



Bakery small business in Azuay (Ecuador) and their productivity

Microempresas panificadoras en el Azuay (Ecuador) y su productividad

Carlos Armando Romero Galarza is a researcher at the Business Research Group (GIE) at the Faculty of Economics and Administration at the University of Cuenca (Ecuador) (armando.romerog@ucuenca.edu.ec) (<http://orcid.org/0000-0003-1149-4299>)

Gustavo Geovani Flores Sánchez is a researcher at the Business Research Group (GIE) at the Faculty of Economics and Administration at the University of Cuenca (Ecuador) (gustavo.flores@ucuenca.edu.ec) (<http://orcid.org/0000-0003-4123-2644>)

Jorge Arturo Campoverde Campoverde is Professor of the University of Cuenca in the Chair of Operations Research and researcher and coordinator of the Business Research Group (GIE) in the Faculty of Economics and Administration of the University of Cuenca (jorge.campoverde@ucuenca.edu.ec) (<http://orcid.org/0000-0002-1633-5644>)

Katherine Tatiana Coronel Pangol is a graduate of the Business Administration and Research Assistant of the Research Group (GIE) at the Faculty of Economics and Administration of the University of Cuenca (Ecuador) (katherine.coronelp95@ucuenca.ec) (<http://orcid.org/0000-0003-4370-756X>)

Abstract

The business sector represents one of the fundamental axes in the economy of a country. It contributes to generate employment; development of the industrial, commercial and services sector. At the same time, the participation of micro, small and medium-sized enterprises is noteworthy due to the large number of organizations in this category. It is important to emphasize in the short life cycle of these companies and the limitations that are present. Through a descriptive and a bivariate analysis, 113 micro-bakeries had been studied in the province of Azuay, which are affiliated to the Ministry of Industries and Productivity (MIPRO) of Region 6. The results show related behaviors between the average productivity per employee of the microenterprises and strategic business management, their productive capacity, their degree of innovation in machinery, the equipment and marketing systems and also on the requirement of additional financing for the growth of business. However, it is considered that it is a sector with limited skilled labor that does not allow an increase in productivity and competitiveness, which is a key factor in business development.

Resumen

El sector empresarial representa uno de los ejes fundamentales en la economía de un país, en la generación de empleo y en el desarrollo del sector productivo, comercial y de servicios. Es notoria la participación que tiene la micro, pequeña y mediana empresa debido a la gran cantidad de organizaciones existentes en esta categoría. Cabe recalcar que es preocupante el corto ciclo de vida que mantienen las mismas y las limitantes que éstas mantienen. El estudio presenta un análisis descriptivo y bivariable de 113 microempresas panificadoras en la provincia del Azuay (Ecuador), afiliadas al Ministerio de Industrias y Productividad (MIPRO) de la Zona 6. Los resultados muestran comportamientos relacionados entre el promedio de productividad por empleado que tienen las microempresas y la gestión empresarial estratégica, la capacidad productiva, el grado de innovación en maquinaria, equipo y sistemas de comercialización y sobre el requerimiento de financiamiento adicional para el crecimiento de los negocios. Se considera que es un sector con limitada mano de obra calificada que no le permite un incremento en la productividad y competitividad, factor clave de desarrollo empresarial.

Keywords | Palabras clave

Microenterprise, productivity, innovation, business management, strategic, financing.
Microempresas, productividad, innovación, gestión empresarial, estrategia, financiamiento.

1. Introduction

The importance of micro and small enterprises in the national and international economy is indisputable. According to figures released by the INEC - Directory of Companies and Establishments (2014), in Ecuador they represent 97.9% of the total productive organizations.

The manufacturing sector is one of the most important because of the great linkages generated in the value chain, generating employment and innovation. However, other economists who give greater emphasis to stylized facts such as Kuznets (1966) and Rodríguez, Bernal, & Cuervo (2012) have suggested that the structure of chains in an economy is irrelevant from the more orthodox neoclassical point of view. Economic growth is driven by productive linkages between different sizes of companies that occur in the territories.

On the contrary, Latin America, especially Ecuador, is characterized by the presence of a highly polarized and disjointed business reality "... in which highly competitive poles coexist with scattered universes of micro, small and medium-sized enterprises (SMEs) (Cohen & Gabriel, 2012).

Well-managed and healthy SMEs are sources of employment and wealth creation. They contribute to social stability and generate tax revenues. According to the International Finance Corporation (2009) there is a positive relationship between a country's income level and the number of SMEs per 1,000 people. The Doing Business (World Bank Group, 2014) reports that a high SMEs sector corresponds to a reduced level of activity in the informal or black market sector.

On the other hand, in Latin America the impulse to the entrepreneurial activity has become one of its main policies, considering to the microenterprises and the small companies with a representation of 80% of the total of the economy (Hidalgo, Kamiya, & Reyes, 2014). In Ecuador, according to the quarterly labor market report of the Central Bank of Ecuador (2015), it was observed that the majority of entrepreneurs are in establishments with less than 100 employees; this percentage stands at 77.4%; while the remaining 22.6% are located in establishments with more than 100 employees; that is, an important role of micro and small enterprises in the Ecuadorian economy is evidenced.

However, according to Cohen & Gabriel (2012), the SMEs have some difficulties, such as restricted access to funding sources, low levels

of training of their human resources, limited levels of innovation and technological development, little penetration in international markets, low levels of productivity, low association and administrative capacity among the most important; factors that limit their business growth, subtracting its productivity and efficiency in the domestic and international markets.

The objective of the present investigation is to show if the factors referred to above affect the productivity of the employees of the micro-bakeries with the developed business management and in what form, through the influence of certain relational variables that are part of the organization of the businesses. The relational variables included in the analysis are influenced by certain business management structures, such as strategic and operational, as well as innovation factors and additional financing requirements for the operations of micro-bakeries.

2. Theoretical framework

2.1. Organizational performance

To understand the concept of organizational performance it is necessary to clarify meanings that can be confused with the one of organizational effectiveness that refers to the fulfillment of proposed objectives and the one of performance of the firm that is constituted in the market value.

According to Dyer & Reeves (1995), organizational performance refers to the measurement and assessment of achievement of organizational goals and are measured through the evaluation of financial results, organizational results and results related to human resources.

Velarde, Araiza, & García (2014) conducted a study in Coahuila, Mexico, in which they tried to determine the relationship between the factors of the company and the entrepreneur with business success, and conclude that only the factor associated with the degree of schooling has a positive relation with the growth in the investment of machinery and equipment, while the other factors of the entrepreneurs have no association with the economic success. On the other hand, the factors of the company - such as legal structure and economic sector in which the company is developed - are related to the success of the company in relation to increase of sales, increase of employees and investment in machinery and equipment.

2.2. Innovation

At present, according to Teece, Pisano, & Shuen (1997), growth in organizations and especially manufacturing MIPYMES require, among other options, to strengthen their innovative activity and for this, they require a greater competitiveness. Lochon (2014) considers in his research that innovative activity must have an influence on companies in such a way that it must be reflected in the business results and in the gradual increase of its competitiveness.

An analysis model widely recognized in the literature assumes that the realization of innovations by companies is influenced by a set of variables, which can be grouped basically in three large blocks as described by Hoffman, Parejo, Bessant, & Perren (1998), including: (i) extra-organizational factors, in particular associated with the characteristics of the sector to which the company belongs; (ii) those related to the characteristics of the members of the organization, especially managers; (iii) those related to the organization itself, for example strategic orientation or financial structure.

According to Etzkowitz & Leydesdorff (2000), innovation has become one of the key elements within a company. It transcends all areas such as production, finance, planning, human resource management and marketing. However, in the small business many of these functions are carried out directly by the owner or by the person who runs several jobs.

Small companies have enormous innovation advantages over large companies, such as their business dynamism, their internal flexibility and their capacity to respond to changing circumstances. In addition, their size gives them dynamism, internal flexibility, short delivery times of products and capacity to respond to change, although they may encounter barriers such as:

- Lack of specialists and qualified staff within small businesses.
- Lack of time and resources to identify and use external sources of information, techniques and scientific knowledge.
- Difficulties in attracting capital, especially venture capital.
- Inability of small business to distribute risk through a portfolio of projects due to limited resources.

However, Vossen (1998) states that a certain current of literature considers that there are differences between large and small companies.

This justifies that the innovative activity of the latter is more internally developed and is mainly linked to the figure of the entrepreneur and the taking of certain business strategies. Some studies suggest that small firms tend to be more successful in industries where the weight of personal skills and abilities are more important, while others argue that small business strengths do not reside in resources but in characteristics such as flexibility, business culture and staff motivation.

Several authors point out the importance of investing in innovation to increase the level of sales in micro and small companies. For example, Benavente (2005) found that increased R & D spending, by research in the sciences and technological development, is positively related to the increasing importance of sales of innovative products on the total sales of the company.

Analyzing a sample of Chilean manufacturing companies, Griliches (1979) presents as a result of his research a positive relationship between R & D expenditures and increased productivity. The link between investment in innovation is also evidenced by Crépon et al. (1988) and Kemp et al. (2003). However, it is important to note that there are studies that indicate that there is no consistent relationship between the same variables (Löf, Heshmati, Asplund, & Naas, 2001).

Likewise, Córdova & Naranjo (2017) state that small companies with a lower level of technology make a greater effort in Science Technology and Research activities, which is not reflected in innovative sales, while companies with a higher level of technology outperform in sales to the previous ones.

On the other hand Fairlie (2007) sought to determine if there is a statistical relationship between business innovation and value added generation, where comparisons made in general showed that 82% of SMEs that have applied some type of innovation in their company in the last two years have increased their sales in relation to their competitors, while those that did not innovate had a sales increase of 27%. The differences in sales between companies of the same category with respect to those that innovate constantly is significant.

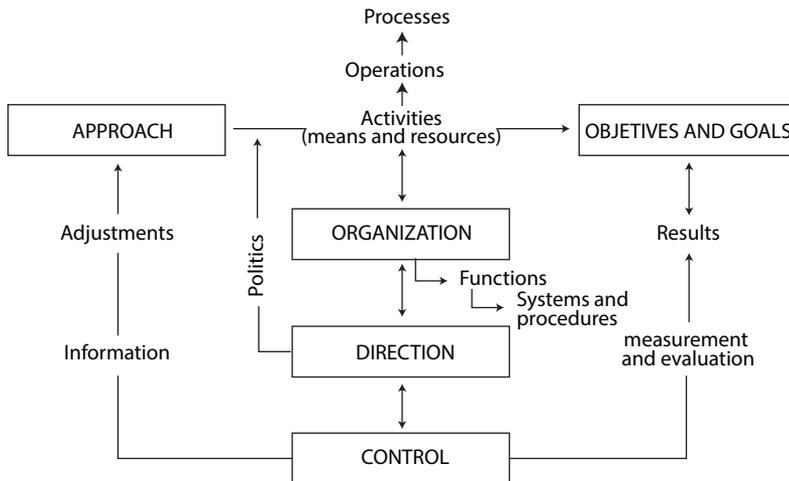
2.3. SMEs Performance

Considering that management designs the structure on which the business control function is supported, for Solís (2005), the design of

control systems must offer a feedback in a timely and cheap manner that is acceptable to the members of the organization. From this, it can be affirmed that the control system based on the structure of the organization develops the activities of the business, under clear and defined policies aimed at preserving the common purpose.

Management has as its fundamental functions the planning, organization, direction and control. The coherence and cohesion between them produces an efficient, economic and effective administration of the resources that it uses for the achievement of the planned goals and objectives. In this sense, the functions of the administration are defined to focus the analysis on the control and its relation with the business risks. Figure 1 shows the process that follows the development of functions within the management.

Figure 1. Functions of management



Source: Dextre (2010)

3. Materials and method

3.1. Type of research

The research is experimental, since it focuses on the implementation of knowledge for the search of social benefit, through the use and study of variables that will allow understanding the behavior of the sector.

3.2. Research Method

The research method applied is hypothetic-deductive, because it allows demonstrations based on hypotheses or research questions; in turn also the logic-deductive method was used, because it admits to consider population samples for the estimation of results since the elements of the investigation could not be studied in their entirety.

3.3. Sample

In order to determine the sample, it was considered as a study population the micro and small companies of the baking sector registered in the database of the Ministry of Industries and Productivity (MIPRO) in the province of Azuay (Ecuador) from January 2015 to March 2016, considering a total of 137 bakeries; so the information was collected in a census manner.

Of the 137 bakeries, 113 were surveyed, representing 82.5% of the population. Of the remaining 17.5%, i.e. 24 businesses, no response was obtained for various reasons: 2.92% sold the business, 1.46% went on vacation, 10.20% were not located due to that both the address and the phone were wrong, 0.73% does not authorize, 1.46% does not collaborate, and 0.73% change of business.

Chart 1 shows how the sample margin of error was determined to be able to be inferred in the entire resulting population, obtaining a +/- 3.88 margin sufficient to infer in the entire study population.

Chart 1. Sample Statistical Parameters

Description	Value
Confidence level	95%
Population	137
Sample error margin	+/- 3,88
Sample	113

3.4. Sources of information

The information gathered for the elaboration of the research was obtained by means of primary information applying surveys to each one of the micro-enterprises of the sector under study. Secondary information was also obtained that was based on the review of bibliography of interest. Finally, information was obtained from tertiary sources that

provided information at the macroeconomic level of the study sector, such as the National Institute of Statistics and Censuses (INEC).

3.5. Methodological procedure and tools

The process carried out in the study began with the obtaining of the database of micro and small companies to be investigated. Subsequently we proceeded with the collection of data in primary sources; the tools for data collection and analysis were developed, such as instrument-survey and templates for generation of databases, which were put to the test in an exploratory pilot analysis that served to validate and guarantee the reliability of the same.

The surveys were applied directly to each of the owners and/or managers of the companies, which guarantee the accuracy of the data. Once the survey was completed, the information was filled out and the data entered into the analysis software templates.

Once digitized, the data of the surveys was processed in the statistical software IBM SPSS® v. 20.0, through an analysis of univariate statistical information (frequencies and percentages) of the main study variables. This allowed characterizing the bakery sector in the province of Azuay, investigating its opportunities and weaknesses. In addition, a bivariate analysis was performed to compare the differences between the means of more than two populations. For this purpose, ANOVA was used to determine and compare the means of productivity per employee of microenterprises with relevant factors of business management that affect their manufacturing operation.

3.6. Data and variables description

To evaluate the micro-bakeries, a set of variables considered according to the sector's reality was established. These allowed an overview of the situation. The defined variables were:

- Dependent variable: the employee's average productivity, measured by the monthly turnover divided by the number of employees working in the micro-bakeries.
- Independent variables:
 - √ Business Management: defined its mission.
 - √ Business Management: defined its vision.

- √ Business Management: defined its organization chart.
- √ Business Management: defined the internal policies of the company.
- √ Productive Capacity: number of units/day produced.
- √ Change or improvement in the processes, products or management systems in the last 2 years.
- √ Innovation: Acquisition of technology incorporated into machinery and equipment.
- √ Innovation made: Incorporated improvement of marketing systems.
- √ Additional financing during the time it takes to generate activities.

3.7. Average Employee Productivity

Job performance is the way employees do their jobs. This is evaluated during performance reviews, by analyzing factors such as leadership capacity, time management, organizational skills and productivity to analyze each employee individually (Economic Commission for Latin America and the Caribbean - ECLAC, 2001).

Job performance reviews are usually conducted monthly or annually and can determine whether an employee's eligibility is raised, whether he is eligible for promotion or even if he should be fired. Therefore, performance is linked to employee productivity, which is measured by the ratio of a company's turnover to the number of employees it has. The number of employees, on the other hand, is a variable that also indicates the size of the companies (Bonilla & Mayorga, 2011).

Employee productivity is a result of work performance, which is the relationship between objectives, goals or tasks achieved and the time it has taken to achieve it. This calculation has to be made taking into account that time refers to quality hours worked and that the most important variable are the people in charge of performing the functions of the job (Rodriguez & Gomez, 2011).

3.8. Sales and general productivity

According to Salazar (2015), the average number of sales generated by employees is a good measure of productivity, since it helps determine how much sales must increase to justify hiring an additional employee; therefore to obtain an average of employee productivity, the following equation is derived:

$$\text{Average Employee Productivity} = \frac{\text{Net sales}}{\text{Number of employees}}$$

The average employee productivity describes how much sales should increase to consider the cost of hiring a new staff member in the company. Evaluating the performance or productivity of employees can provide numerous benefits to the organization. It also allows you to distribute compensation incentives fairly. Employee performance appraisals can increase staff operational efficiency and productivity, while identifying high-performance candidates for future business promotion (Maldonado-Guzmán et al., 2011).

Chart 2 also shows the descriptive statistics of the variable of interest, which is the average of the productivity of the employees/month of the micro-bakeries, whose value is USD 683.28

Chart 2. Descriptive Statistics

Variable	No.	Minimum	Maximum	Mean	Median	Typical. dev
Productivity by employees	113	20	2,400	683,28	500	536,48

Note: Elaborated by the SPSS® software v.20.0

4. Description of the sector

In Ecuador there are 6,879 active companies dedicated to the production of bakery products, according to the qualifier of economic activities CIIU4 - C1071. Of this total, within the province of Azuay there are a total of 621 companies, of which 83.89% are in Cuenca. In turn, micro and small enterprises represent 67.99% of all Ecuadorian companies (INEC 2015, Redatam). Their participation in different scenarios is very heterogeneous, being the most important in the generation of employment, less important in production and very small in exports.

The greater participation in employment, compared to production, indicates low relative levels of productivity. Its low participation in exports shows its strong orientation to the domestic market and its dependence on the dynamics of domestic demand. Therefore, its production is very determined by the evolution of employment and wages in the economy as a whole, contributing with 0.28% of formal employ-

ment according to data (INEC 2015). Chart 3 shows the growth of the sector in its sales level.

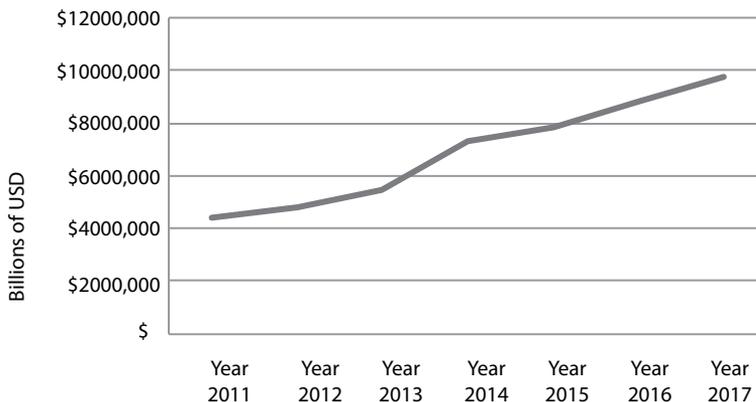
Chart 3. Percentage variation in annual sales

Period	Sales (billions of USD)	Sales variation
Year 2011	\$ 4 430,54	0,00%
Year 2012	\$ 4 821,58	8,83%
Year 2013	\$ 5 462,98	13,30%
Year 2014	\$ 7 340,94	34,38%
Year 2015	\$ 7 856,61	7,02%
Year 2016	\$ 8 794,00	11,93%
Year 2017	\$ 9 731,15	10,66%
Average	\$ 6 919,68	14,35%

Source: Own elaboration with INEC data (2011 - 2015)

In the period 2011-2017, the bakery sector has shown a constant growth, which reaches an average of approximately 14.35%. Figure 2 shows the growth trend that has had the level of sales of the sector, being considered an item with significant growth in the economy of Ecuador. Sales for 2016 and 2017 were forecasted.

Figure 2. Annual sales bakery sector



Source: Own elaboration with INEC data (2011 - 2015)

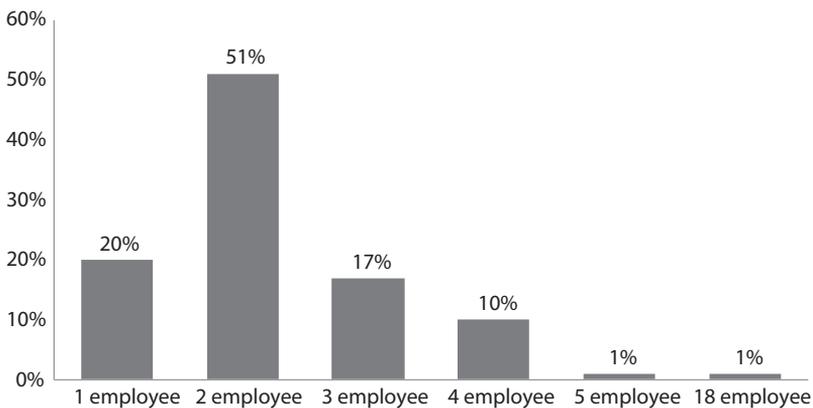
5. Analysis and results

The results obtained through the descriptive analysis of the 113 applied surveys indicate that 90% of respondents are qualified as artisans affiliated with MIPRO, while 10% belong to the Craftsman's Board. Of these, 89% do not have the obligation to keep accounting since they are qualified under the Régimen Impositivo Simplificado Ecuatoriano (Simplified Ecuadorian Tax Regimen) (RISE) modality and only 11% has the obligation to keep accounting.

Considering the years of the activity of the companies, we determined that 44% maintain their activities between 1 and 5 years; 24% have between 5 and 10 years of dedication; 13% between 10 and 15 years, and 19% have been working for more than 15 years.

In Figure 3, it can be observed with clarity that around 20% of the businesses surveyed have 1 employee, 51% of them have 2 employees, 17% have 3 employees, 11% of businesses have 4 employees, and only 2% have more than 5 employees; evidencing that 99% of the companies by their characteristic are microenterprises.

Figure 3. Number of employees of the bakery companies



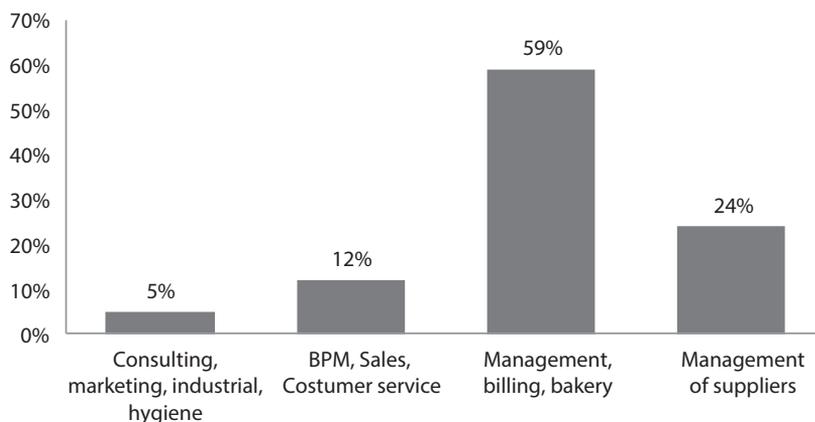
As for the market of destination of its sales, it is observed that 96% of its turnover is concentrated in the city of Cuenca and 4% it is carried out in cantons and nearby provinces. On the other hand, in terms of turnover, 93% of micro-enterprises produce bread and pastry, while 7% produce only pastry products.

The average monthly turnover of the 113 businesses shows an average monthly income of \$ 1,708.32. In addition it is evident that there are on average 5 premises of the same economic activity in a radius of 5 blocks, considering it as a business with many competitors.

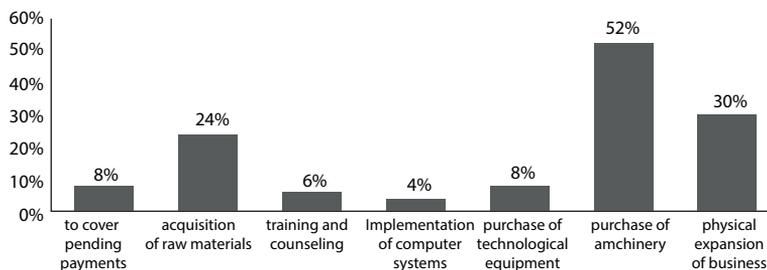
It is observed that employees of micro-enterprises have, on average, 8 years of schooling; 43% of employees have primary education, 51% of employees have secondary education, 5% have a university education and the remaining 1% have a postgraduate level.

It is also worth noting that 58% of businesses have received training, and 59% of the micro-enterprises that have received training have done so in such areas as administrative management and billing, 24% in supplier management and one 12% in sales and customer service, as shown in figure 4.

Figure 4. Training areas received by the employees of the bakery companies



On the other hand, it is established that during the time that the businesses are operating, only 43% of the companies have requested additional financing to continue their operations, with their average financing amount of \$ 12,885.45. Figure 5 shows the reason why they require additional financing; 52% have used machinery, 30% for the physical expansion of the business and 24% for the acquisition of working capital as the raw material, among the most important.

Figure 5. Reason for which additional funding was required

With regard to technology, machinery and the degree of automation of micro-enterprises, 47% of the businesses have manual action, meaning that bread and its products are handcrafted, while 47% have a semi-automatic action and only 6% of businesses have an automatic degree. 94% of companies do not have software for their processes or management.

When examining the relationship between products and processes, defined by the type of productive process available to micro-enterprises, 71% do so on a continuous basis for sale, 19% produce for stock and only 10% made under request. In addition, 70% of micro-enterprises have a productive capacity of more than 61%, producing an average of 658 units per day.

At the same time, 91% of the baking companies project their production daily and only 9% do it weekly. Similarly, businesses manufacture a mix of products, which means that 81% of micro-enterprises produce on average between 1 and 5 products, and 19% produce more than 6 products.

With respect to the quality system that the businesses have, it can be seen that 92% of micro-enterprises carry out quality controls on their finished products, mainly using the method of visual inspection. On the other hand, only 50% of the companies carry out quality controls in the production processes; In addition, 95% of companies do not have quality control records. Similarly, 70% of companies have a maintenance plan for their machinery and equipment, performing a 46% corrective maintenance and 54% preventive maintenance.

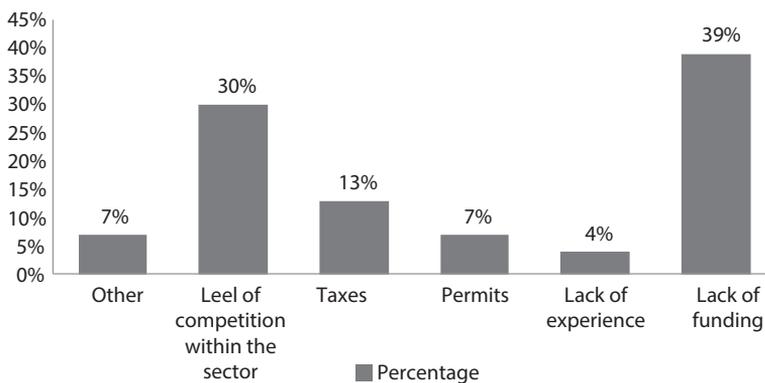
As far as customer knowledge and tastes are concerned, 95% of companies claim to know the taste of consumers, and 80% know the buying habits of their customers. On the other hand, only 43% identify the products and prices of their competition; 26% provide after-sales services and 85% offer warranty on their products to their customers.

If we analyze the origin and supply of the raw material, we can see that 90% of the companies are supplied mainly at national level, acquiring from wholesale distributors. In addition, 50% of micro-enterprises qualify their suppliers and 87% consider that provisioning or delivery is timely. Likewise, 90% of companies state that the credit granted by their suppliers is on average from 1 to 30 days.

Concerning the organization and business management, it is observed that 92% of the bakeries do not have a documented strategic management. On the other hand, 78% of micro-enterprises do not carry general accounting or cost accounting; important factors for business decision making. Similarly, 80% of companies do not use financial planning as a sales, purchasing, production and cash flow budget for business operations.

They were also questioned about the main constraints that microenterprises have for business growth and, according to figure 6, 39% stated that the lack of financing was, 30% the level of competition in the sector and 13% taxes, among the most relevant.

Figure 6. Main constraints to the growth of the company



Likewise, with respect to the perception in management of innovation and development by companies, 94% believe that innovation is important and very important for the development and growth of companies. Even 62% of businesses say they have made changes to their products, processes or management systems in the last 2 years. In the same way, 86% of the companies have made innovation in the improvement of the products; 82% in process improvement, 51% have developed new products and lastly, 46% of businesses have implemented environmental standards and the application of clean technologies in their production processes.

Subsequently, we analyze the tools and equipment available to micro-enterprises, which shows that 78% of them use stainless steel work tables, 43% use automatic oven, 53% use manual oven, 81% has a blender, and 59% uses semi-automatic kneader, among the most important baker equipment.

In relation to the bivariate analysis, a one-way ANOVA analysis (also called one-way ANOVA or one-way ANOVA) is performed, being a statistical technique that establishes whether two variables (one independent and one dependent) are related based on that if the means of the dependent variable are different in the categories or groups of the independent variable. That is, it points out whether the means between two or more groups are similar or different.

For this purpose, Chart 4 shows the contrast results of the ANOVA analysis of the mean of the variable of interest, which is the employee productivity of the micro-bakeries and the means of the two independent samples or factors concerning strategic business management, business operation, innovation applications and additional funding requirements. This analysis was generated individually between each independent variable with the dependent variable.

Chart 4. One-Way ANOVA Analysis - Employee Performance / Independent Variables

Independent variables (factor)		N	Performance
			F
Business Management: mission.	Yes	11	*** 5,123
	No	102	
Business Management: vision.	Yes	10	*** 4,661
	No	103	
Business Management: organization chart.	Yes	7	*** 5,247
	No	106	
Business Management: internal policies of the company.	Yes	8	*** 10,536
	No	105	
Productive Capacity: number of units produced per day.	<= 658	73	*** 15,270
	> 659	40	
Has made some change or improvement in its processes, products or management systems in the last 2 years.	Yes	71	** 3,857
	No	42	
Indicate in which has made innovation: Acquisition of technology incorporated into machinery and equipment.	Yes	17	** 3,839
	No	96	
Indicate in which has made innovation: Improvement of marketing systems.	Yes	27	** 4,591
	No	86	
It has required additional funding during the time it has been generating activities.	Yes	49	** 4,562
	No	63	

Note: significance *** 1%; ** 5%; * 10%

As shown in Chart 4, those microenterprises that have developed and implemented their strategic business management with tools such as vision, mission, organizational chart and internal management policies of the company, have a significant correlation with the average employee productivity; that is to say that those who have managed to deploy a business strategy in the organization have an average superior of productivity per employee in comparison to those that have not developed it.

Consequently, it is significant evidence that those microenterprises that have implemented business management have an average

increase in productivity per employee between USD 583.29 and USD 783.28.

On the other hand, when analyzing the production capacity of the microenterprises through the daily units produced, a negative correlation with the average productivity of the bakery business is evident; that is to say that those micro-enterprises that produce on average more than 659 units per day have an average monthly productivity per employee of USD 934.20 compared to USD 545.79 of those that produce less than 658 units per day.

Likewise, micro-enterprises that have made changes or improvements in their products, processes or management systems in the last 2 years in the acquisition of technology incorporated in machinery or equipment and in marketing improvement show a significant average productivity per month per employee ranging from USD 587 to USD 895.

Likewise, microenterprises that have required additional financing during the time they are generating activities have a significant average productivity-month per employee, ranging from USD 633 to USD 977, compared to those that did not require additional funding. This has a direct relationship since the resource that the company acquires is invested in the purchase of machinery and physical expansion of the business, allowing a greater use of the performance of its resources in micro-bakeries.

6. Conclusions

It can be seen that micro-bakeries have limited competitiveness in internal factors of their own operation, such as weak administrative management, problems with the market, production and financing, which are elements that make management difficult and prevent business growth.

On the other hand, the productive capacity measured by the units produced per day, is a factor that affects the productivity per employee, reason why it is increased considerably if the microenterprises produce more than 659 units. This is linked to the productive capacity of micro-bakeries that on average has 70%, so it is evident that micro-enterprises can produce more units per day.

Another factor related to employee productivity in Azuay's micro-bakeries is related to changes or improvements in processes,

products or management systems in the last 2 years, especially in the acquisition of technology incorporated in machinery and equipment, and in the improvement of marketing systems.

In addition, it is observed that the employees of the micro-bakeries have, on average, 8 years of education, and studies have shown that the higher the level of education of their employees, the higher the productivity in the company; so that micro-bakeries have a low level of productivity.

As can be seen in the characterization of micro-bakeries in Azuay, due to its organizational structure, tax regulations and restricted strategic business management, it has a high limitation for sustained growth over time.

Finally, these factors contribute to the fact that most microenterprises are considered subsistence businesses because they do not have operational controls for a correct and timely administrative management. In addition, having unskilled labor restricts the development of innovative processes, products or management systems. The lack of training of personnel in important areas and the low level of technification of machinery leaves productivity to make businesses profitable and bring greater benefits to the country's economy.

7. References

- Benavente, J. (2005). Investigación y desarrollo, innovación y productividad: un análisis econométrico a nivel de la firma. *Estudios de Economía*, 32(1), 39-67.
- Bonilla, Y. M., & Mayorga, J. Z. (2011). Medición de la productividad por el método del valor agregado (MPVA) a las Pymes de familia del sector industria de la ciudad de BOGOTÁ D.C Medición de la productividad por el método del valor agregado (MPVA) a las Pymes de familia del sector industrial. Bogotá, Colombia.
- Centro de Comercio Internacional. (2003). Forum de Comercio Internacional. Available in <http://www.forumdecomercio.org/La-medic%C3%B3n-del-rendimiento/>
- Centro Europeo de Empresas e Innovación. (2012). Centro Europeo de Empresas e Innovación. Available in <http://www.ceeicr.es/innovacion/innovacion-empresarial/>
- Cohen, M., & Gabriel, B. (2012). La situación de las PyMEs en América Latina.
- Comisión Económica para América Latina y el Caribe. (2001). Elementos de Competitividad Sistemica de las PYMEs del Istmo Centroamericano. Naciones Unidas - CEPAL, LC/MEX(L.499), 1-54.
- Córdova, J., & Naranjo, J. (Abril de 2017). Incidencia de la Inversión en Innovación en las Ventas de Productos Innovadores. Evidencia Empírica en Empresas Manufactureras de Colombia. *Información Tecnológica*, 28(2), 153-164.

- Crépon, B., Duguet, E., & Mairessec, J. (1998). Research, innovation and productivity: an econometric analysis at the firm level. *Economics of Innovation and New Technology*.
- Dyer, L., & Reeves, T. (1995). Human Resource Strategies and Firm Performance: What Do We Know and Where Do We Need to Go? *Center for Advanced Human Resource Studies*, 1-17.
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations. *Research Policy*, 29(2), 109-123. [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4)
- Fairlie, E. (2007). Generación de Valor Agregado en las Pymes a través de la Innovación Empresarial. *Gestión en el tercer milenio. Revista de Investigación de la Facultad de Ciencias Administrativas, Universidad Nacional Mayor San Marcos*, 23-27.
- Griliches, Z. (1979). Issues in assessing the contribution and development of research to productivity growth. *The Bell Journal of Economics*, 10(1), 92-116. <https://doi.org/10.2307/3003321>
- Hidalgo, G., Kamiya, M., & Reyes, M. (2014). Emprendimientos dinámicos en América Latina (No. N°16 / 2014). Venezuela.
- Hoffman, K., Parejo, M., Bessant, J., & Perren, L. (1998). Small firms, R&D, technology and innovation in the UK: a literature review. *Technovation*, 18(1), 39-55. [https://doi.org/10.1016/S0166-4972\(97\)00102-8](https://doi.org/10.1016/S0166-4972(97)00102-8)
- Kuznets, S. S. (1966). *Modern economic growth : rate, structure, and spread*.
- Lochon, F. (2014). *El salto productivo a la tecnología*.
- Lööf, H., Heshmati, A., Asplund, R., & Naas, S. (2001). Innovation and performance in manufacturing industries: a comparison of the Nordic countries. *EconStor, SSE/EFI working paper series in economics and finance(457)*.
- Maldonado Guzmán, G., Martínez Serna, M. del C., Hernández Castorena, O., & García Pérez de Lema, D. (2011). El impacto de los procesos de producción en el rendimiento de la pyme manufacturera de México: Un estudio empírico. *TEC Empresarial*, 5(1), 21-30.
- Rodríguez, F. X., & Gomez, L. (2011). *Indicadores de calidad y productividad en las empresas*. New York.
- Rodríguez, L. A., Bernal, M. E., & Cuervo, L. M. (2012). *Teoría y práctica del desarrollo económico local*.
- Salazar, C. A. (2015). *La Productividad y Competitividad en las PYMES*. Quito - Ecuador.
- Solís, L. (2005). Procesos de negocios de Pymes insertas en redes colaborativas SMSB negotiating processes inserted into collaborative. *ADMINISTRACIÓN DE OPERACIONES*.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)

- Velarde, E., Araiza, Z., & García, A. (2014). Factores de la empresa y del empresario y su relación con el éxito económico en la PYMES de la región centro de Coahuila, en México. *Revista Internacional de Administración y Finanzas*, 7(5), 11-23.
- Villegas, C. A. S. (2015). *La Productividad y Competitividad en las PYMES*. Quito – Ecuador.
- Vossen, R. W. (1998). Relative strengths and weaknesses of small firms in innovation. *International Small Business Journal*, 16(3), 88–95.
- World Bank Group. (2014). *Doing Business 2014 Measuring Regulatory Quality and Efficiency*. <https://doi.org/10.1596/978-1-4648-0667-4>