural areas, 35 live in extreme poverty, a relative value that is three to four times higher than that observed in their non-indigenous and urban counterparts" General Secretariat of Planning and Programming of the Presidency (SEGEPLAN, 2015). This population includes subjects in the rural area of the municipality of San Miguel Tucurú, Alta Verapaz, Guatemala. Phenomenon manifested by the level of income they obtain from their agricultural activity and the commercialization of their products.

Collaterally to the above, the situation of the individual income level below U.S. 1362.00 in the federation, generated the search for a proposed solution to overcome this problem and reduce the indicators indicated as extreme poverty.

In the municipal jurisdiction of the organizations associated with the federation "extreme poverty indicators have been of the order of 65% and total poverty of 95%" (Instituto Nacional de Estadística G de G (INE),World Bank (WB)., 2013). These indicators are the main socioeconomic reason for reducing them by improving productivity and competitiveness.

The study made it possible to know, understand, characterize and explain the level of income identified in the federation and in the environment of the municipal jurisdiction of San Miguel Tucurú and established the problems observed as a phenomenon to be addressed within productivity and competitiveness. (FUNIBER, N.D.).

Thus, the subject of the search for a solution to the problem of income in the rural enterprise analyzed corresponds to economics, according to (Flores, 1965), by the allocation of means to achieve the competitive ends of entrepreneurship, where the distribution of resources and their use consists of maximizing the achievement of these ends, an arrangement that is broken down into the aspects of the research developed.

Based on the above reasoning, how should efficient business management be implemented at FEDEMT to improve income through productivity and competitiveness? This question became the main question generating the general objective consisting of: To formulate an integrated solution that improves income through efficient business management with permanently increasing productivity and competitiveness in the federation.

Question and objective that are set as purpose in this article to transfer the business policy proposal as an integrated project for solution to the low productivity and competitiveness origin of the income problem for the associative enterprise.

During the survey research, the conditions of production, handling and marketing of important products within the agroindustrial production processes permanently established by the individuals associated to first and second level federally integrated organizations were known.

With the literature review (UNDP, 2016a), the background and current status of the topic were established, which were known by analyzing public policies that contained aspects such as economic growth, productivity and competitiveness, the development plan for Guatemala, the municipal development plans, their indicators and information from programs such as the national competitiveness program; The Millennium Development Goals (UNDP, 2016b), those of sustainable development towards 2032 (PRONACOM, 2018) and concepts of economy, agriculture and development that are linked to the topic and the company where the research was carried out.

This is the beginning of an integral process of elaboration of a business policy that will fill the gaps in knowledge corresponding to the training of human resources, the application of norms and standards for product classification, packaging and storage. In this way, business management will be achieved with which added value can be generated by means of technification to obtain qualified products offered at market prices that allow profitability in the investment.

Likewise, a demonstrative effect is presented to companies in the rural area of the importance of research in agroindustrial production processes to project with the results achieved the sustainability of natural resources and investment, possible through the implementation of a business policy that corrects problems of productivity and competitiveness, an effect that should be extrapolated to cause income improvement through the generation of added value in rural companies that need to improve their profitability.

The originality of the topic established that productivity and business competitiveness in the rural area of the Municipality of Tucurú, Alta Verapaz, location of FEDEMT, had not been scientifically investigated considering first degree groups (associations) integrated into a federation (second degree organization).

The information from secondary sources made it possible to know the importance and current relevance of the topic for the business organization, for the region and for the country, having consulted public policy documentation such as the following.

The National Report of Guatemala within the Regional Public Policies on Poverty Reduction in Central America, (Inter-American Institute of Human Rights., 2008), shows the strategies to achieve economic growth, in addition to using social policies to generate employment and income in order to improve the human being, an approach that allows projecting the solution to the problem established considering these issues objectively according to the knowledge achieved through the analysis of information collected.

According to (UN/ECLAC, 2010-14), at the macroeconomic level had adequate and productive employment and income, within the first goal set at the Millennium Summit of 1991 to 2015, a relationship that is projected among the scope of the research work done, to improve the condition of employment, and increase income by updating business management.

This target, continued in the SDGs, consisted of halving the population earning less than one dollar a day by 2015 to improve the quality of life, thereby achieving full employment and decent work.

From the year 2016 with projection to the year 2030 the Sustainable Development Goals -ODS-, (UNDP, 2022), include within goal 8 that relates income, to promote sustained, inclusive and sustainable economic growth, full and productive employment for all, issues that are pursued with the improvement of productivity and competitiveness in the target company in the research.

Since then, the macroeconomic goal has been to achieve high levels of economic productivity by 2030 through diversification, technological modernization and

innovation, among other things by focusing on higher value-added and labor-intensive sectors.

Macroeconomic policy aspects congruent with the analysis, conclusions and microeconomic projections of the research and business policy of the project presented as a solution to the problem established in the target federation.

The content of the alignment of K'atun's objectives and goals towards 2032 includes the variables of productivity and competitiveness established in the research as independent variables to be worked on in order to achieve modifications in the dependent variable of income, the main element of the study in the search for a solution to the problem identified.

The municipal development plans included in the Monografía Catastral Tucurú, Alta Verapaz, (Gobernacion Departamental Alta Verapaz. Municipal Planning Office, 2009). The Municipal Development Plan, Current Territorial Development Model of San Miguel Tucurú, (SEGEPLAN, 2010); the Departmental Development Plan, (SEGEPLAN, 2011). In addition, the decisions of the Municipal Council of San Miguel Tucurú, Alta Verapaz and the Municipal Development and Land Use Plan 2019-2032 were consulted. (SEGEPLAN, 2020); having identified in each of the sources analyzed the characteristics of economic growth, deficiencies in productivity and competitiveness that were manifested in the municipal and departmental competitiveness indexes.

To determine the situation of the federation within its environment, the location of the department of Alta Verapaz, jurisdiction to which the municipality of San Miguel Tucurú, headquarters of the Federation for the Development of Tucurú, FEDEMT, belongs, was established within the classification of the local competitiveness index in position 22 of 22 departments; the departmental capital Cobán, was placed in place 136 of 340 municipalities with index 51.77% and the municipality of San Miguel Tucurú was placed in position 324 of 340 municipalities with local competitiveness index of 41.54%. (FUNDESA, 2017).

In addition, the results established in the productivity and competitiveness indicators in the survey demonstrated the need to increase income by means of a business policy that permanently obtains profitability.

Method

In order to turn the federation into a competitive company, the research was oriented towards the observation and analysis of the management environment, for which reason information was gathered from primary and secondary sources, taking into account the importance of public policies among the latter, analyzing them to obtain objective quantitative conclusions and orienting the solution towards a business policy integrated by components for a management that surpasses productivity and competitiveness.

The research design oriented by the theory of research methodology in its fifth edition (Hernández, 2010), corresponded to a methodological scope of exploratory, descriptive and explanatory type that was used to constitute the strategy to obtain profitability and achieve the objectives to improve productivity and competitiveness, income and market share with an updated management with positive results in each production cycle.

The design is exploratory because it deals with a subject that has not been studied very much, and it is known through macroeconomic analysis, the contents of external, national, regional and municipal public policies, with observation of the area of influence

of the federation and its members, using this knowledge to identify the area of management of the federation, the context and situations of study and the possible relationships between the research variables.

It was descriptive because it sought the properties, characteristics and profile of the organizations of the federation targeted by the research, as well as to obtain information at the microeconomic level of the processes and work management that was carried out at the time of collecting the information on the variables included in the survey and that integrate the different management components.

It was correlational in scope because it explained and quantified the relationship between income, productivity and competitiveness variables, as well as the experimental variables used to formulate an answer to the established income problem.

Definition of research variables: In order to overcome the research problem and to solve it through the fulfillment of the established objective, income was determined as a dependent variable and productivity and competitiveness as independent variables, adding to the latter the experimental variables to use them as precise information points and use them to search for appropriate questions to be used in the capture of information during the field work.

It then emerged that in order to increase the current annual income it was necessary to implement a business management for income improvement through productivity and competitiveness, which constituted the general question and the beginning of the research.

Operationalization of the variables: This was done by conceptualizing them as dependent, independent and experimental, determining their meaning, establishing their denomination and operation, which included general aspects and the following chapters:

1.- Information on the population of the communities, 2. Associate or organizational land tenure,3. Individual and partnership income, 4. Crops and extent of each crop in the work area, 5. Situation of cardamom and coffee.6. Administrative, accounting and financial aspects of the organization, 7. Aspects of classification, storage, conservation.8. Agro-industrial process, 10.- Technical assistance received by the organization/community.

Points included in the research report that represented the independent variables productivity and competitiveness and the dependent variable income, which were disaggregated as active or experimental variables of importance to rationalize the theoretical variables to obtain information from primary sources with accuracy and to make quantitative recognition of the research by calculating indicators, are represented in tables and graphs in the article.

Type of sampling and sample determination: The technique applied was simple random sampling by clusters (Webster, 2001), because it was important to preserve the criterion of an organization composed of 35 associations in equal socioeconomic and production conditions, making the selection of the sample within the universe (federation) allowing the random extraction of the information necessary for the survey work in 8 units (Arias, 1999).

Sample that originated at typical score 1.96 with 95 % confidence level, estimated sample proportion .5; Population or universe 35; data included in Data Processing Creative Survey Research System. (Creative Research Systems, 2019).

Information from which resulted in a sample of 9 members of the universe considered, a sample value to which the application of the formula of the Data Processing Program for finite sample correction makes the necessary adjustment to 8 associations to be surveyed.

Research technique and instrument: Once the variables were defined and the indicators to be obtained were established, according to et al (Arias, 1999), the pertinent data collection technique and instrument were selected to answer the questions formulated. All in correspondence with the problem, objective and research design.

Continuing with Arias, the research technique was understood as the survey and the procedure or particular way of obtaining data or information for field research, a structured questionnaire being the guide for the interview. In addition to the previous instrument, a notebook was used to store observations and a computer with a hard disk and memory sticks was used to file the information obtained.

The ballot was elaborated to carry out the survey as a transactional or cross-sectional research because the data collection was done in a unique time for each association considered in the sample.

The field work made it possible to obtain information for the survey through the questionnaire, which was considered an instrument for capturing information, validating it with the following process:

A test of the ballot was run on 37% of the sample used to review the construction, content and ordering of each question item. Analysis used to achieve consistency and make the questions in each component coherent. Finally, a reasonable revision of the survey was obtained, thus validating the procedure.

The debugging of the data collected made it possible to relate the answers obtained to the total number of respondents and the number of units included, verifying that the answers to most of the questions offered reasonable and quantitatively representative responses.

The validation of the research instrument was followed by verification of the definition of the topic, design of the work plan to be followed, interview of the representative person of the organization included within the percentage of units selected to test the instrument; the information from the questionnaire was used for quantification and preliminary drafting of text for analysis, generalizing results, demonstrating the reliability and validity of the work by preparing a written report of results to demonstrate the coherence of the questions of the questionnaire by components of interest and to obtain conclusions approximating the reality originating from the selected topic.

At the conclusion of the validation process of the research instrument, the reliability of the instrument and the validity of the sample survey were established, orienting the scientific content to be obtained towards the search for productivity and competitiveness improvement.

Results

Related to productivity and competitiveness, findings from the research environment are presented, which correspond to the macroeconomic level of the country, intermediate level of the region and microeconomic level that provided results based on the survey work carried out in the target company.

This relationship resulted in the need to update the corporate policy by means of a management proposal with a project integrated by components, establishing the process of elaboration of the proposal up to the formulation of the pre-feasibility and its subsequent feasibility study.

Findings about productivity and competitiveness of the research environment

According to the local competitiveness indexes, there is a relationship between the global competitiveness of Guatemala within the world environment, with position 96 in a universe of 140 countries; for local competitiveness of the municipalities, Guatemala, seat of the capital of the republic, ranks 1 among 340 municipalities, Cobán, departmental head of Alta Verapaz 173 and San Miguel Tucurú, the latter jurisdiction to which the federation belongs, in position 324 of 340 municipalities. In addition, the department of Alta Verapaz is ranked 22nd out of 22 departments. (FUNDESA, 2018a).

The local competitiveness index and its component factors by reference municipality (Table N°1) presents the LCI for the municipalities of Guatemala, Cobán and San Miguel Tucurú, showing the competitive difference between the municipality of Guatemala and those that correspond to FEDEMT's management area.

Table 1

Local competitiveness index and factors comprising it by municipality of reference

Factors	Municipality		
	Guatemala % Guatemala	Cobán % Cobán % Cobán % Cobán % Cobán % Cobán	San Miguel Tucurú % San Miguel Tucurú
Local competitiveness index	77.82[(1)]	40.60[(2)]	37.11[(3)]
Institutions	69.72	35.84	54.6
Infrastructure	81.96	54.09	45.49
Adoption of Tics	93.2	23.43	6.86
Economic environment	82.75	57.92	43.55
Health	100.00	61.22	36.41
Workforce and talent	71.67	39.65	28.93
Product market	39.51	9.28	32.13
Labor market	83.07	50.15	46.62
Financial system	64.87	21.54	33.94
Market size	71.44	33.34	28.91
Business dynamics	97.85	60.27	54.74
Innovation capacity	100.00		

Note. [(1)] Position 1 of 340 municipalities. [(2)]Position 270 out of 340 municipalities. [(3)]Position 308 out of 340 municipalities. Source: FUNDESA. Local competitiveness index.2020.

The factors that make up the local competitiveness index (FUNDESA, 2020), Table N°1, made up of activities of different public sector institutions, private sector organizations and the financial system, establish the possibility of economic growth for the region. These factors offer modest indicators that hinder economic growth in the municipality and the improvement of competitiveness for productive activities of the rural private sector in which the federation analyzed participates, within which the capacity for innovation does not exist for Cobán and San Miguel Tucurú. The adoption of ICTs was 6.86 for the latter.

With the LCI scores for Alta Verapaz, in the analysis of the local competitiveness index and service indicators in Alta Verapaz (Table 2), references were established to identify existing problems, one of them being employment and income from family activities 46.07 for the department, 50.70 for the departmental capital and 38.40 for the municipal capital of Tucurú. Indicator that shows the difficulty in achieving sustainable economic growth in the department and in the municipality where the activities of the federation under investigation are carried out.

Table 2

Analysis of the local competitiveness index and service indicators. Alta Verapaz

Location	Index local competitiveness	Accessible institutions and services	Connectivity and infrastructure	Km. Asphalt Road network	Employment and family income
Department	44.30 (22/22)	61.92	58.99	39.69	46.07
Header[a]	51.77(136/340)	62.28	63.74	39.69	50.70
Municipality[b]	41.54 (324/340)	64.06	56.66	39.69	38.40

Note. [a] Cobán [b] Tucurú

Source: FUNDESA. Last updated October 2017(Various official sources).

Regarding the productivity and local competitiveness indicators of the aforementioned municipalities, they do not pertain to private business management, since they represent indicators of the municipal and departmental environment resulting from the application of public economic policy.

The aspects of business management considered below present indicators of variables including the average annual income of U.S. 779.00 for coffee and cardamom, with the addition of income from the sale of surplus production of basic grains for family consumption in the nearby market that reached the U.S. 1023.00 and I note the identified problem of income level corresponding to the poverty level and dissatisfaction of the company's associates.

Such income obtained U.S. 1023.00 with indicator of .57, scored in productivity and competitiveness indicators estimated for the associative enterprise (Table 3 sub-index 1), offered in relation to the reference income established prior to the U.S. research. 1769.00, justifying the discomfort of the participants in the productive process because it corresponded to an income below the minimum necessary to exceed the poverty line income qualification.

Table 3
Estimated indicators of productivity and competitiveness for associative companies

Indicator	Indicative level	Variable
Reference income productivity (1)	.57	Salary reference U.S. $1769.00
Agricultural productivity (2)	.92	Production qq per hectare
Raw materials traded (3)	.85	Volume of raw material traded unprocessed
Technical assistance (4)	.29	Permanent Assistance
Current business management (5)	.12	Integrated and functional management Accounting records and controls Working capital Technical Assistance Industrialization Integrated and systematic marketing
Business productivity (6)	.70	Income Agricultural productivity Industrialization Technology
Business competitiveness (7)	.32	Current business management Industrialization Technical assistance Business Productivity
Technical labor productivity (8)	.36	Workdays per cycle Production per cycle
Economic productivity (9)	1.32	Sales revenue per cycle Cost of production per cycle

Note. In brackets explanatory callout corresponding description on pages 9 and 10 in this article.

Due to the lack of an integrated and functional administrative methodology, at the time of the survey, there were no functional administrative procedures and there was no system of records and controls that worked with adequate accounting procedures. Bank credit was also not used for most of the producers who were members of the associations.

For marketing costs, no accounting records were used, so no information was obtained on the historical monetary value of the activities carried out during the research period.

Due to the absence of internal records and controls, the productivity and competitiveness of the production cycle under analysis was calculated with the information from the survey, establishing the following indicators.

The earned income indicator, Table 3 sub-index 1, is presented as a productivity indicator of .57 with a negative differential of .43, which value does not reach the basic reference income.

The related variables to obtain the yield indicator for agricultural work, table 3 subindex 2, showed a productivity of .92 for individual work per plot in general, however, the performance of the experimental variables of other components will have to be improved to reach through the industrial process and efficient commercialization the acceptable level of efficiency.

Table 3, numeral 3, shows an indicator of .85 for the participation of the commercial activity of negotiation in raw material, establishing .15 for the sale of industrialized product, a result that constitutes one of the reasons for the low level of income, whose demonstrative participation is the lack of generation of added value in the management process that is carried out in the associations and in the federation.

The indicator of .29 (Table 3 numeral 4) for technical assistance indicated not having a permanent and orderly training process of knowledge to improve the skills of the farmer or the person responsible for operational activities in the agroindustrial process.

According to Table 3 number 5, a coefficient of .12 was obtained for the current business management indicator originated in 3 out of 6 experimental variables, an indicator that is essential to overcome by updating the business management by components.

The business productivity indicator, Table 3 sub-index 6, presented is of the order of .70, a coefficient that is lower by 30 performance points to meet the expectations of the factors used efficiently.

The company's conditions (Table 3 sub-index 7) regarding the satisfaction of market participation requirements, present an indicator of .32 which determined the importance of updating and establishing new procedures to increase competitiveness.

The technical productivity of the labor factor, Table 3 sub-index 8, offers an indicator of .36, originated in the relation of the experimental variables production per work cycle and number of workdays, indicator necessary to increase to consider satisfactory the productivity relation obtained, whose projection must recover the real value of the workdays applied to the process studied.

The economic productivity of each product and its overall productivity reflected in the productivity indicators, Table 3 number 9, for the case of the products–analyzed, coffee, cherry cardamom and parchment as a company, for the work cycle studied 1.32, coefficient greater than the minimum necessary to overcome (1.0) with sales revenue, a relationship that demonstrates efficiency in the use of production factors.

Discussion and conclusions

The indexes calculated for the global competitiveness of the republic of Guatemala (ICG) and the local competitiveness index (ICL) of the municipality of Guatemala, the department of Alta Verapaz and the municipality of San Miguel Tucurú, (FUNDESA, 2018b), are related as environment of the associative enterprise because given the level of significance they present, they hinder economic growth and the improvement of competitiveness in the municipality for productive activities of the rural private sector in which the federation participates, a difficulty that is evidenced by the income level of the target population, whose classification has been established as poverty level.

Characteristics of corporate governance

As a consequence of not applying an integrated and functional administrative methodology, the managerial functions of planning, organization, control and direction are not carried out, and consequently the purpose of constituting an associative company with productivity and commercial competitiveness in the market in which it participates is not achieved.

In addition, the system of records and controls is not used to establish adequate accounting procedures.

The technical assistance does not obey a permanent and orderly training system that offers knowledge to improve the skills of the participating associate, a variable that added to the deficient commercialization of whose costs there are no records to be used for accounting purposes, impairs the realization of a productive process of high commercial value; in addition, with the lack of infrastructure and technology, it was established that there is a lack of an operative with productivity to act competitively.

The average annual income of U.S. 1023.00 for coffee and cardamom plus basic grains in relation to the reference income (U.S. 1769.00) confirmed the identified problem of income level, generating an indicator in the order of .57, lower than the minimum sufficiency expected as satisfactory for the requirements of the participating associate.

The technical productivity of the labor factor showed a relationship of low performance between the experimental variables production and quantity of wages applied to the work cycle of .36, which needs to be improved in order to achieve a technical productivity of the labor factor that recovers the value of the wages used.

The economic productivity of each product and its overall productivity reflects the internal conditions of the company, where external factors, such as market conditions, as considered by Rodriguez (1971), have an impact, which are manifested in the amount of income, which depends on the sales price, established on the basis of costs and expenses, where the value of inputs and wages is important.

When obtaining 1.32 as an indicator in the annual production cycle process investigated for the calculation of economic productivity, it is necessary to mention that the value of wages considered as a contribution of the family economy was not included in the calculation of the cost of production, nor the investment and depreciation in fixed assets such as the value of land acquired associatively because no records were available. Also not included in the cost structure is the financial expense caused by the advance of the value of the product negotiated prior to harvest.

Omission of elements that results in a decrease in the total cost, which is necessary to establish the selling price and calculate the profit. The selling price is lower than the real price that should be applied to recover the total amount of the investment in the work cycle and determine the corresponding profit. This situation allows us to note why such productivity, for the investigated period, exceeded the production costs, providing an artificial profit.

From the magnitude of the independent variables productivity and competitiveness and their relationship with income, it can be deduced that it is necessary to improve results through efficiency in the business activity in order to obtain profitability at the end of each cultivation and harvesting process through competitive marketing.

Proposal approach

The productivity and competitiveness indicators of the analyzed management, income, technical productivity of the labor factor and economic productivity, recommended updating the business management policy to provide the necessary added value for each production and commercial period to overcome the level of income that caused the established problem.

This recommendation leads to a proposal that will promote benefits through the commercialization of processed and industrialized crops under competitive conditions, obtaining from the added value to be generated the corresponding profit that can be used for investments in various activities that will make the productive activity sustainable for each work cycle.

By applying the strategy and using the research design, we obtained an integrated project made up of components with updated business presence to improve productivity and competitiveness, establishing the development process of this, through the formulation of the pre-feasibility and its subsequent feasibility study to determine the goodness of the investment in the future. This project, considered as a business policy, will promote benefits through the marketing of processed and industrialized products under competitive conditions.

In this way, the process will be ordered to achieve benefits that will allow exceeding the established income and these studies will be used to determine ex ante the possibility of reaching the target competitiveness annually and will reflect the importance of making investments in the different components to be executed. (Madeiros, 2019).

The development of the work offered as a scientific contribution the design applied in the research, which established the possibility of entrepreneurial transformation to opt for the correct use of available resources to improve income and quality of life through technified work, pursuing a multiplier effect towards rural entrepreneurship with the possibility of extrapolating in the future the type of innovative model generated to study productivity and competitiveness through different levels of the country's economic system.

This contribution indicates that competitiveness is a dynamic process and is framed by a series of business, structural and systemic factors included in the proposal for the adequacy of business policy.

The productivity and competitiveness indicators obtained from the analysis of the macroeconomic environment that established the level of income below the U.S. were also presented. 1769.00, from the knowledge of public programs and policies as an intermediate level of economic analysis and from the analysis of the current productivity and local competitiveness indexes that placed the department, the capital of Alta Verapaz, and the municipal jurisdiction within the national environment in a backward situation.

In addition, the microeconomic review provided indicators of productivity and competitiveness particular to the federation.

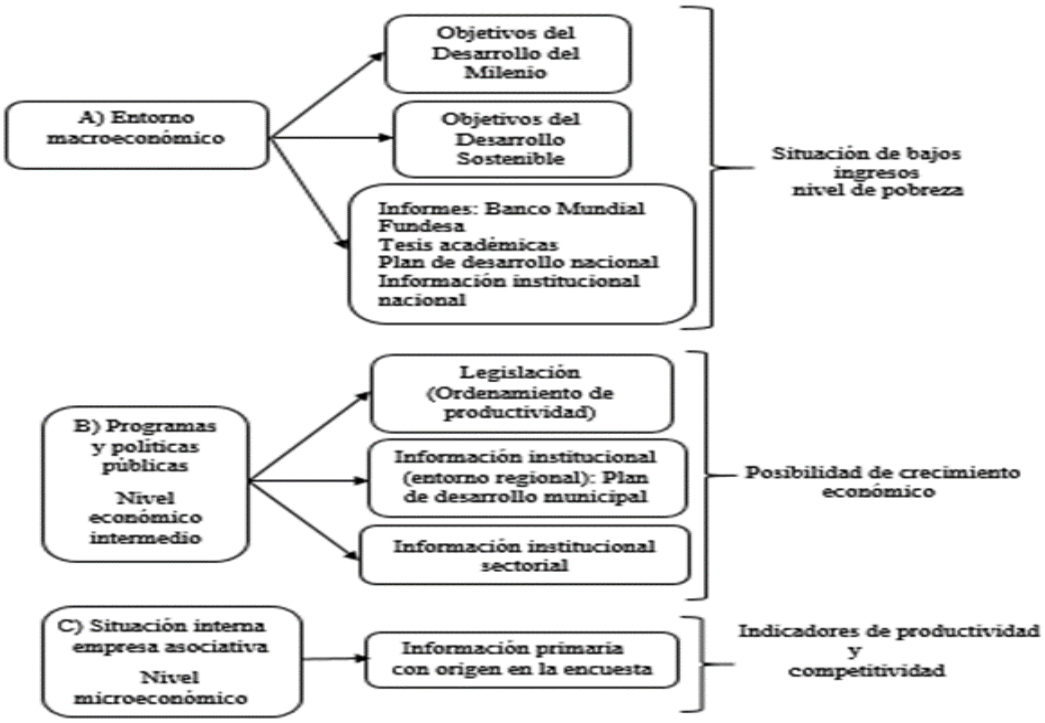
According to the procedure worked, the values obtained from the business calculation were placed in the interval from zero to infinity, observing, according to (da Conceicao, 2020), that if the indicator was greater than the unit, the activity would have a favorable comparative advantage for the product or variable calculated; being the values obtained in the research for most of the indicators less than 1, the comparative advantage has turned out to be unfavorable.

The complete interrelation of the 3 levels, macroeconomic, meso and microeconomic of the model used, is presented with the literals A) Macroeconomic environment, B) Programs and public policies, intermediate economic level and C) Internal situation, microeconomic level of the research design of productivity and

competitiveness, presented in Figure 1, allowed analysis, obtaining results and developing the business policy proposal to improve income through a new business management.

Figure 1

Productivity and competitiveness research design



The above discussion is presented based on elements of the results obtained and contents cited below used to arrive at the proposed solution as an integrated project.

The National Human Development Report for Guatemala 2002-2019 mentions that existing policies to improve the quality of life of the population include activities oriented towards access to financing, formalization of productive organizations, technological innovation, infrastructure improvement, training and investment.

Activities projected in the microeconomic management scheme of the federation's associative companies, with which we obtain updated institutional validity with the proposed solution to improve income through increased productivity and because they provide validity of interest towards 2032, the year of projection of the SDGs and the national development plan in force since 2015.

The inclusion of these activities in the research and the proposed solution to the identified problem is evidence of the search for economic growth.

Through the results of the research, the competitiveness conditions of the federated associations with an indicator of .32 were related to the established local competitiveness indexes of .37 for the department of Alta Verapaz, .40 and .36 in the municipalities of Cobán and Tucurú (FUNDESA, 2018b).

This situation placed the associative company in the competitive structure of the department at a deficient level, placing it in the departmental economic growth and of the municipal jurisdiction, within the positioning of the competitiveness index, in order 20 of

22 departments and in the 248 and 316 for the municipalities of Cobán and Tucurú respectively.

In the context analyzed, in terms of the structure of merchandise exports. (World Bank, 2017), it was determined that Guatemala is above the world average level of raw material exports and higher than the rest of Latin America and the Caribbean, which justifies the importance of adding value to FEDEMT's work process, to increase income through an agro-industrial process of productivity improvement that allows competing in the domestic market and if possible in the external market with high competitive capacity. The federation sells .85 of the product as raw material in its own domestic market.

The findings related to productivity and competitiveness were technical productivity .36 and economic productivity 1.32, which justified the need to update the business by means of a management proposal by components, establishing the process of elaboration of this through the formulation of the pre-feasibility and its subsequent feasibility study.

The study was considered to be limited by the training of human resources, smallholding land tenure, a situation that reduces the possibility of increasing the volume of agricultural production even with the addition of working capital, training, bank financing, application of technology and other elements.

As external limitations of the investigation, there were several states of prevention and states of siege during the period of investigation. Emergence of pandemic originating from SARS 2 COVID 19 virus.

The integrated proposal for the increase of productivity and competitiveness is based on the improvement of technology for agroindustrial activities, being necessary the technical, administrative and financial readjustment in the federated associations to work in the market obtaining profitability from each work cycle.

In addition to the above, it will be necessary to establish technical education and training to add value to the work of human resources in the development of permanent activities.

The integrated project comprises a preparation and evaluation process to transform business management and obtain results that increase the income of associates by means of the following.

1. Continue the research considering the results of the Productivity and Competitiveness Study in a rural area of San Miguel Tucurú Alta Verapaz Guatemala, to develop the pre-feasibility of the integrated project using the products of the survey conducted in that study.

2. To implement the proposal by components and activities for the new management with the content referring to project administration, (Ocampo, 2002) who emphasizes the need to formulate the feasibility, coinciding with (Baca, 2001) to formulate the feasibility project as an update of the company, with the inclusion of management studies, market, technical, organizational, legal, economic, financial and business environment studies, which, when integrated into an integrated project by means of the strategy used in the research design, will provide the formal, technical and legal structure necessary to achieve the objectives of the agroindustrial enterprise analyzed.

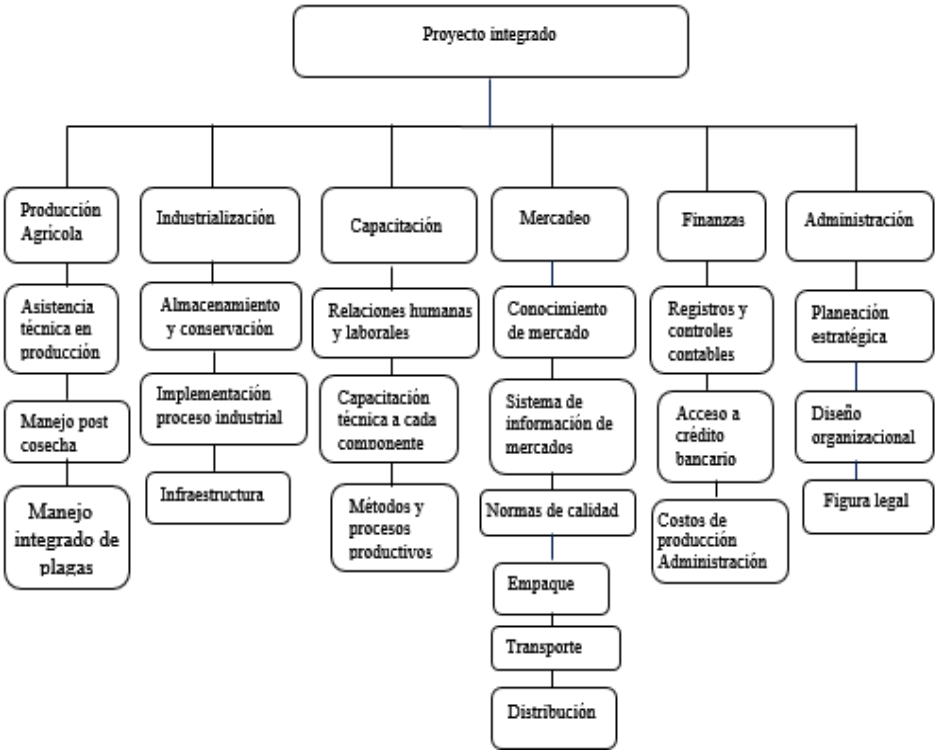
3. Adapt to the integrated project proposed as a solution, factors considered within the Tobit model, such as innovative capacity and sophistication of the business environment (improvement of administration and finances), future knowledge of structural aspects such as the size of the internal and external markets and the quality of demand, as well as systemic factors such as supply and quality of infrastructure, training

of labor force, important to constitute a competitive unit. According to et al (Madeiros, 2019).

In order to make the updated system dynamic, it is proposed to develop the internal environment of the functional organization chart below included as Figure N°2, with which the characteristic of an integrated project is acquired and which includes the components of the business strategy to be implemented in FEDEMT and in the associated first degree organizations; such development will make the analyzed company competitive.

Figure 2

Functional Organization Chart



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