

Generation of technological innovation as an alternative to generate value and its impact on decision-making in SMES

Generación de innovación tecnológica como alternativa para generar valor y su repercusión en la toma de decisiones en las PYMES

RODRIGUEZ-RODRIGUEZ, Noemi del Carmen^{†*}, ORTEGA-SÁNCHEZ, Rosa, CUELLAR-HERNÁNDEZ, Héctor and GONZÁLEZ-JIMÉNEZ, Katya

Universidad de Guadalajara - Centro Universitario del Norte, carretera federal No. 23 km. 191, C.P. 46200, Colotlan, Jalisco, México

ID 1st Author: *Noemi del Carmen, Rodriguez-Rodriguez* / ORC ID: 0000-0002-2169-9821, Researcher ID Thomson: S-5835-2018, CVU CONACYT ID: 265335

ID 1st Coauthor: *Rosa, Ortega-Sánchez* / ORC ID: 0000-0003-0464-4017, Researcher ID Thomson: S-6648-2018, CVU CONACYT ID: 669460

ID 2nd Coauthor: *Héctor, Cuellar-Hernández* / ORC ID: 0000-0002-5369-2237, Researcher ID Thomson: S-4874-2018

ID 3rd Coauthor: *Katya, González-Jiménez* / ORC ID: 0000-0002-6105-2432, Researcher ID Thomson: S-5965-2018, CVU CONACYT ID: 661990

Received January 27, 2018; Accepted May 18, 2018

Abstract

SMES Innovation SMES, (small and medium-sized company) is a required element to survival because of markets competition. Technological innovation consists of changes and modifications in the different processes and their application. These changes, by themselves may not mean great advances in the generation of knowledge or technologies. If these changes are made permanent based on systems, implemented measurable both in individuals and procedures, will mean a permanent improvement throughout the company. One tool for the generation of SMES innovation is information technology (IT) in the management activities of SMES to impact decision-making and in its final performance, for which it is important to carry out a field study to know where the opportunity areas are for implementation. The main objective of this work will be to carry out a study to generate a perspective on the impact of innovation, the subsequently tools related and how it has been applied in SMES located in the municipality of Ocotlán, Jalisco.

Technological innovation, Knowledge generation, Information technology

Resumen

La innovación dentro de las PYMES (Pequeñas y medianas empresas), es elemento obligatorio para la supervivencia dada competencia en los mercados. La innovación tecnológica consiste en cambios y modificaciones en los diferentes procesos y su aplicación de estos. Dichos cambios, por si mismos quizá no signifiquen grandes avances en la generación de conocimiento o en las tecnologías. Si se logra que éstos cambios sean permanentes basados en sistemas, implementados medibles tanto en los individuos como en los procedimientos, supondrá una mejora permanente en toda la empresa. Una de las herramientas para la generación de innovación dentro de las PYMES son las tecnologías de la información (TI) en las actividades de gestión de las PYMES para impactar en la toma de decisiones y a su vez en su desempeño final, para lo cual es importante realizar un estudio de campo para saber dónde se tienen las áreas de oportunidad para su implementación. El objetivo principal de este trabajo de investigación consistirá en la realización de dicho estudio para generar una perspectiva sobre el impacto de la innovación, las herramientas subsecuentemente relacionadas y como se ha aplicado en las PYMES localizadas en el municipio de Ocotlán, Jalisco.

Innovación tecnológica, Generación del conocimiento, Tecnologías de la información

Citation: RODRIGUEZ-RODRIGUEZ, Noemi del Carmen, ORTEGA-SÁNCHEZ, Rosa, CUELLAR-HERNÁNDEZ, Héctor and GONZÁLEZ-JIMÉNEZ, Katya. Generation of technological innovation as an alternative to generate value and its impact on decision-making in SMES. Journal-Economic Development Technological Chance and Growth. 2018. 2-2: 23-27.

* Correspondence to Author (email: 14carmenrodriguezr@gmail.com)

† Researcher contributing first author.

Introduction

The knowledge within SMES companies is fundamental for making decisions to maintain a competitive advantage within the market through (Vaca Garcia, 2007) customer satisfaction, complying with product specifications and / or service to the added value. This, hence the importance of having an efficient and efficient processes based on the knowledge generated by the information of the processes, of the company, the method used for the collection of the data record, the analysis, the information and knowledge acquired from the same if, they are applied intelligently they will add value to the processes or systems within the SMES. According to (Vaca Garcia, 2007) "You can not talk about intelligence without referring to knowledge.

Both concepts are closely linked, since knowing the factors that affect the business allows smart decisions to be made. That is why modern organizations are increasingly seeing themselves as knowledge-based companies, in which the proactive management of their knowledge base is important for competitiveness. There is a growing understanding among the business community that knowledge is a critical resource in organizations, however, this resource has not been addressed through efforts directed systematically towards the administration of human, material and financial resources".

Manage knowledge, can become a competitive advantage for SMES, since knowledge is the information analyzed and organized, which comes from the knowledge, experience, skills and abilities of human capital, to be useful in making decisions, adds value to the processes and services of the company.

The management of the company oriented to the significant knowledge basicene employ the resource of knowledge to increase efficiency and renew quality, generating knowledge based on information and transforming these into sustainable competitive advantages, which will become commercial success according to Klaus & Rivas, (2008). A tool to acquire this knowledge is information technologies and how this information is transformed into knowledge and the latter into a generator of value. Hence the importance of analyzing the processes with respect to what should enter and what is expected as a result.

Acknowledgement

In the furniture producing companies of Ocotlán Jalisco, it has been observed that they have the opportunity to improve in the different areas, both administrative and production, by means of the reduction of waste caused by the operations that do not add value to the product, as well as as to maximize the abilities and experiences of the human factor.

Globalization obliges the SMES of the furniture sector of the Ciénega region, to generate technological innovation for the development and permanence within the markets.

The SMES, by not having a robust control of their resources used and the amount of goods and services produced, productivity is affected, according to (Roberto Carro Diaz, 2016), productivity is an index that relates what is produced by a system (output or product) and the resources used to generate it.

This work is focused on companies in the furniture sector of Ocotlán Jalisco. It provides an overview of the area where the companies under study are located. According to a study carried out by the Ciénega University Center (Table 1), the furniture companies of the municipality were classified according to their size (Guerrero Medina Pedro, 2008)

Category	No. of companies	%
Micro from 0 to 15	145	60
Small from 16 to 100	22	22
Medium from 101 to 250	4	2
Large + 250	0	0
I do not answer	38	16
TOTAL	242	100

Table 1 Classification of companies based on size
Source: Furniture industry census in the city of Ocotlán (Guerrero Medina Pedro, 2008)

Methodology

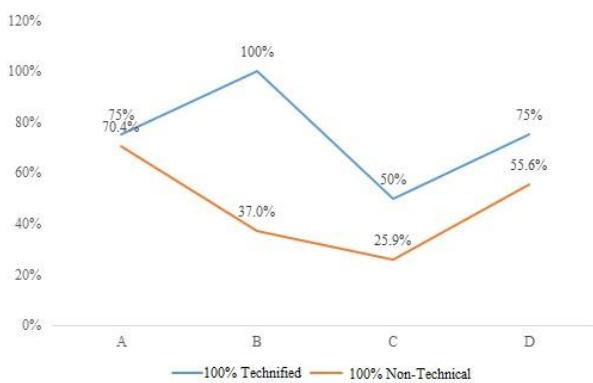
The useful method was qualitative and quantitative, through instruments aimed at obtaining information on the different productive processes of business management, classifying them as technical companies (T) since they use information technology (IT) by means of software in the areas of purchasing, production control, sales and payroll, non-technical (NT), do not have software.

The information was obtained through surveys applied at medium levels and interviews with managers.

The data obtained in both companies were analyzed through the results of the same surveys that were generated by obtaining acceptance ratios on each variable analyzed later, making correlation between technified and non-technified companies to visualize the areas of opportunity.

Results

According to the information obtained in the study, it is observed in which points there are differences between companies T and NT, the results obtained are shown below. According to the data in Figure 1 and Table 2, on which the success of your company is based. It can be seen that in T companies, one of their strengths is the development of unique and innovative products, being a leader in products and innovation, not so for NT companies, where their main strength of success is teamwork, the commitment and interest on the part of the workers. NT companies depend on the skills and knowledge of their collaborators, this can sometimes make it difficult to measure and improve production systems, since depending on the collaborators, continuity is affected if for some reason they leave the company, the stability or success of the same can be in risk. Not so with T companies, where their success is based on innovation in their products, based on information technologies. As can be observed in the data of the companies (T) when using, an information system helps to visualize the areas of opportunity within the company, these companies maintain a competitive advantage over the NT.

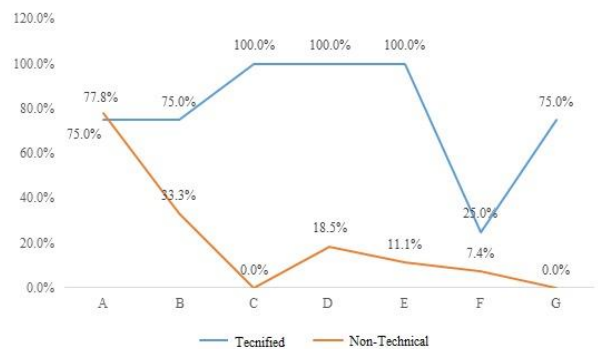


Graphic 1 On what is the success of your company based?
Source: Own creation

A = Teamwork, commitment and interest on the part of the workers	B = Leaders in products and innovation	C = Being the number with respect to the competition	D = Production programming are critical aspects
--	--	--	---

Table 2 What is the success of the company based on?
Source Own creation

On the graph. 2 and Table 3, Useful knowledge for decision making is stored, it is observed, that an area of opportunity for NT companies is found in information systems, to be used in decision making. NT companies, decision making is based on the experience and knowledge of their employees, are decisions with high risk of uncertainty. Decision making must be based on data, generated through information technologies. In the T companies, one of their strengths are the information systems, in the decision making, where they are using specialized software.



Graphic 2 Where is the knowledge useful for decision making stored?
Source: Own creation

A = Expert people, experiences	B = Procedures manuals, documentation, personal files	C = Databases or intranet that allow storing experiences and knowledge to be used later	D = There are phone directories or emails by functional areas that allow to identify the expert in a specific topic
	E = Employees frequently use databases	F = Information system and IT indicate, with directories, graphs,	G = Information system and IT facilitate access to information to different users in different locations, simultaneously

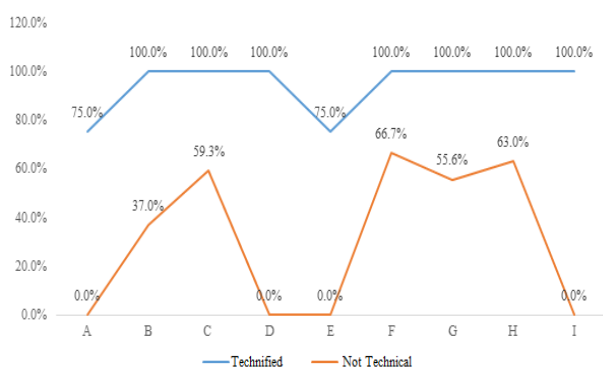
Table 3 Useful knowledge for decision making is stored
Source: Own creation

As can be seen in Figure 3 and Table 4, some of the NT companies, accounts, with software used in the areas of payroll and human resources, these in some cases are required to carry out their procedures before the social security.

Unlike with the T companies, they have software to take control of their processes, from the raw material, the production scheduling, the finished product warehouse, as well as the logistics to take the product to its final customer.

They are software, specialized to carry out the administrative and operations activities, these can be made specifically for the company, or buy the licenses of those already existing in the market.

The relevant thing is to acquire the right software for each company, that covers their needs, and with this tool the decision making is made based on the information, and not only on the experience of the collaborators.



Graphic 3 Does the company use software?

Source: Own creation

A = Purchase s	B = Raw material inventory	C = Inventor y of finished product	D = Distributio n logistics	E = Custome r service
	F = Accountin g	G = Nomina RRHH	H = Production schedule	I = Batch tracking

Table 4 Does the company use software?

Source: Own creation

Conclusions

Table 5 shows the comparison of the perception against the technological innovation proposal.

This analysis shows how important IT is for good decision making, since they are to be taken based on the information, and this information must come from reliable data collected through secure and reliable systems, in addition It is essential to save valuable information in order to analyze the results of these decisions, and from that design strategies that favor their development and remain in the market.

Categories	Perception of more significant strengths		Proposal
	Tecnified Companies	Non-technical companies	Technologic al innovation
On what the success of your company is based	In the development of unique and novel products. Be a leader in products and innovation	Teamwork, commitment and interest on the part of the workers	It is suggested to develop a design department for new products, in NT companies
Useful knowledge for decision making is stored	IT, which allow data storage, administrative and operations	Expert people, experience, anecdotes and opinions	It is suggested that the NT companies have a system where they are stored as administrative and operations are performed, to perform more reliable operations.
Specific software is available to perform administrative and operations tasks	It has software tailored to the company to perform administrative tasks and operations	Accounts with databases for the human resources area and the procedures before the IMSS	Implement software tailored to perform administrative tasks and operations in NT companies.

Table 5 Significant strengths

Source: Own creation

References

Calderon, G. (07 de julio de 2008). www.claveempresarial.com. Obtenido de Administración del conocimiento.

Klaus N & Rivas, R. (2008). Gestión del conocimiento: Una guía práctica hacia la empresa inteligente. Mexico: LibrosEnred.

Roberto Carro Diaz, Daniel Gonzales Gomez. (2016). Administración de la Operaciones Productividad y competitividad. 1.

Vaca Garcia, C. (2007). Desarrollo de un modelo para la incorporación de la inteligencia competitiva en las SMES de la Region Ciénega. Revista Estudios de la Ciénega , 241-246.