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RINOE Journal-Economic History

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The works must be unpublished and refer to topics of Macroeconomics and monetary economy: Growth and economic fluctuation; Financial markets and institutions; Labor and consumers, demography, education, income and wealth; Government, War, Law, and Regulation; Agriculture, natural resources, natural, natural environment and extractive industries; Manufacturing and construction; Transport, domestic and international trade, energy, technology and other services; Micro-Business History; Regional and urban history and other topics related to Social Sciences.

Presentation of the content

In the first article we present, *Analysis of the economic impact, as a contribution of university students in the municipality of Ocosingo, Chiapas*, by Pérez-de la Cruz, José Francisco, Zepeda-Trujillo, Elizabeth Guadalupe, Aguilar-Flores, Miguel Ángel with adscription in the Universidad Tecnológica de la Selva , in the next article we present, *Gray TEU repositioning a sustainable circular economy commitment*, by Flores-Cruz, Luis Antonio, Cruz-Gómez, Marco Antonio, Lara-Andrade, María Verónica Altagracia and Vázquez-Juárez, Patricia, with adscription in the Benemérita Universidad Autónoma de Puebla, in the next article we present, *Knowledge economy and higher education: An analysis of the role of the student* by Preza-Medina, Sergio Roberto, Hernández-Chacón, Sandra, López-Cetina, Yamit and Peña-Santoyo, Kermin Dayan, with adscription in the Universidad Tecnológica de Cancún, in the last article we present, *Anxiety and money management* by Sandoval-Palomares, Jessica, with adscription in the Tecnológico Nacional de México (TecNM) / Instituto Tecnológico Superior de Irapuato (ITESI) and Universidad Tecnológica de León.





Content





Article	Page
Analysis of the economic impact, as a contribution of university students in the municipality of Ocosingo, Chiapas Pérez-de la Cruz, José Francisco, Zepeda-Trujillo, Elizabeth Guadalupe, Aguilar-Flores, Miguel Ángel <i>Universidad Tecnológica de la Selva</i>	1-7
Gray TEU repositioning a sustainable circular economy commitment Flores-Cruz, Luis Antonio, Cruz-Gómez, Marco Antonio, Lara-Andrade, María Verónica Altagracia and Vázquez-Juárez, Patricia <i>Benemérita Universidad Autónoma de Puebla</i>	1-13
Knowledge economy and higher education: An analysis of the role of the student Preza-Medina, Sergio Roberto, Hernández-Chacón, Sandra, López-Cetina, Yamit and Peña-Santoyo, Kermin Dayan <i>Universidad Tecnológica de Cancún</i>	1-8
Anxiety and money management Sandoval-Palomares, Jessica <i>Tecnológico Nacional de México (TecNM) / Instituto Tecnológico Superior de Irapuato (ITESI)</i> <i>Universidad Tecnológica de León</i>	1-7





Analysis of the economic impact, as a contribution of university students in the municipality of Ocosingo, Chiapas

Análisis del impacto económico, como contribución de los estudiantes universitarios en el municipio de Ocosingo, Chiapas

Pérez-de la Cruz, José Francisco* ^a, Zepeda-Trujillo, Elizabeth Guadalupe ^b, Aguilar-Flores, Miguel Ángel ^c

^a  Universidad Tecnológica de la Selva •  KRQ-6241-2024 •  0009-0004-8388-7969 •  2001407

^b  Universidad Tecnológica de la Selva •  KRQ-6262-2024 •  0000-0001-9444-6473 •  1137810

^c  Universidad Tecnológica de la Selva •  A-2156-2019 •  0000-0002-0396-7001 •  353401

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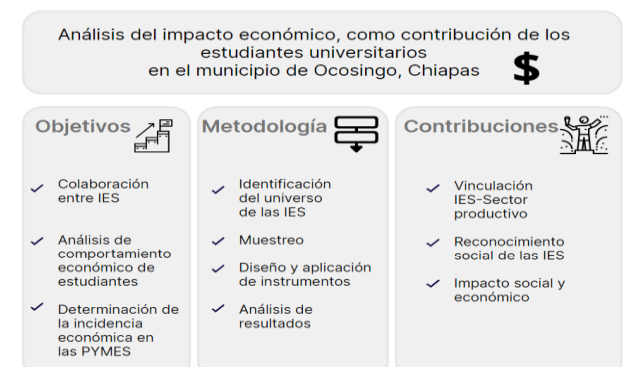
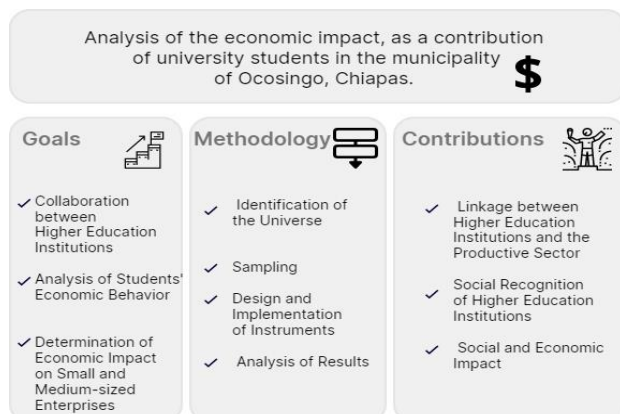


Abstract

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Resumen

Los estudiantes de las Instituciones de Educación Superior, contribuyen con el crecimiento económico del sector productivo del municipio de Ocosingo, Chiapas; a través de la adquisición de bienes y servicios. Los resultados de esta investigación parten de la premisa de que los estudiantes universitarios, al interactuar con el sector productivo, inyectan vitalidad económica, crecimiento empresarial, fomentan la generación de empleo y fortalecen la estructura financiera municipal. El universo de investigación se realizó con la participación de cuatro IES del municipio: Universidad Tecnológica de la Selva (UTSelva), Universidad para el Bienestar Benito Juárez García, sede Ocosingo (UBBJG), Universidad de México (UDEM) y Universidad Alfa y Omega.



Institutions, Economics, Linkage, Social impact, Productive sector

Instituciones, Economía, Vinculación, Impacto social, Sector productivo

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Peer review under the responsibility of the Scientific Committee MARVID®- in the contribution to the scientific, technological and innovation Peer Review Process through the training of Human Resources for the continuity in the Critical Analysis of International Research.



Introduction

The main objective of this research, entitled 'Analysis of the economic impact as a contribution of university students in the municipality of Ocosingo, Chiapas', is to examine the influence that university students can have on the municipality. This project is framed within the need to understand and assess the contribution of the student population to the local economy and, in particular, its impact on the business fabric of the productive sector.

Numerous previous research studies have also highlighted the relevance and positive potential of collaboration between university students and the productive sector. Some relevant studies highlighting the importance of this issue are mentioned below:

The role of university students in energising local SMEs: This study highlights the significant contribution that university students can make by bringing knowledge, skills and energy to SMEs, thus boosting their growth and economic development.

The integration of university students in the business environment: a mutual collaboration approach. This research highlights the beneficial symbiosis between university students and SMEs, where students gain practical experience and companies benefit from the fresh perspective and up-to-date knowledge that students bring.

Previous information underlines the relevance of the topic of study by demonstrating that the involvement of university students in the productive sector can generate a positive economic impact for both local businesses and the student community.

Background

The municipality of Ocosingo, Chiapas, is characterised by the existence of a wide range of economic activities, significantly represented by the productive sector. Over the years, this sector has demonstrated a remarkable capacity to adapt to the transformations of the environment, generating employment and diversifying its operations. This process has had a positive impact on the region's economic outlook, resulting in a significant increase in local incomes.

In parallel, we observe a paradigm shift in the local society, where Higher Education Institutions play an increasingly important role in the development of the environment. In the specific context of the municipality of Ocosingo, Chiapas, Higher Education Institutions, both public and private, have emerged as crucial options for students residing in the municipal capital and surrounding communities.

The accessibility of undergraduate academic programmes in these institutions has prevented the need for students to move to other municipalities or states, resulting in a constant migration to the municipal capital. This phenomenon, far from being just a geographical relocation, has become a recurrent activity that brings significant benefits to the community as a whole.

This project is based on the premise that university students, by interacting with the productive sector, inject economic vitality into the local community. In addition, through knowledge, skills and participation, students not only gain practical experience that is fundamental to their academic training, but also contribute to the development of the municipality.

Collaboration can foster business growth, promote employment generation and strengthen the opportunity-creating financial structure of the municipality of Ocosingo, Chiapas. The changes they bring about in the social environment have led universities to become a fundamental factor in local development. This translates into development for the population, greater opportunities, efficiency and improved quality of life.

With regard to the evaluation of the economic and social impact generated by students, it should be noted that all the expenses incurred in the various economic sectors are accounted for. It is important to highlight that both the volume and the pattern of student spending is very different between public and private universities (Benito, M., Grané, A., & Romera, R., 2022).

It is necessary to thoroughly analyse and quantify this economic impact in order to understand the magnitude of the contribution of university students to local businesses and ultimately to the economy of Ocosingo, Chiapas.

This project proposes to explore in detail the interaction and evaluation of student participation in the local economy.

The National Autonomous University of Mexico (UNAM) has established as one of its essential objectives the linkage with the social, public and private sectors to promote its integral development. This linkage strategy is fundamental because it allows the knowledge generated at the university to reach society, benefiting it in multiple ways. According to Jorge Vázquez Ramos, coordinator of Liaison and Technology Transfer at UNAM, this approach is crucial to fulfil the university's mission of contributing to social and economic well-being (UNAM, 2020).

Methodology

Study area

Ocosingo is a city located in the north of the Mexican state of Chiapas. It is the largest municipality in the Chiapas territory; the name Ocosingo comes from the Nahuatl expression meaning 'place of the black lord'. The city is located in a transition zone of the physiographic regions of the northern mountains of Chiapas, the central plateau and the Lacandon highlands; consequently, its climate ranges from warm and humid in summer to temperate and humid in winter with abundant rainfall in summer (Plan de Desarrollo Municipal Ocosingo Chiapas, 2021)

Box 1



Figure 1
Study area, municipal capital of Ocosingo, Chiapas, Mexico

Source: 2024 Google, INEGI

<https://www.google.com/maps/place/Ocosingo,+Chiapas/data=!4m2!3m1!1s0x85f2ea7135f1d337:0xbb1dcd13e9d2d3ad?sa=X&ved=1t:242&ictx=111>

Identification of the universe of HEIs

The methodology to be used in the development of this research was chosen considering the students of the different Higher Education Institutions in the municipality of Ocosingo, Chiapas, as the universe to be studied; however, in order to carry out the study it was necessary to identify the number of Universities in the locality, as well as the total current student enrolment; The research instruments and diagnostic tools were applied, such as questionnaire forms, interview scripts, checklists and observation that allowed us to obtain the necessary and objective information on the results and subsequently tabulate, graph and interpret them to validate whether the presence of universities in the municipality of Ocosingo, Chiapas, represents a positive impact for businesses, owners and employees of the companies, as well as society in general; the methodology used in the development of the study was to identify the number of universities in the municipality of Ocosingo, Chiapas.

The methodology used in the development of the project is based mainly on the quantitative and qualitative method, since statistical data are recorded in relation to the results of the diagnosis and analysis of the perception of students, employees and employers of the organisations.

Study population

The research universe will be a finite population. The students considered are:

Box 2

Table 1

Participating Higher Education Institutions

IES	Population
Universidad Tecnológica de la Seva	980
Benito Juárez García University, Ocosingo Campus	900
University of Mexico	300
Alfa y Omega University	215

Source: Own elaboration, Department of School Services of HEIs

Sampling

By virtue of the total enrolment in each of the public and private Higher Education Institutions, the finite sample calculation was determined.

The following formula was used to calculate the sample size of the finite population:

$$n = \frac{N * Z_{\alpha}^2 * p * q}{d^2 * (N - 1) + Z_{\alpha}^2 * p * q} \tag{1}$$

Where:

- N = 2405
- Z α = 2.33 squared
- p = 0.5
- q = 1 - 0.5 = 0.5
- d = 0.02

As a result, 1,408 surveys were carried out.

Design and Implementation of instruments

The data collection technique for the elaboration of the project will be by means of a questionnaire and field research.

The questionnaire will allow us to collect data directly from the students of the different public and private universities in the municipality of Ocosingo, Chiapas.

Box 3

Table 2

Metrics collected by the research instrument

Dimension	Description
General data	University Sex Career
Financial income	Origin and amount of monthly resources.
Financial outgoings	They have a grant and type Amount of monthly expenditure.
Mobility and transport	¿Purchasing preference Means of transport used

Analysis of results

Box 4



Figure 2

Dimension graphs general data

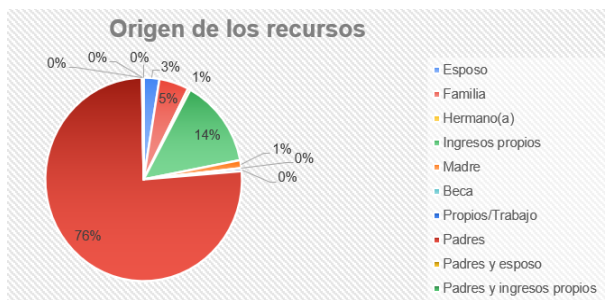
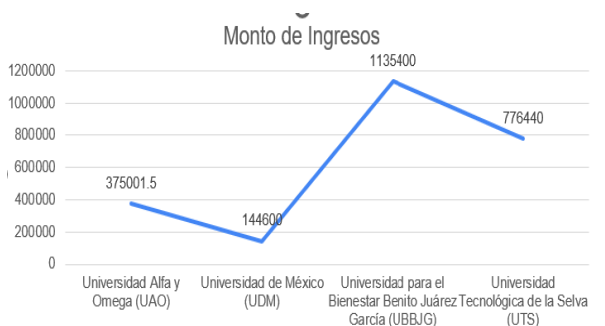
Source: Own elaboration

The application of the research instruments made it possible to determine the number of students from each Higher Education Institution that participated in the study, considering that students from the Universidad para el Bienestar Benito Juárez García accounted for 52% of the research universe, 34% from the Universidad Tecnológica de la Selva, 11% from the Universidad Alfa y Omega and 3% from the Universidad de México; considering that the first two Higher Education Institutions are public and the remaining two, respectively, are private.

The professional disciplines of the students with the greatest presence in the study are focused on health sciences (nursing and medicine), with a total of 77% of the surveyed students taking into account both careers; likewise, professional careers oriented towards administration, tourism and gastronomy studies had a total of 18%, in this sense, it is important to mention that the study is dominated by professional careers in public sector HEIs.

A factor that determines the choice of a professional career is the gender of the student, which is why the results of the study show that a total of 67% of the students were female and 33% were male, which also determines the type, quantity and frequency of the economic expenditure incurred by the students

Box 5



Cuenta con beca

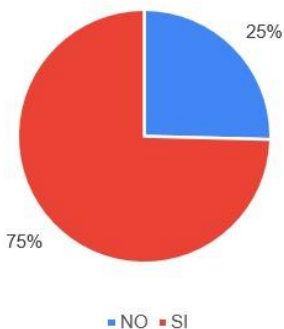


Figure 3

Economic income dimension graphs

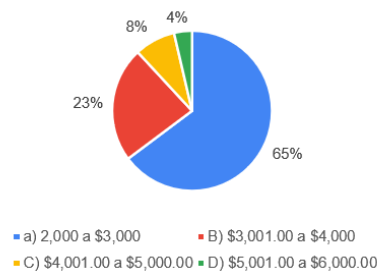
The importance of the determination of the results obtained in the amounts of the monthly research instrument, according to the students surveyed who participated, oscillates for the Universidad para el Bienestar Benito Juárez García in the amount of \$1,135,400.00; the Universidad Tecnológica de la Selva in the amount of \$776,440.00; then the Universidad Alfa y Omega with a value of \$375,001.50 and lastly the Universidad de México with \$144,600.00 pesos. This results in a total monthly income of \$2,433,641.50 pesos for the municipality of Ocosingo, Chiapas.

According to the question of the origin of the resources in the previous graph, 76% are obtained from their parents, 14% from their own income, 5% from other members of the family and 1% from their partner and mother of the family.

In the presentation of the results referring to the students surveyed, they mention that they obtain some type of scholarship, 75% have a scholarship, 25% do not have a scholarship, due to the fact that they are students of private IES, it is worth mentioning that the Benito Juárez García Scholarships are provided to students studying at the UBBJG and the scholarships for academic excellence and young people building the future, respectively to students of the Universidad Tecnológica de la Selva, which are public IES.

Box 6

Importe económico que gastas mensualmente



Preferencias de compra

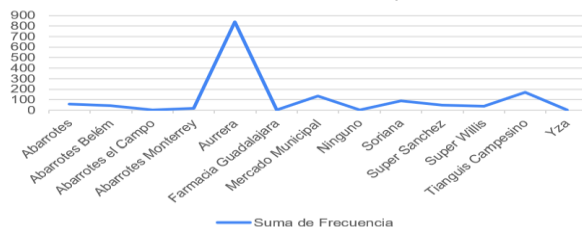


Figure 4

Economic income dimension graphs

The results presented in the graph show that 65% of HEI students spend between \$2,000.00 and \$3,000.00 pesos per month, 23% spend between \$3,001.00 and \$4,000.00 pesos per month, 8% spend between \$4,001.00 and \$5,000.00 pesos per month, and only 4% spend between \$5,001.00 and \$6,000.00 pesos per month.

In relation to the types of establishments where students spend their economic resources, the study identifies that the most visited business is the bodega aurrera self-service shop, followed by the farmers' market and the local municipal public market, which indicates that students' consumption of products is mainly focused on food.

Box 7

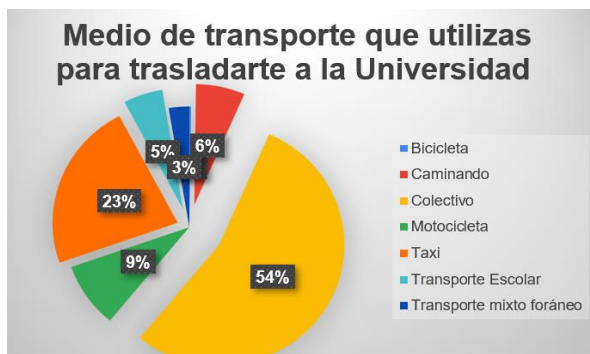


Figure 5

Mobility and transport dimension graphs

One of the important factors in determining the students' outgoings is the means of transport they use to travel to school or for their daily activities. The results of the study show that 80% of the students use public transport, mainly by taxi, bus and mixed transport; 9% use private transport in the form of motorbikes; 6% walk and 5% use school transport.

Results

Once the research instrument had been applied to the target group and the data had been processed and interpreted, the relevance of young university students in the local economy became clear. These results objectively quantify the contribution to the economy of the municipality of Ocosingo, Chiapas; considering that there are benefits for local businesses, employers and employees; this means that the dissemination of the research will allow society, institutions and organisations to recognise the importance of the presence of Higher Education Institutions in this municipality.

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Conclusions

Throughout the study of the present research, the value of students focused on being part of the dynamics of growth and development of this region is identified, thus achieving the improvement of services and the quality of products offered in the locality.

The main mission of HEIs is to train professionals who respond to the needs of the business and productive sector, thereby contributing to the growth and development of their area of influence. In this sense, it is important to recognise the contribution that the university community generates in favour of the municipality, mainly in economic, social and cultural aspects.

Finally, it is concluded that the research project has fostered the appropriate conditions for institutional links between HEIs and productive sector organisations, in order to seek alternatives and strategies that allow for academic and productive collaboration commitments.

Declarations

Conflict of interest

The authors declare no conflict of interest. They have no known competing financial interests or personal relationships that could have appeared to influence the article reported in this article.

Author contribution

The contribution of each researcher in each of the points developed in this research, was defined based on:

Perez-de la Cruz, Jose Francisco: Contributed in the definition of the topic for the research, writing of the article, summary, introduction and tabulation of data.

Zepeda-Trujillo, Elizabeth Guadalupe: Contributed to the definition of the research topic, writing of the article, background, methodology and analysis of results.

Aguilar-Flores, Miguel Ángel: Contributed to the definition of the research topic, writing of the article, design of the instruments, results and conclusions.

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Availability of data and materials

The method chosen for the collection and processing of the research data will be through the Google Forms platform.

In addition, spreadsheets such as Excel were used for the tabulation and analysis of the data. In addition, the following digital resources were used conceptually: data, processes, files and database managers.

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We are grateful for the collaboration of the professors and students of the IES of Ocosingo, Chiapas, who took part in the research: UTSelva, UBBJG, UDEM, Universidad Alfa y Omega.

Abbreviations

IES	Instituciones de Educación Superior
PYMES	Pequeñas y Medianas Empresas
UBBJG	Universidad para el Bienestar Benito Juárez García, sede Ocosingo
UDEM	Universidad de México, sede Ocosingo
UNAM	Universidad Nacional Autónoma de México
UTSELVA	Universidad Tecnológica de la Selva

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Antecedents

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Gray TEU repositioning a sustainable circular economy commitment

Reposicionamiento de TEU grises un compromiso de economía circular sustentable

Flores-Cruz, Luis Antonio ^a, Cruz-Gómez, Marco Antonio ^{*b}, Lara-Andrade, María Verónica Altagracia ^c and Vázquez-Juárez, Patricia ^d.

^a  Benemérita Universidad Autónoma de Puebla •  KQU-2985-2024 •  0009-0001-4188-2922 •  2030632

^b  Benemérita Universidad Autónoma de Puebla •  S-3098-2018 •  0000-0003-1091-8133 •  349626

^c  Benemérita Universidad Autónoma de Puebla •  ISB-9246-2023 •  0000-0002-0381-4072 •  1092332

^d  Benemérita Universidad Autónoma de Puebla •  KQU-7720-2024 •  0009-0002-8300-4287 •  9559717

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*  [\[marco.cruz@correo.buap.mx\]](mailto:marco.cruz@correo.buap.mx)



Abstract

The imbalance between imports and exports in global trade generates, consequently, the relocation of gray TEUs on the Transpacific and Transatlantic routes. Moreover, the objective of this research was to analyze the relocation of empty TEUs on the Transpacific and Transatlantic routes. for the purposes of commitment to a sustainable circular economy. On the other hand, the fluidity of global trade depends on the containerization available for export. However, ports that do not have assets will consequently face shortages and will have to be relocated. A mixed analysis was carried out on the relocation of gray TEUs on the Transpacific and Transatlantic routes; based on the quantification and estimation of statistical control variables, decision making, modernization and information and communication technologies. The characterization of data obtained from the relocation of gray TEUs is the basis of the commitment to circular economy and sustainability. The identification of manufacturing processes for recycled TEU will be the subject of future work.

Resumen

El desbalance entre importaciones y exportaciones del comercio global genera en consecuencia, la reubicación de TEU grises en las rutas Transpacífica y Transatlántica. Por otra parte, el objetivo de esta investigación fue analizar la reubicación de TEU vacíos en las rutas Transpacífica y Transatlántica. con fines de compromiso de economía circular sustentable. Por otro lado, La fluidez del comercio global depende de la contenerización disponible para exportación. Sin embargo, los puertos que no cuentan con activos enfrentarán, en consecuencia, escasez y tendrán que ser reubicados. Un análisis mixto fue realizado en la reubicación de TEU grises en las ruta Transpacífica y Transatlántica basado en la cuantificación y estimación de variables de control estadísticas, toma de decisiones, modernización y tecnologías de la información y comunicación. La caracterización de datos obtenidos de la reubicación de TEU grises son base del compromiso de economía circular y sustentabilidad. La identificación de procesos de manufactura para el reciclado TEU será motivo de trabajos futuros.

Gray TEU repositioning a sustainable circular economy commitment		
Objectives	Methodology	Contribution
Analyze the relocation of empty TEUs on the Transpacific and Transatlantic routes. for the purposes of commitment to a sustainable circular economy.	This research had a mixed approach, applying both quantitative and qualitative technologies, using systematic processes, as well as records and estimated data.	The characterization of data obtained from the relocation of gray TEUs is the basis of the commitment to circular economy and sustainability.

Reposicionamiento de TEU grises un compromiso de economía circular sustentable		
Objetivos	Metodología	Contribución
Analizar la reubicación de TEU vacíos en las rutas Transpacífica y Transatlántica. con fines de compromiso de economía circular sustentable.	Esta investigación tubo un enfoque mixto, aplicando tecnologías tanto cuantitativas como cualitativas, utilizando procesos sistemáticos, así como registros y datos estimados.	La caracterización de datos obtenidos de la reubicación de TEU grises son base del compromiso de economía circular y sustentabilidad.

Elocation empty TEU, Repositioning empty TEU, Global empty container movements

Reubicación de TEU vacíos, Reposicionamiento de TEU vacíos, movimientos globales de contenedores vacíos

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Introduction

90% of world trade is carried out by maritime means of transport and it is of great importance to highlight that around 65% of total maritime trade is through container ships. International trade takes place on the five equatorial global sea routes; Transpacific, Asia-Europe, Transatlantic, Intra-Asian and Bab el-Manded Strait. These have some steps required by Channels such as Suez, Panama and the Channel and Straits such as Malacca, Bab el-Manded, Hormuz, Bosphorus and Oresund (Abdelshafie et al., 2022).

One of the biggest problems for shipping companies is the availability of TEU (twenty-foot equivalent unit) containers, due to the imbalance between exports and imports mainly on the Transpacific and Transatlantic routes. The arrival of container ships full of TEUs with a large amount of cargo from Asia to North America, upon their return North American exports to Asia have a decrease, which implies many empty TEUs called (gray TEUs), which will have to be relocated for future uses as a means of port packaging; consequently, consequently this affects sustainability. The aim of this research was to analyze the relocation of empty TEUs on the Transpacific and Transatlantic routes. for the purposes of commitment to a sustainable circular economy.

The characterization of data obtained from the relocation of gray TEUs is the basis of the commitment to circular economy and sustainability (Dovgal et al., 2024).

The passage of empty container ships represents a critical point in the imbalance between exports and imports. China sends many containers full of products to countries such as the United States and Canada with imports of approximately 28 million container units in 2022. However, these containers will have to be returned so that they can serve as a means of packaging for future exports. but returning a ship with few imports to China makes Shipping companies charge more for the export of products from China to the United States and Canada, because they must prorate the costs of export transportation full of products with a return of empty containers and minimal containers full of imports as cargo on ships. container ship.

How to achieve the relocation of empty TEUs with a commitment to a sustainable circular economy? The port supply chain when it is point-to-point is due to less complex logistics, but this is aggravated when the empty TEUs are transhipped in Internal or Dry Ports with transport companies that move the TEUs inland for the sequenced arrival of cargo and unloading, making transfer logistics complex and with variants of a large number of phenomena that can influence the times of the port supply chain of empty containers (Efes, 2021).

This can be a trigger for the American continent to increase its exports to Asia, Africa and Europe, placing its agro-industrial products, raw materials and crafts, with privileged shipping company expenses for its exports.

Container ships face problems due to logistics, loading capacity, expenses and monitoring of customs procedures in the relocation of empty containers. Therefore, in the reverse route of the route, if a peer client wishes to export, the route becomes bidirectional, contributing to the expenses charged by shipping companies for the relocation of TEUs.

A theory of export promotion in developing countries establishes that, if the ship is volumetrically occupied by empty and low-weight containers, they could be occupied by exporting business companies, detonating progress by selling products abroad at higher costs. transfer rates by shipping companies.

The construction of dry canals would trigger sustainable development projects, sources of work, increase in infrastructure in areas surrounding the canal, increase in capital gains in the value of the land, settlement of industrial zones, creation of companies in port areas (chemicals, mining and process) that would turn areas with high poverty rates into prosperous areas (Dovgal et al., 2024).

The identification of processes for manufacturing recycled TEUs will be the subject of future work, there by reinforcing our commitment to sustainability.

Containerization

One TEU or twenty-foot equivalent unit (20 feet long, 8 feet wide, and 8 feet high). is the standard size, they normally load up to 24 metric tons and an empty container weighs 2.24 metric tons, therefore, the total weight will be 26.28 metric tons. But the maximum loading capacity will be 30.48 metric tons when loading with higher density products up to 28.2 metric tons. An FEU or forty-foot equivalent unit (40 feet long, 8 feet wide and 8 feet high) is twice the size of a TEU and has a tare weight of 3.7 tons.

Maritime container units are classified according to their design into 16 types of containers that protect cargo and ensure transportation via container ships to meet the requirements of the shipping industry. These are dry storage container, flat rack container, open top container, tunnel container, open side storage container, double door container, refrigerated ISO container, insulated or thermal containers, tanks, rolling container for cargo storage, mid-height containers, automobile carriers, intermediate bulk change containers, drums, special purpose containers, changeable body container.

Moreover, when a container is loaded onto a ship, it is fixed to its structure and fixing elements such as moorings, turnbuckles, twist locks, etc. are placed between containers. This prevents containers from moving out of place or falling into the sea during adverse weather conditions or high winds. The stevedores and the deck crew oversee lashing and unlash work in port. Before arriving at the port, the crew of the container ship unstraps the containers that will be lowered to save time in the port and be able to unload the containers immediately after docking. This follows a plan and order of mooring and unmooring according to the loading and unloading plans. of the ship, because an imbalance of masses in the ship can generate an imbalance and offshore with the presence of waves it will not be possible to balance the ship with the intelligent balance system that works with the passage of water flows to the tank tanks that function as hydraulic levelers.

Methodology

This research had a mixed approach, applying both quantitative and qualitative technologies, using systematic processes, as well as records and estimated data.

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Moreover, the objective of this research was to analyze the relocation of empty TEUs on the Transpacific and Transatlantic routes. for the purposes of commitment to a sustainable circular economy. For this, the application of the quantitative method was relevant in the identification of control variables involved in previous studies such as; statistics, decision making, modernization and information and communication technologies.

The characterization of data obtained from the relocation of gray TEUs is the basis of the commitment to circular economy and sustainability (de Mattos Nascimento et al., 2024). The records of results obtained by different port companies, governments of different countries, experiences of shipping and port personnel, previous scientifically reported studies of the relocation of empty containers, were considered as the application of the qualitative method that allowed the possibility of obtaining results from the estimation of variables, which played an important role in decision making to understand the proposals implemented by private, shipping and port companies in the relocation of empty TEUs.

The operational data resulting from this investigation determined that shipping companies charge more for the export of products from China to the United States and Canada, because they must prorate the costs of export transportation full of products with a return of empty containers and minimal containers full of imports as cargo on ships. container ship. Finally, through the mixed method, an analysis of the control variables was carried out that allow involvement in How to achieve the relocation of empty TEUs with a commitment to a sustainable circular economy?

The port supply chain when it is point-to-point is due to less complex logistics, but this is aggravated when the empty TEUs are transshipped in Internal or Dry Ports with transport companies that move the TEUs inland for the sequenced arrival of cargo and unloading, making transfer logistics complex and with variants of a large number of phenomena that can influence the times of the port supply chain of empty containers (Efes, 2021).

The new and relocated TEU, FEU markets

Containerization allows for the distribution of cargo in a unified, intermodal transport through a combination of rail, road, canal and maritime transport. Every year, between 1.5 and 2.5 million TEUs are manufactured in China. Containers are standard cargo units, they are classified into three main markets: dry containers, refrigerated containers (reefers) and tank containers. (Abdelshafie et al., 2022 and Helo & Thai, 2024).

The number of total TEUs in the world was estimated at around 37.6 million at the beginning of 2019. Annual TEU production in 2019 reached around 5.2 million, due to significant trade demands and port congestion, due to a temporary shortage of containers. in world markets. In March 2020, there was a huge surplus of boxes, 3 million empty TEUs available in Chinese ports plus another 1.2 million TEUs stored with container manufacturers. Orders for new cases plummeted due to this surplus. However, the situation reversed in mid-2020, due to an increase in import demand in North America and Europe. All this linked to an increase in exports from China, caused an avalanche of orders for new containers, which doubled the price of a standard 20-foot box.

China represents 90 to 95% of the world's container production. It has four leading companies in the production of containers in their different variants, capable of building 6 to 8 million containers annually, the price of a new container can range from 3,000 to 85 million. 000 dollars according to your specifications.

Dry TEUs in their base part have a price of 3,000 to 4,500 dollars and FEUs from 4,500 to 14,500 dollars, and the most expensive TEU sector is the refrigerated ones whose price ranges from 30,000 to 85,000 dollars in 2024. Once produced, a new container is immediately moved to a nearby export activity (factory or distribution center), then loaded and taken to a container port. On the other hand, any TEU utilization strategy must consider production and relocation costs in the event of requiring repositioning over long distances (Efes, 2021 and Helo & Thai, 2024).

Manufacturing a 20-foot dry TEU has a final price of \$2.30 per cubic foot. On the other hand, a 40-foot dry FEU container costs \$1.80 per cubic foot. However, it is estimated that the production cost for dry TEU per cubic foot is \$1.70 and for FEUs it is \$0.80 per cubic foot. In the case of relocated containers, the price of the base dry TEU ranges between 1,600 and 2,500 dollars and for the relocated base dry FEU between 3,200 and 6,950 dollars during 2024 on the Transpacific route heading from North America to Asia, which balances the costs of production with relocation for dry TEU and FEU. In the case of relocated containers there are two types of business plan modalities, one with return and another where relocation is not requested, this depends on the company that chartered the container, and its relocation costs depend on the type of container and the remaining useful life of the container. The useful life of a container is six trips for it to be profitable according to port standards. On the other hand, if a container does not require return because it has been acquired with that specification, it could be forgotten after the delivery of the merchandise, being a waste product for the importing country.

Another way of abandoning a container is when its useful life has ended or the owner of the exporting company does not claim it, considering it as waste packaging, so he is not responsible for the container, leaving the customer to abandon it and its fate. end with the problem, to the port storage yard, to the importing country as part of its waste, while the shipping companies and the exporting manufacturer ignore it.

This problem is of greater magnitude in base dry containers, because the relocation costs can be exceeded by the production costs, so the companies that own the containers ignore the container and replace it with a new one, because it is cheaper, however, this represents a source of global pollution. On the other hand, refrigerated containers whose price is more expensive due to the refrigeration units, the satellite tracking technologies that accompany them and the disinfection processes required before loading them. These are the focus of attention of the relocation of shipping companies and manufacturing companies that own containers due to their high costs (Efes, 2021 and Helo & Thai, 2024).

96% of the containers that move in supply chain management in 2021 are owned by shipping companies and container leasing companies with percentages of 48% each. This allows shipping companies to cope with temporal and geographical fluctuations in container demand. By 2024, the number of single-use containers by private manufacturers without responsibility for relocation will increase to 10%.

Containers are an asset that maritime shipping companies make available to their clients. Control of container assets that allows for more efficient use of the transportation chain.

The rising cost of new containers, the cost of repositioning empty containers and competitively low freight rates that control the price of moving containers along trade routes have made the container leasing business less profitable.

Maritime carriers have the responsibility of repositioning empty containers with payment for their services, logistics companies have the responsibility of charging the exporting producer for shipping and container relocation services once the product is delivered, as well as representation and customs costs, trunk relocation costs in ports and inland and finally in the case of containers that have ended their useful life, the owner and beneficiary of the container transportation services (the shipping company that rents or the manufacturing company must take charge of a program integral responsible for the “9 Rs of the circular economy in “Containerization” (Refuse, Reduce, Reuse, Repair, Restore, Remanufacture, Redesign, Recycle and Recover) in the country of origin of container manufacturing or through transnational companies that By agreement, they responsibly support the control and management of containers.

Otherwise, it is more comfortable for companies to get rid of their assets when they stop generating financial resources. However, in containerization is as expensive to build as it is to destroy, which is a problem for exporting companies, shipping companies and private entrepreneurs who are inheriting third world importing countries with loose regulations in their territories that make them an easy flank. of abuse (de Mattos Nascimento et al., 2024, Hunger et al., 2024 and Muñoz et al., 2024).

Port Assets

The global leasing market in 2020 was 10.7 million TEU. From the point of view of shipping companies, their containers are secondary assets that allow efficient use of their vessels and control of cargo. These maximize the use of the ship, which is its main asset. As of early 2023, 18 of the top 35 shipping companies were in Asia. China is the second largest ship-owning country after Greece (first), followed by Japan (third),

Singapore (fourth), Hong Kong, China (fifth), the Republic of Korea (sixth) and Taiwan Province of China (eighth). China has a share of 11.04% of the world fleet, surpassed by Greece with 11.8%. Japanese shipowners own a 10.73% stake, Hong Kong; China is fourth in share with 8.8% of the world fleet.

Hong Kong, China has a 2.4% share of the world's fleet of vessels with a total of 2,537 vessels Hong Kong, China represents a 6.27% share of the world's fleet, placing the flag in sixth place by value of ships. Singapore fifth place, followed by China sixth place and Japan tenth place. Other flags in the top 35 include Indonesia (12), the Republic of Korea (18), India (19), Vietnam (22), Malaysia (25) and Taiwan Province of China (33).

TEU and chassis fleet leasing

Leasing companies, containers are their main asset, the objective is to amortize their investments through leasing contracts. These agreements are in terms of the duration of the lease, who is responsible for the repositioning of the empty containers. Recent trends underscore their more active role in container asset management, because a container spends a large portion of its useful life idle or being repositioned.

Container market chassis fleets are needed to transport containers by road and sometimes within terminals. They are designed to be interoperable, the chassis are adjustable to carry containers between 20 and 40 feet, while others can be adjusted to handle containers of less common sizes, such as 53 feet. Their transportation between international markets depends on separate regional segments of supply of chassis.

A chassis can also be used to store containers in terminals and distribution centers called operations on wheels with a supply and demand perspective (Cui et al., 2022 and Ng, 2024).

A chassis supply business model is that shippers or logistics service providers own the chassis they use, major intermodal terminals, chassis groups support drayage operations by allowing motor carriers to access and return equipment, which is a predominant business model in North America. In a road transport contract, the carrier assumes responsibility for organizing all segments of the transport chain, including the provision of a motor carrier and a chassis.

The chassis market is a derived demand. The chassis market is prone to lag effects and adjustments, as chassis suppliers seek to match chassis fleets, commonly organized in regional groups, with container movements.

A container is a transport and also production unit that moves as an export, import or repositioning flow. Once a container has been unloaded, another means of transportation must be found, because moving an empty container is as expensive as moving a full container, in addition to occupying the same volume. Shipping companies need containers for their service throughout the port network, but these must be in continuous flow because a delay increases the costs of their handling, transfer and stay.

The repositioning of empty containers is one of the most complex problems in the global distribution of goods, due to the fact that cargo for return could not be found. Under normal operating circumstances around 2.5 million empty TEUs per year are stored, waiting to be used and these represent around 10% of existing active containers and 20.5% of global port handling. A trade imbalance leads to the systematic accumulation of empty containers. Conversely, a region that exports more than it import will face shortages. If this situation persists, large quantities of containers will need to be repositioned between trading partners. Repositioning costs: They include a combination of domestic transportation and international transportation costs. Container repositioning cost assessed on global stock market (Luo et al., 2021).

The relocation of TEUs on transpacific routes could spend three to four weeks in the internal port of the importing country loading it and returning it to the exporting port between 10 to 12 weeks, obtaining an income of 800 dollars in the internal port and repositioning the container through of the Pacific and generate a total return income of around \$3,000 dollars, this could be higher in case of peak demand in the port system. Higher manufacturing or leasing costs may favor the repositioning of empty containers and the balance between manufacturing and repositioning the forgetting of assets to liabilities (de Almeida Rodríguez et al., 2023 and Ding et al., 2023).

The reluctance of some shipping lines and leasing companies to share market information on container positions and quantities for competitive reasons makes it difficult to establish “grey box” empty TEUs. In the North American railway system (TTX Rail Equipment Pool), it is possible for transport companies to clearly separate container assets from modal assets in order to improve efficiency (such as the turnover rate). For this, shipping companies use containers marked with the name of the company and offer availability capacity to its clients through its platforms.

Shipping companies have problems in TEU transfer logistics and container ships are affected in their routes, times and costs of transfers that generate delays due to nodal loading and unloading, inter-port, customs passages, however, the relocation of container ships on a port-to-port route increasing the transfer speed to more than 21 knots, which reduces the impact on the carbon footprint (Luo et al., 2021).

The repositioning of empty containers is at least 60 million each year. This repositioning of containers can occur on three scales: Local (they are queued before the recipient or consignor), Regional (intermodal repositioning or net exporter) and International (repositioning or net exporter). The costs of repositioning empty containers are multiple and include handling and transshipment at the terminal, positioning of the chassis for hauling, empty storage while waiting to be repositioned, inland repositioning by rail or truck to a terminal and marine repositioning (Ding et al., 2023 and Ng, 2024).

Shipping companies spend, on average, \$110 billion a year managing their container assets (purchase, maintenance, repairs), of which \$16 billion goes to repositioning empty containers. This means that repositioning accounts for 15% of container asset operating costs. To cover these costs, shipping companies charge higher freight rates on the "full" leg and lower rates on the return leg.

These freight rate practices are therefore a major factor in shipping costs to developing countries in Africa, Asia and the Caribbean. The result is higher costs for imported goods, which has a detrimental economic impact when comparing consumer prices for the same product in different countries.

The repositioning of empty containers faces numerous challenges such as face the costs of access and storage in the terminals, wear and tear on equipment, downtime and loss of productivity of land transport fleets for access to doors in the return of empty containers and chassis. Of every 100 containers that enter the United States, 50% will be repositioned empty, the other 50% remain empty in the yards of port terminals and distribution centers waiting for export cargo to become available. Only around 5% of containers will be loaded with export products and the rest will remain on hold depending on supply and demand with container rotation and what this implies in the transfer out to sea and inland ports that function as a buffer yard. container ship (Cui et al., 2022).

The transshipment of containers with modern technologies helps repositioning according to asymmetries with respect to the loading plane of the container ship, repositioning, digitalization (location coordinates, temperature, humidity, pressure, geofences, impact detection, door opening and closing information), better level of control over the transport chain and alarms of theft, damage or violation of the integrity of the container.

Online freight exchange and virtual container yard platforms have been proposed to help connect different business needs where information on container availability is displayed, without the container needing to be in a physical storage warehouse, due to which may be in circulation or in a distribution center, but the important thing is that its availability is known for the logistical planning of the asset in supply chain management.

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The main objectives of a platform organized by logistics companies external to shipping companies are to have information on assets such as containers, (characteristics, location, availability) road transport companies, shipping companies, distribution centers and equipment leasing companies. Global port logistics companies want shipping companies and ports to give up full rights to the use and management of their infrastructure so that they can carry out decision-making in the total management of the supply chain based on their administrative company as; transfer the lease agreement returns and exchanges of the container even without bringing the container back to the warehouse or terminal.

The reactions of maritime transport companies prefer those containers be within the maritime system, where they generate income for shipping companies, instead of being in inland ports where they generate income. for trucking, rail and barge companies. Because they are private companies with independent variable capital, for this reason international trade must be understood to be governed by several companies at a global level that, depending on their offshore assets and internal ports, occupy their leadership. These companies compete based on their market and infrastructure strategies; however, they are not a monopoly, therefore in a capitalist world they must compete among themselves for placement in the market (Ding et al., 2023).

Seasonality has a geography as harvest time varies between different regions of the world, which implies temporal and geographical fluctuations in the repositioning of empty containers. It is common in the agricultural sector for raw material prices to drop during the harvest season, but when actual production is finally known, uncertainties are eliminated. If production is higher than expected, prices fall, making containerization a less attractive alternative.

The average number of TEUs per hectare in yard or distribution center per year was 49,005 at container terminals. In North America there were 9,303 and in Hong Kong it exceeded 60,000 TEU per hectare per year. The productivity of port land has been achieved through planning, regulation and relocation.

The relocation of urban ports is because they tend to be victims of the global success of their cities being reached by the urban sprawl; As cities become more attractive to investment, land values increase, making it difficult to maintain port functions in urban centers.

Every year around \$20 billion is invested in repositioning empty containers. This amount implies that the Gross Domestic Product (GDP) of some countries is exceeded, which generates a red light for the global economy and an opportunity for other sectors. The average container spends 56% of its useful life inactive or empty, in ocean transit 16%, in terminal 16%, in land use 6% and in repair 6% (Efes, 2021).

Normally you can store a container in a port for five days for free, but if you exceed this limit, yard rental can cost \$100 per day, depending on the shipping company and the port. This means that it is usually more profitable to move empty containers by means of a carrier to inland warehouses far from the ports where warehouse costs are lower and their return to load it, than storing them in port yards until they are shipped full (Ding et al., 2023).

Artificial Intelligence in container relocation

Some digital platforms have emerged as a proposed solution to the shortage of empty containers as a way of connecting carriers to carriers to ensure a frictionless procurement process for spot and contract purchases, completely online. This system automates complex tasks, provides unmatched visibility, and supports rapid data-driven decision making.

These companies were designed and built by logistics procurement experts, offering transparency, automation and efficiency to the global logistics industry. It is used and managed by some of the world's largest companies to respond to market volatility, control transportation costs and manage risk. However, these logistics companies depend on shipping companies, their infrastructure and services to be able to operate (Chen et al., 2024 and de Almeida Rodríguez et al., 2023).

The Shipping industry makes its operational logistics according to its infrastructure, business plan, area of operation and its reach through its commercial partners.

The business strategies of each shipping company depend on the logistics experience of its work team, and it may or may not use the technologies to carry it out. The incorporation of technologies (cloud business models, big data, blockchain, artificial intelligence, machine learning, mobile applications, etc.) (Raza et al., 2023 and Wang et al., 2023), on the part of the shipping companies will make logistics more friendly both for the company and for its users.

The implementation of cutting-edge technologies such as Artificial Intelligence, by Shipping Companies, can be seen as an opportunity for growth to the next level from where they currently are, and growth will be gradual. To do this, companies and their staff must follow procedures, acquisition and implementation of technologies in their workspace.

It is worth mentioning that the incorporation of Shipping Companies into artificial intelligence systems provided by external port logistics companies is not always attractive, because their business is a business at the level they are at, however, even at the next level the opportunities may vary depending on that what is a business under these conditions is a failed company on the other rung.

Shipping companies are not reluctant to cooperate as seen by the large global port logistics consortia, but rather they reserve their operating parameters in a continuous fight in competition as an integral company with its own assets in the face of the incorporation of global consortia. logistics companies that under agreements want to use their assets as their own, punishing prices in a world of global competition (Chen et al., 2024 and D'Amico et al., 2021).

Global Logistics Industries external to Shipping Companies, as indicated by global trends, want to have control and availability of assets through global negotiation where artificial intelligence can be a trigger for development in every sense, however for this it must be fed to the networks. of Artificial Intelligence in real time with data of different types involved in the port transport supply chain to be efficient.

A complaint of his because problems such as the relocation of empty containers through global port logistics of Artificial Intelligence cannot be solved today is because there are limitations of global technological communication infrastructure, all global shipping and inland companies would have to merge to the generation of a shared logistics monopoly capable of sharing all assets and even profits (the dream of logistics and artificial intelligence), which in a capitalist system has no place, there will always be competition to offer transport services in the chains supply, therefore, companies can make, based on their assets, their network of subsidiary companies and a constantly expanding business strategy, an excellent competitor that shares classified information with their company, but will never do so with their competitors. The limitations of any management system, network or platform that can make decisions in real time requires the feeding of real data that is only shared between business groups for specific purposes, a limitation to the Idealization of Artificial Intelligence (Chen et al., 2024, D'Amico et al., 2021 and Zhao et al., 2024).

Results discussion

The availability of empty TEUs and FEUs is a global market that is governed by the laws of supply and demand depending on the region where they are required, therefore logistics companies open representation web portals to put the use of empty TEUs and FEUs up for sale. repositioned containers for rental or sale service for the transfer of merchandise, which does not mean that they monitor the container, their logistical activity for which they acquire their profits is mostly by representation and they leave the relocation under the discretion of the exporter, leaving the TEU sale or rental announcement published on its platform in case a new client requires the service, and the cycle begins again. Another way of using containers is under the form of cabotage with one-way leasing with real-time tracking that helps save money in repositioning.

A new form of repositioning is moving to collapsible containers. They offer the potential to save transport, transshipment and storage costs, but so far previous studies have shown that they are not an attractive proposition.

Although the economic advantages of folding containers seem obvious, these types of boxes must face commercial skepticism. This attitude refers to the technical performance, in particular the complexity of the folding and unfolding process, as well as the logistical and organizational problems related to the use of folding containers. (Lee & Moon, 2020).

Large deep-draft ships cannot be fully loaded with empty containers, due to the instability of the vessel's center of gravity, stacking and stowage. Shipping companies carry out container relocation as a port-to-port service with a charge of around \$3,000 per empty TEU (folding or standard) by 2024, divided into the following services that include THC, port and terminal handling charges. Marine transport.

The total costs of the port-to-port chain of standard TEU relocation; deploy container, unload in warehouse, transport port – consignor (empty), transport consignor – port (full), THC (full), maritime transport (full), THC (full), port of transport – consignee (full), consignee transport – port (empty), receipt in warehouse, Folded container, discharge in warehouse, transport warehouse – terminal, THC (empty), sea transport (empty), THC (empty), transport terminal – warehouse, warehouse receipt, storage (empty) and operating costs (Kuhlemann et al., 2021 and Lee & Moon, 2020).

In the case of TEU relocation, container ships will seek to make the return trip North America - Asia profitable, but this requires that at least a third of the containers be full and for this the loading plan must be To maintain the stability of the vessel, place the full TEUs in the lower part of the ship's hull and also distributed throughout the bow (ship's cargo distribution planes).

The other 2/3 of the containers that the ship could load will be limited because the great heights of empty containers, even if they are braced, present instability, thus reducing the number of empty containers that are loaded onto the ship to only one third. giving a total of 2/3 of container filling on a ship that transports empty TEUs. Vessels with light cargo due to the transfer of 1/3 of empty TEUs increase the speed of around 20 to 25 knots, causing the vessels to experience greater instability and in the presence of empty containers in the highest part this can represent a problem. loss of containers due to tilt.

On the other hand, filling this third of empty containers is not profitable in a port-to-port trip, but it will be even less feasible if we add to this that the ship makes stops between ports (for this there are intermodal services, trunk and transshipment of TEU collection to a larger port) and due to the dimensions of the draft, not all ports are suitable for calling, therefore, they will have to be loaded in ports that have the necessary infrastructure for yard storage, cabotage, relocation, and setting to carry out the operation (Li & Yang, 2023 and Li & Yang, 2024).

Some logistics companies offer free export services in the relocation of TEUs called cabotage, taking advantage of the bidirectional transfer of containers; however, this represents a market strategy for logistics companies to attract customers. These companies, through their portals, only generate communication and management to try to correlate importers and exporters (with representation expenses) in a process of sharing expenses in the handling, stay and transfer of containers, wanting to make pairs that can complement each other in the service.

On the other hand, months could go by and not find a commercial partner for bidirectional container transport purposes, which results in exporters ending up paying the costs of returning the TEU, to reuse it, as long as its stay in the yard and costs involved in repositioning they do not become more expensive than the manufacturing of the TEU, otherwise companies tend to ignore their own containers, generating waste pollution in the importing country.

So that this does not happen and the TEU is used at least six times as a means of transportation and is profitable, the logistics company, the shipping companies and the client should have the TEUs that will be used in their exports in continuous movement, thus generating lower costs. the relocation of TEUs until the end of their useful life (de Almeida Rodríguez et al., 2023).

On the other hand, if companies in the maritime sector do not want to reposition TEUs that can be useful to the company, they will even less do so with containers that have reached the end of their useful life.

For this reason, they ignore containers, generating a large amount of waste that accumulates in port yards and private warehouses on land, but the companies in charge of administration cannot use or dispose of TEUs because they are from international companies. that control the assets of the ports and therefore all the abandoned TEUs are viewed as private property of the shipping companies that they must respect in the hope that at some point they will want to be responsible for the yard storage costs that these TEUs caused, although that never happens. happens.

Coupled with a lack of regulation, status, membership, characteristics sheets updated by shippers in the yard, unfinished port procedures, legal disputes between freight forwarders and container owners, it means that shipping companies, ports and owners can go unnoticed of their responsibility.

On the other hand, external logistics companies play an important role in monitoring containers, being the most suitable to clarify the particular cases of each TEU and although it is true that they are only part of the supply chain and there are many companies similar to them When each TEU arrives at its companies, it has a very complete file that allows the specific case of each container to be tracked (that is why before lowering the containers, the port captain together with his fleet verifies documentation).

Most logistics companies say no. have monitoring or internal classified information, so they do not share it, playing a role of loyalty and service to shipping companies due to the fear of losing contracts. Therefore, the relocation of TEUs and their circular economy are limited to commercial interests and between companies (D'Amico et al., 2021 and de Mattos Nascimento et al., 2024).

Lower freight rates for the return trip. Export products from developing countries are generally of lower value and it is often too expensive for them to ship their products in containers, as this will increase the price of the products by a large percentage and the competitiveness of product placement. regional in the global market is limited by social cultural factors, uses and customs and above all that the manufacturers are retailers who in most cases do not fill the volume of a TEU unit, which implies that producer cooperatives are generated.

However, if they are offered a lower shipping rate, the container option could become attractive as they are subsidized with a portion of the freight cost by their country's governments.

Online sales increasingly bring the user closer to virtual logistics platforms for shipping containers of products and their return, making users track container transshipments, but the lack of knowledge of the real system and including a sequence of times and customs procedures when the smallest details are unknown generate unforeseen events and delays that must be resolved remotely and with language barriers, making tracking complex until the shipment is lost, which affects the relocation of the TEU. It is recommended that as a user you hire an expert logistics agent for the container tracking process, and this will avoid financial losses and headaches.

Conclusions

The relocation of empty dry TEU, FEU and Refrigerated containers on the Transpacific and Transatlantic routes is due to the imbalance between imports and exports. Maritime commerce is evolving in all its parameters, making online purchases through platforms increasingly easier. China has created a privileged position among the exporting powers; however, it must also face the problem of container shortages, causing the shortage to put the global market at risk, which is why it has been involved in the relocation of containers.

Different methods and proposals have been used for the relocation of empty TEUs, which involve techniques by port operating personnel, logistics experts through iterative platforms, application of information technologies ranging from spreadsheets to artificial intelligence, proposals technological folding containers, and a whole brainstorm of ideas to solve the problem. However, the limitations to these technologies, methods and strategies are that shipping companies, logistics companies that assist shipping companies, and private entrepreneurs are competition and although the market for shipping companies is small, because there are large Consortiums that dominate the market all compete for customer satisfaction and private enterprise prosperity in unique ways.

The data sharing barrier is a limitation in artificial intelligence networks, coupled with the lack of a bidirectional export market on the route, so the few exporters that may exist from the Americas to China are limited and sought after. unstopable way for the shipping companies. On the other hand, the balance of the price of dry TEU and FEU in new base form with respect to the relocation costs in optimal conditions of transportation without delays and storage of containers in port service yards, in addition to the lack of commitment on the part of shipping companies, ports, businessmen and governments that do not agree on generating strict regulations for the container problem are the perfect mix to indicate that they are working on it but not to resolve in accordance with applicable international laws, which regulate the large number of containers abandoned to their fate in importing countries.

However, the relocation of refrigerated containers, even if they travel empty, is a priority for the different sectors of international trade, due to their high manufacturing and technology costs, but this is not the case for base containers that do not generate profits or, worse yet, economic losses. Moreover, this lack of regulation, combined with port administrative problems, undocumented goods and owners who claim possession of abandoned containers in importing countries, represent factors that influence the relocation of containers in a lack of commitment to a sustainable circular economy, consequently this puts the global market at risk.

Because there are no specific international laws that oblige the exporter to take care of their waste, although events such as agendas and summits are held to solve the problem, they are only social events between nations that evade and prolong the problems and a strategy that has been successful for them. We are working on it while the destruction of the planet increases without being aware of the problem.

Declarations

Conflict of interest

The authors declare no interest conflict. They have no known competing financial interests or personal relationships that could have appeared to influence the article reported in this article.

Authors' Contribution




Flores-Cruz, Luis Antonio: Contributed to the project idea, research method and technique, about to develop all the project.

Cruz-Gómez, Marco Antonio: He supported the design of the field instrument. He also contributed to the writing of the article.

Lara-Andrade, María Verónica Altagracia: Contributed to the research design, the type of research, the approach, the method and the writing of the article.

Vázquez-Juarez, Patricia: Researched multiple papers and information about the topic.

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Abbreviations

FEU	Forty-foot Equivalent Unit
GDP	Gross Domestic Product
ISO	International Organization for Standardization
TEU	Twenty-foot Equivalent Unit
THC	Terminal Handling Charges

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Discussions





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
Knowledge economy and higher education: An analysis of the role of the student





Economía del conocimiento y educación superior: Un análisis del papel del estudiante

Preza-Medina, Sergio Roberto*^a, Hernández-Chacón, Sandra^b, López-Cetina, Yamit^c and Peña-Santoyo, Kermin Dayan^d

^a  Universidad Tecnológica de Cancún •  1465-2024 •  0000-0001-5010-0585 •  505691

^b  Universidad Tecnológica de Cancún •  1510-2024 •  0000-0002-0845-8791 •  742521

^c  Universidad Tecnológica de Cancún •  1515-2024 •  0009-0001-3481-4489 •  1356137

^d  Universidad Tecnológica de Cancún •  9210-2024 •  0009-0009-1814-7151 •  954648

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*  spreza@utcancun.edu.mx



Abstract

The main objective of this study was to investigate students' perspectives on how to take advantage of the opportunities that the knowledge economy offers them for their professional development and future entry into working life, taking into account four specific variables: international mobility, creativity and innovation. . . , registration of patents and utility models, and command of the English language. A quantitative methodology with a descriptive transectional design was used to address the research questions, focusing on criteria that guaranteed the observation and measurement of the problem. Data collection was carried out through the application of the instrument "Knowledge Economy at a Higher Level" in a Technological University of Southeast Mexico, aimed at students of careers related to engineering and technology. The relevance of this study lies in understanding the generation, dissemination and application of new knowledge in the economy, fundamental aspects to promote innovation and technological progress for the economic growth of a state.

Abstract		
Objective	Methodology	Contribution
Investigate students' perspectives on the knowledge economy and their professional development.	Quantitative with a descriptive transectional design	Promote technological progress for economic growth through the training of its students.



Resumen

El objetivo principal de este estudio fue investigar las perspectivas de los estudiantes sobre cómo aprovechar las oportunidades que la economía del conocimiento les brinda para su desarrollo profesional y futura incursión en la vida laboral, tomando en cuenta cuatro variables específicas: movilidad internacional, creatividad e innovación, registro de patentes y modelos de utilidad, y dominio del idioma inglés. Se empleó una metodología cuantitativa con un diseño transectional descriptivo para abordar las preguntas de investigación, enfocándose en criterios que garantizaran la observación y medición del problema. La recolección de datos se llevó a cabo mediante la aplicación del instrumento "Economía del Conocimiento a Nivel Superior" en una Universidad Tecnológica del Sureste de México, dirigido a estudiantes de carreras relacionadas con ingenierías y tecnologías. La relevancia de este estudio radica en comprender la generación, difusión y aplicación de nuevos conocimientos en la economía, aspectos fundamentales para impulsar la innovación y el progreso tecnológico para el crecimiento económico de un estado.

Resumen		
Objetivo	Metodología	Contribución
Investigar las perspectivas de los estudiantes sobre la economía del conocimiento y su desarrollo profesional.	Cuantitativa con un diseño transectional descriptivo	Impulsar el progreso tecnológico para el crecimiento económico a partir de la formación de sus estudiantes.



Knowledge economy, Creativity, Innovation

Economía del conocimiento, Creatividad, Innovación

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Peer review under the responsibility of the Scientific Committee MARVID® in the contribution to the scientific, technological and innovation Peer Review Process through the training of Human Resources for the continuity in the Critical Analysis of International Research.



Introduction

Today, in a world driven by rapid technological advances and hyper-connected globally, the knowledge economy emerges as a central factor in the economic and social growth of nations, through the vocational training of their young students. In this scenario, the ability to acquire, process and apply knowledge becomes determinant for competitiveness and progress in all aspects of life.

University students in Mexico face this challenge, immersed in a social, educational and work environment that increasingly demands skills in areas of innovation, technology and creativity.

The aim of this research is to explore how university students prepare themselves for the challenges and opportunities arising in the context of the knowledge economy. Specifically, it aims to analyse how they interpret and manage aspects such as international mobility, creativity and innovation, patent protection, language skills and other elements relevant to their successful insertion in this constantly changing economic environment.

For this purpose, a quantitative study was carried out in which the instrument 'Economics of Knowledge at Higher Level' was administered to students from different disciplines at a university in Cancun. It is anticipated that the findings of this study will provide information on students' experiences, opinions and requirements in relation to the knowledge economy, according to Oppenheimer (2023), as well as on the possibilities for improvement in both educational and employment settings.

Understanding how university students in Mexico adjust to and prepare for the challenges of the knowledge economy can help identify strategies and policies that foster their full development and contribute to the country's progress towards a more innovative, inclusive and competitive society.

In the knowledge economy, intellectual capital, innovation and the ability to learn and adapt become essential to the success of businesses and economies in general.

This means that education, research and technological development become increasingly important as drivers of economic growth and competitiveness.

Furthermore, this economy promotes collaboration and interaction in global networks, which facilitates knowledge transfer and value creation at the international level, (Oppenheimer, 2023).

Problem statement

The rapid transformation of global economic and social paradigms by the knowledge economy has generated new opportunities and challenges for contemporary societies.

In this scenario, university students occupy a strategic position, as they represent today's human capital that will drive innovation, competitiveness and economic development of our nation.

Despite the growing importance of the knowledge economy, there is a gap between the conventional approach to higher education and the needs of the labour market in this new economic reality.

The question then arises as to how university students are preparing themselves to meet the challenges and take advantage of the opportunities presented by the knowledge economy.

Research objectives

Overall objective

To understand students' perspectives on taking advantage of opportunities in the knowledge economy.

Specific Aims

To identify the extent to which students are internationally mobile in relation to the development of innovative skills.

To find out the level of creativity and innovation oriented to the satisfaction of needs in the knowledge economy.

To find out the degree of protection of the technological projects they develop in terms of patents, utility models, industrial designs and copyrights.

To describe their command of the English language for insertion into global markets.

Research questions

What is the degree of international mobility of students related to the development of innovative skills?

What is the level of creativity and innovation oriented to the satisfaction of needs in the knowledge economy?

What is the degree of protection of the technological projects they develop in terms of patents, utility models, industrial designs and copyrights?

What is their level of English language proficiency in order to enter global markets?

Inquiring into these questions will enable a better understanding of the needs, challenges and opportunities faced by university students in the knowledge economy, and will also facilitate the identification of viable measures to improve their training and encourage their participation in the economic and social progress of the country.

Rationale

There are few options that nations have to consolidate themselves as global economic powers, and one of them is growth and development in the knowledge economy through their institutional apparatus.

And this is where higher education institutions play an important role in the formation of innovative brains that contribute to the technological and digital development that dominates our way of life today.

Certainly, the vision towards innovation has to come from governments, from public policies and from budgets, however, having an innovative mindset should be fostered and procured from schools, as it is there where we have momentarily captive the brains that will provide solutions to modern challenges.

Focusing on innovation skills and creativity may be the key to generate the economic independence that Mexico is experiencing. Betting on our students and believing in them should be the culture that should be fostered.

Higher education students have a fundamental role to play in the economic and social progress of our country. Improving their preparation for the knowledge economy can generate the factor required to position ourselves as an internationally competitive nation.

According to Villasana et al (2021), some of the benefits found in the application of strategies that promote knowledge management in students are:

- Increase creativity
- Generate new ideas
- Improving innovation capacity
- Helping companies to be faster, more efficient or innovative than their competitors
- Tackle environmental challenges and maintain market competitiveness
- Improve performance, with a focus on improving efficiency, effectiveness and innovation
- Achieve goals and optimise the decision-making process
- Acquire competitive capability to ensure your ability to survive
- Get the most value from existing knowledge
- Promote organisational skills and value creation
- Identify and utilise existing intangible assets
- generate new intangible assets
- Smooth functioning of processes in the organisation
- Contribute to decision making to improve the viability and durability of the organisation and generate competitive advantage
- Providing value to the organisation to achieve unique core skills or abilities
- Increase organisational knowledge production
- Improve people's understanding of specific areas of interest.

Theoretical framework

Knowledge Management

Knowledge capital is increasingly being recognised as the main distinctive asset of companies. In recent decades, the development of this concept has evolved in parallel with the endless technologies that are part of the current digital revolution.

Initially, these technologies were used simply to support data processing, but over time they have evolved into increasingly sophisticated information systems with broader functionalities. Today, new digital technologies enable us to analyse and forecast future events, and to reflect on the past in order to make informed decisions (Casado, 2020).

According to Girard and Ribière (2016), in relation to the future of knowledge management, which has been the area of greatest interest to both academics and practitioners since its inception, there is a convergence in the recognition that organisations are increasingly dependent on knowledge for their operations and competitiveness: knowledge economy.

Consequently, the central point of debate remains whether it will retain its current name of 'knowledge management' and continue to be managed by a 'knowledge management department', or whether it will become a mainstream approach integrated into all organisational activities and disciplines at different levels.

From this approach, the success of knowledge management in an institution is linked to the ability to leverage diverse knowledge to move to new stages, which can enhance existing organisational actions or lay the foundation for future initiatives.

This process drives innovative performance and orients the organisation's knowledge system towards the generation of new ideas, which in turn strengthens innovation capabilities (Rubier, 2019).

Another future challenge lies in the integration of knowledge management with Industry 4.0.

This term alludes to the fourth industrial revolution driven by digital transformation, which implies a reorganisation and management of the sector's value chain, marking a significant change (Buisán & Valdés, 2017).

On the other hand, Blanco et al. (2017) detailed the nine technologies that are transforming industrial production, as presented in Figure 3, these include big data analysis, autonomous robots, simulation, horizontal and vertical systems integration, industrial internet of things, cyber security, cloud computing, additive manufacturing and augmented reality.

In conclusion, the knowledge economy focuses on generating economic value by creating, obtaining and applying knowledge. Understanding this process is essential to stimulate innovation in various fields and drive sustainable economic growth.

Methodology to be developed

The research adopted a quantitative approach with a descriptive cross-sectional design, focusing on criteria that ensured the observability and measurability of the problem.

The data collection was carried out in a Technological University in the Southeast of Mexico, with a population of engineering and technology students.

Sample

The research sample consisted of 81 students. Of the total number of participants, 82.7% (67 students) were male and 17.3% (14 students) were female.

The age ranged from 18 to 22 years, with an average of 19 years.

This information provides an overview of the profile of the students who participated in the study.

Instrument

The instrument administered for data collection was called 'Economics of Knowledge at Higher Level', which allowed for the collection of data on the four variables studied:

1. International mobility: the current definition of international mobility, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022), refers to the movement of people across national borders for the purpose of participating in educational, academic, employment or cultural activities in a country other than that of their habitual residence.

This concept has been widely accepted internationally and is used by various institutions and organisations to understand and manage flows of people globally.

2. Language proficiency: Language proficiency refers to the level of competence and skill that a person possesses in that language. It includes the ability to understand, speak, read and write in the language in question. This proficiency can range from basic to advanced or native levels, and is assessed by taking into account different aspects such as grammar, vocabulary, pronunciation, fluency and oral and written comprehension (Urriza, 2019).
3. Creativity and innovation: Creativity refers to the ability to generate original, useful and appropriate ideas in different contexts, whether in art, science, business or any other area. It involves thinking unconventionally, solving problems inventively and finding new ways to address challenges.

Innovation, on the other hand, refers to the process of putting these creative ideas into practice to generate value. This may involve the introduction of new products, services, processes or business models that meet market needs in unique or improved ways. Innovation can arise from both the implementation of new ideas and the continuous improvement of existing ones.

In short, creativity is the engine that drives the generation of ideas, while innovation is the process of turning those ideas into reality and creating value (St. Lucia Impulsa, 2022).

Patents and utility models: An invention refers to any human creation that enables the transformation of matter or energy existing in nature in order to satisfy specific human needs. The products or processes eligible for protection by an invention are diverse and cover numerous human needs, such as telecommunications, fashion, food, medicines, biotechnology, among others.

Each invention specialises in a specific technical area and requires a corresponding degree of specialisation in science, art or technology (Instituto Mexicano de la Propiedad Industrial [IMPI], n.d.).

Validity of the instrument

The assessment of the content and structural validity of the instrument was carried out through a judgement by six experts. All the participants had doctoral degrees and were part of academic bodies in education and educational technologies, in consolidation.

In order to carry out this evaluation, they were provided with the questionnaire developed together with the research problem, as well as the general and specific objectives, which allowed them to contextualise the elaborated instrument. These experts were specialised in the subject matter in question, and adjustments were made to improve the instrument.

Results

With regard to the research questions, the results obtained are as follows:

What is the degree of international mobility that students have related to the development of innovative skills?

Of the 81 participants, only one student has participated in international mobility programmes. This result indicates an absence of opportunity or low interest in international exchange programmes among the student subjects.

This finding may reflect a lack of promotion of the programmes or economic and logistical barriers to student mobility.

What is the level of need-oriented creativity and innovation in the knowledge economy?

In terms of creativity and innovation, 9.9% (8 students) reported to have developed some product or service during their academic training (see Table 1).

Products mentioned include parking system, automated pollinator garden, SOS bracelet, development of API's .

Box 1

Table 1

Have you created or innovated any product or service during your time at university?

		Frequency	Percentage	Percentage valid	Cumulative percentage
Válido	No	73	90.1	90.1	90.1
	Si	8	9.9	9.9	100.0
	Total	81	100.0	100.0	

What is the degree of protection of the technological projects you develop in terms of patents, utility models, industrial designs and copyrights?

Of the products and services only 5.9% (2 projects) have been patented, see Table 2. This result suggests that, although there is a capacity for innovation and creativity among the students, there is a significant gap between the creation of innovations and their formalisation through patent registration.

This finding highlights the need to provide more support and guidance to students in the patenting process, as well as to foster a culture of intellectual protection.

Box 2

Table 2

Has the product or service been patented?

		Frequency	Percentage	Percentage valid	Cumulative percentage
Valid	No	32	39.5	94.1	94.1
	YES	2	2.5	5.9	100.0
	Total	34	42.0	100.0	
Lost	System	47	58.0		
	Total	81	100.0		

What is their level of English language proficiency for entry into global markets?

Regarding language proficiency, 32.1% (26 students) reported being proficient in English, while 58% (47 students) reported not being proficient in any language. See Table 3.

This finding suggests that, although English is commonly spoken, proficiency in the third language is low among students.

This situation could limit students' opportunities in an increasingly globalised labour market, where multilingualism is a significant competitive advantage. It is crucial that the university promotes and facilitates the learning of other languages, perhaps through exchange programmes, additional classes, or online resources.

Box 3

Table 3

Which foreign languages are you fluent in?

		Frequency	Percentage	Percentage valid	Cumulative percentage
Valid	French	1	1.2	1.2	1.2
	English	26	32.1	32.1	33.3
	English, French	1	1.2	1.2	34.6
	English, French, Other	1	1.2	1.2	35.8
	English, None	1	1.2	1.2	37.0
	English, Other	2	2.5	2.5	39.5
	None	47	58.0	58.0	97.5
	Other	2	2.5	2.5	100.0
	Total	81	100.0	100.0	

Conclusions

In accordance with the general objective of this research, the students' perspectives on taking advantage of opportunities in the knowledge economy are presented.

The results of this research highlight key areas of student learning. Lack of participation in international mobility programmes can be due to a number of factors, including lack of information and financial barriers. The university should consider actively promoting these programmes and provide financial and logistical support to facilitate student participation.

In terms of creativity and innovation, while there is minimal product and service development, the lack of patents suggests a gap in the knowledge and resources available to protect these innovations. The implementation of intellectual property training programmes and the creation of a supportive environment for patenting can be important steps towards closing this gap.

Language proficiency remains a crucial competence in the knowledge economy. English proficiency among students is positive, but there is a need to increase it and also to reinforce the need for a third language. This could include the provision of additional courses, language exchanges and the use of technology for language learning.

In summary, the results of this research show that although there is some inclination towards creativity and innovation among students at this university, this does not translate into international mobility and patenting.

Participation in international mobility is almost nil, suggesting the need to further promote these opportunities and remove barriers to participation. Despite the capacity for innovation, the lack of patents indicates a need for additional support in the protection of intellectual property.

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Declarations

Conflict of interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or personal relationships that might have appeared to influence the article reported in this paper.

Authors' contributions

Preza-Medina, Sergio Roberto: Research leader
Hernández Chacón, Sandra: especialista metodologías cuantitativas y análisis de datos/
quantitative methodologies and data analysis specialist

López-Cetina, Yamit: Specialist in quantitative methodologies and data collection/
metodologías cuantitativas y recolección de datos/
quantitative methodologies and data collection specialist

Peña-Santoyo, Kermin Dayan: recolección e interpretación de datos/
data collection and interpretation

Availability of data and materials

- Data openly available in a public repository that issues datasets with DOIs
- Data openly available from a public repository that does not issue DOIs

- Data derived from public domain resources.
- Data available on request to authors.
- Data openly available in a public repository that issues datasets with DOIs
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- Data derived from public domain resources
- Data available on request from the authors

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Abbreviations

API application programming interface

IMPI Mexican Institute of Industrial Property

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Anxiety and money management

Ansiedad y gestión del dinero

Sandoval-Palomares, Jessica* ^a^a  Universidad Tecnológica de León  S-9841-2018  0000-0002-3294-0916  827848

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* ✉ [\[ejemplo@ejemplo.org\]](mailto:[ejemplo@ejemplo.org])

Abstract

The generation of stress and financial anxiety is the result of a person's inability to cope with adversities and unforeseen events of an economic nature, poor financial education and poor management of money, which can arise at any time. Thus, this research seeks to identify the presence of psychosocial factors that people do not know how to recognize, associated with the interpretation of reality that converges between the subjective and objective, between a present desire and the anguish of the future. A lack of cognitive capacity to unravel the psychological networks created by the individual for several years, based on beliefs, experiences and bad habits, mostly physical and cognitive - economic. Being a non-experimental, exploratory type of research, with a quantitative approach, using the inductive, analytical-synthetic method. Taking as a sample, 219 people between 20 and 40 years old, currently working and studying, using a questionnaire of 22 questions on a Likert scale. Which shows little information on financial issues, lack of knowledge of the symptoms and emotions that can arise as a result of stress and financial anxiety. Concluding that continuing education in financial issues and money management is necessary and indispensable; as well as recognizing that anyone can experience stress and anxiety in various contexts and going to specialized doctors for optimal treatment using therapies such as Gestalt that serve as a catalyst for emotions.

Objective	Methodology	Conclusion
Identify the presence of psychosocial factors that people do not know how to recognize, associated with the interpretation of reality that converges between the subjective and the objective, between a present desire and the anguish of the future.	It is a non-experimental, exploratory, quantitative approach research, using the inductive, analytical-synthetic method. Taking as a sample, 219 people between 20 and 40 years old, currently working and studying, using a questionnaire of 22 questions on a Likert scale.	Continuing education on financial issues and money management is necessary and indispensable, as well as recognizing that stress and anxiety can occur in any person in various contexts and to see specialized doctors for optimal treatment using therapies such as Gestalt that serve as a catalyst for emotions.

Money management, Financial stress and anxiety, Emotions

Resumen

La generación de estrés y ansiedad financiera son resultado de la incapacidad por parte de las persona para hacer frente a las adversidades e imprevistos de carácter económico, escasa educación financiera y un mal manejo de la gestión del dinero, que pueden llegar a presentarse en cualquier momento. Es así que la presente investigación busca identificar la presencia de factores psicosociales que las personas no saben reconocer, asociados a la interpretación de la realidad que converge entre lo subjetivo y objetivo, entre un deseo presente y la angustia del porvenir futuro. Una falta de capacidad cognitiva para desentrañar las redes psicológicas creadas por el individuo por varios años, con base en creencias, experiencias y malos hábitos en su mayoría físicos y cognitivos - económicos. Siendo una investigación de tipo no experimental, exploratorio, con enfoque cuantitativo, empleando el método inductivo, analítico-sintético. Tomando como muestra, 219 personas entre 20 y 40 años, actualmente laborando y estudiando, utilizando un cuestionario de 22 preguntas en escala Likert. La cual evidencia poca información en temas financieros, falta de conocimiento de los síntomas y emociones que pueden llegar a surgir consecuencia de estrés y ansiedad financiera. Concluyendo que es necesaria e indispensable la educación continua en temas financieros y gestión del dinero; así como reconocer que el estrés y ansiedad cualquier persona puede presentar en diversos contextos y acudir a médicos especializados para su óptimo tratamiento haciendo uso de terapias como la Gestalt que sirvan de catalizador de las emociones.

Objetivo	Metodología	Conclusión
Identificar la presencia de factores psicosociales que las personas no saben reconocer, asociados a la interpretación de la realidad que converge entre lo subjetivo y objetivo, entre un deseo presente y la angustia del porvenir futuro	Siendo una investigación de tipo no experimental, exploratorio, con enfoque cuantitativo, empleando el método inductivo, analítico-sintético. Tomando como muestra, 219 personas entre 20 y 40 años, actualmente laborando y estudiando, utilizando un cuestionario de 22 preguntas en escala Likert	Es necesaria e indispensable la educación continua en temas financieros y gestión del dinero; así como reconocer que el estrés y ansiedad cualquier persona puede presentar en diversos contextos y acudir a médicos especializados para su óptimo tratamiento haciendo uso de terapias como la Gestalt que sirvan de catalizador de las emociones

Gestión del dinero, Estrés y ansiedad financiera, Emociones

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Peer review under the responsibility of the Scientific Committee MARVID®- in the contribution to the scientific, technological and innovation Peer Review Process through the training of Human Resources for the continuity in the Critical Analysis of International Research.



Introduction

The aim of this study is to identify the external and internal factors that have an impact on the financial decision-making of people between 25 and 40 years of age currently studying and working, within a society overwhelmed by aggressive advertising for consumption and unplanned spending as a result of a lack of financial education and the application of bad habits in relation to money management, mostly based on cultural beliefs and practices.

Chronic indebtedness, sharpened and guided by impulses and emotions within the reach of a technology that provides us with the necessary means to shorten the distance by making instant purchases, which in most cases are based on a momentary pleasure and lack of functional objective only to satisfy a desire.

The lack of financial strategies, objectives and goals at different levels: personal, couple and family, can become stressors that impair the quality of life in the physical, emotional and psychological spheres of people, resulting in satisfaction or dissatisfaction which will translate into a degree of financial stress (Joo, 1998). Financial anxiety is considered a syndrome whereby people manifest discomfort, as well as unhealthy attitudes, resulting from disengagement and inefficient management of their personal finances (Burchell 2003).

Therefore the importance of adequate mental health equates to having an appropriate response to normal life stresses, productive performance at work and in the community according to the (WHO). Thus, mental health serves as the main focus for dealing with stress and possible anxiety disorders associated with financial issues.

Miguel-Tobal (1996) summarises that anxiety is an emotional reaction to the perception of a danger or threat, manifesting itself through a set of responses grouped into three systems: cognitive or subjective, physiological or bodily and motor, which can act with a certain degree of independence. Thus, the causal relationship between stress and financial anxiety is strongly linked to impulses and emotions related in most cases to a generalised and instantaneous desire for satisfaction, which derives in contrast to the objectivity of the desire itself.

Theoretical framework

The concepts of gender and consumption appear related in the classic work of the sociology of consumption that combines concepts of gender and consumption, namely the theory of the idle class. At the end of the 19th century, Veblen (1974) points out that consumption is a feminine domain because it is through it that women express their social status as wives, in what is known as vicarious consumption, a consumption that socially represents the status of the head of the household.

Campbell (1989) shows how consumption is related to the romantic ethic of the 18th century, relating to emotions, sensations and desires. Whereas masculinity is related to productivity, rationality, utility and practicality.

In the beginning of consumer societies, it was already established as a domain for women. It is about women who come from families with adequate resources to free them from the work that most of them do, yet they are subjected to standards of representation of the status of the same families. A space for women, but for a privileged and subordinated minority.

If the universe of consumption has been created for a minority of privileged social groups, the majority of the population has access to consumption through the purchase of goods necessary for the reproduction of life. In patriarchal societies, women have been forced to assume domestic and family responsibilities, including consumption.

A range of purchases and consumption are necessary to care for and maintain a household and family. From difficult times to current times of overconsumption, women have been in charge of buying and manufacturing the goods and products needed for the whole family, from self-consumption to overconsumption. Therefore, the world of purchasing and consumption has been related to women and femininity both from the dominant social positions and from the most needy groups.

A femininity that seeks to flee and deny any relationship with work, responsibility, organisation, efficiency and rationality, which are more typical of the productive and therefore masculine sphere of work, from consumption (Guzmán-Fernández, 2022).

This is why the female perception of consumption is constructed and reconstructed from the sphere of emotions, feelings, desires, lack of willpower, whims, impulses and the festive and pleasurable, as well as the degree of anxiety when faced with purchases and the use of money. According to Pinto (1990), with the emergence of mass consumption, it seems that the managerial housewife model has disappeared or deteriorated in favour of the consumer model. In our societies, a model of home-consumption is established in which only the playful and pleasurable dimension is important, hiding or adding a festive component to domestic work. For example, one can observe advertisements for electronic devices that present the home as a place where no work is done, and when the connection between the domestic task and the use of the electronic device is established, a combination of leisure and work is created. The kitchen is no longer a place where women work, but a modern, technified place where they entertain themselves. Consumption has been characterised by the transformation of the spheres and spheres where femininity takes place, from obligatory and working spheres to festive spheres, such as shopping, cooking, washing, etc.

This construction of the imaginary of consumption associated with femininity has permeated our society in such a way that in youth culture, certain groups of young people associate resistance to the commercial as a sign of strength and judgement, while the absence of this resistance is associated with conformism associated with femininity (Martínez, 2002). However, the social imaginary of masculinity is based on being the leader of the family, that is, the one who is responsible for providing the family unit with financial income to buy the goods and services essential for its sustenance. Thus, work, production and the values related to this field are values that belong to men. As mentioned, rationality, efficiency, willpower and responsibility are almost exclusively male characteristics.

However, what defines this masculinity is not limited to sharing these values, but also to opposing and rejecting anything related to femininity. Traditionally, men have been denied or restricted from expressing emotions, desires, feelings, etc. so that the public expression of these emotions could not be considered too feminine.

The limitation of masculinity in terms of productive values applies not only in the public sphere, but also in the private sphere, in the home, where the woman takes centre stage. Men become passive and receptive to women's care and attention. The consumer society does nothing but encourage this mentality (Charris, 2015).

Advertising has reinforced the sexual division of labour. Most advertisements in which women are the main target are related to the home, the field of consumption par excellence, reinforcing the idea that the home is a space for women.

This is not because women are the only consumers, but because, due to their gender condition, they are in charge of buying food, cleaning and other services for the enjoyment and wellbeing of the whole family, assuming the enormous burden of anxiety that this entails.

Herrero (1996) points out in her analysis of advertisements that men only appear inside the home in three ways: in a passive attitude or waiting for the woman in most cases, carrying out domestic chores on rare occasions and when they are carried out, they are previously organised by the woman.

Last but not least, when the man lives alone and does not have a woman to help with the housework. In addition, men participate in the household individually and for themselves, unlike women, who always do it for the benefit of all members of the family.

In other words, he limits himself to the values that already exist. Men participate in the household individually and for themselves, unlike women, who always do so for the benefit of all members of the family.

This imaginary is built up from childhood through the processes of socialisation and consumption at this age and only strengthens this separation. Studies by Díaz and Orol (1998) show how this construction of masculine and feminine has a significant impact on the choice of toys and gifts in childhood. These studies show that boys are highly specialised in sports and girls are highly specialised in fashion. Football players are the ideal role models for boys and *top models* will be the idealisation for girls.

In order to understand the disparities and inequalities that originate mainly on gender grounds, a problem arises that, although unjustified, has arisen when looking at gender and class as important parts of the social structure in explaining women's economic inequality.

A specific position in the world of work, or even the lack of it (for many women), and the existence or lack of an income of their own place women in unequal positions at the outset. On the other hand, it has been observed on a day-to-day basis that not all the money the husband earns goes to the family community. Husbands believe that the money the wife earns goes to her expenses, but in practice it is spent on the household.

To deepen this inequality at the level of perceptions, it is shown how the needs of mothers and wives are considered less important by the rest of the household.

Thus, money acquired through work has an important relevance in people's lives. The financial resource will play a more important role in society, and it is through the individual and collective perception of money that one plans, fantasises, creates, dreams, invests, exchanges, acquires status, power, recognition, health, success, tranquillity, balance, happiness and peace, however, it will also be an agent of stress, anxiety and physical-mental problems, i.e. through money one will live positively or negatively.

Money according to Raccanello, & Herrera (2014). Is 'a set of assets in an economy that people are regularly willing to use as a means of payment to buy and sell goods and services. Money is much more often intrinsically worthless, like banknotes.

Money with no intrinsic value is known as fiat money, which has no material value, but has value simply because a nation collectively agrees to assign it. Money works because people believe it will'. Thus, as a product of individual and collective perception, money gives meaning to the external material world around us. And, therefore, the material acquisitions one has will provide a degree of satisfaction, relative in many cases.

This leads us to identify that, in Mexico, in general, financial education has been relegated as a non-relevant topic for the population, particularly for women, causing a lack of literacy in an area that is becoming increasingly important, not only at the individual-family level, but also within an economy where its participants lack the basic and indispensable tools to cope with change.

According to Olmedo (2009), financial literacy implies a process that provides the necessary tools to understand and interpret the economic world.

This lack of financial literacy will be associated with socio-economic status, gender, age, level of schooling, cultural factors and other aspects linked to race or ethnicity (Gil, 2009).

Financial health

Financial health is an indispensable issue for women, who, due to multiple personal, intrapersonal, family, social, educational and economic factors, have modified their patterns of behaviour in daily spending and saving.

History, culture and assumed roles have led to senseless purchases and bad experiences derived from generalised, chronic and unstoppable indebtedness, triggering a variety of physiological and psychological reactions that can become a major health problem if not addressed in time.

Concepts such as personal finance management, financial education, appropriate decision making, among others, are aspects that people must manage in order to achieve adequate control of their income and expenses, and thus avoid risks at a personal or family level Wei, H and Chen, J. (2013).

Therefore, in order to achieve a radical change in money management, it is essential to identify the cross-cutting variables that impact on financial decision-making.

In a society that has learned excessive consumption and daily spending, women learning adequate financial planning contributes to the achievement of objectives and goals, in addition to improving their standard of living.

According to Alvarado and Alvarado-García, P. (2020), the best way to achieve these financial goals is through proper personal financial planning, defining a clear short- and long-term path, with specific financial strategies to achieve them.

Personal and/or family financial planning will be closely correlated with family upbringing, personal experience with money management, social and gender myths and beliefs historically held on the subject.

Most life plans are linked to the correct management of individual and family budgets. Therefore, in order to achieve dreams, goals and objectives, improve quality of life, increase wealth, take care of health issues, and be prepared for life's unexpected events, it is necessary to carry out several simple but effective financial strategies.

Financial Anxiety

Excessive consumption will directly affect the ability to pay off the accumulation of acquired debts, together with the inadequate management of women's emotions derived from financial issues, will cause them to begin to present risk factors related to stress and financial anxiety. Mejía Córdova (2017) states that financial anxiety occurs due to factors such as high levels of indebtedness, low savings and economic recession.

Financial stress is associated with decreased physical health, such as increased headaches, stomachaches and insomnia. In addition, women who have a high amount of financial stress are likely to experience high levels of depression and depression is directly associated with worsening physical health (Saavedra, 2023).

Financial stressors occur when there is less money in the budget or income, so it is necessary to cut back on health care and pay more for basic food necessities that cause people to feel frustration and a sense of hopelessness as debts pile up and the amount of money increases just to pay interest. This causes additional stress, which compounds the stress of poor coping to become a threatening amount of stress (Sierra, Ortega, and Zubeidat, 2023).

For its part, financial anxiety is a transitory emotional state generated by economic uncertainty, which a person may go through at any given time and is linked to subjective feelings of tension, apprehension, nervousness and discomfort, evidencing discomfort, worry, and motor restlessness (Medina-Mora, Rascon, Tapia, Mariño, Juarez, Villatoro, Caraveo, Gomez, 1992).

The present study analyses the perception of 271 people, measured with an instrument that measures anxiety and finances; 161 women and 110 men responded; the analysis presented here shows the responses exclusively from women: when talking about their marital status, 77.1% are single, 14% are married, 5.9% live in free unions, 1.8% are divorced and only 1.1% are single.

In relation to children, 21.8% mentioned being mothers of a family, while 78.2% were not mothers. 93.7% mentioned that they were currently working, while 6.3% did not work. Likewise, 83.4% are studying for a Bachelor's degree and 16.6% are studying for a Master's degree.

The results of the instrument are presented below: When asked whether their finances are healthy, 40.3% answered in the negative, 59.7% considered that they are. On the question, 'Do you plan your expenses and purchases in advance?', only 11.4% answered yes, always; 41% indicated that almost always, the rest were almost equally distributed in the answers: occasionally, almost never and never.

When asked the question: Do you make impulse purchases, 41.3% answered occasionally, 14.7% answered yes, and 44% mentioned that they do not do so, either never or almost never.

To the question: How often do you save to solve health or financial emergencies, etc.? 31.7% answered never or almost never, 33.9% occasionally, and 34.4% said that this is an activity that they do. In the case of the question 'If you are currently in debt, do you consider it a problem?' It is very interesting that both the answer of never and that of not having debts, obtained the same percentage, 18.6%; however, when asked about anxiety and stress due to debts, 49.6% mentioned that occasionally, which contradicts the answer to the previous question.

When asked about the symptoms of stress or anxiety about debts, 55.8% are aware of them; interestingly, 48% do not know what actions to take to manage or eliminate this stress. Leading 33.5% to ask for some kind of support, either from family members or specialists.

However, 71.4 % do not take specific actions to mitigate financial anxiety. This leads 46.3% to present some kind of bodily discomfort such as headaches, stomach aches, backaches, etc. 37.3% even present anger, bad moods or crying in the face of the situation. The results indicate that 61.1% have difficulty in managing their emotions due to the anxiety they feel because of the debt.

Conclusions

Far from being egalitarian, consumption is one of the areas that establishes and reproduces gender inequality.

Although it is difficult to see this inequality through quantitative data, efforts to dimension domestic-family work are increasingly necessary, demonstrating the situation of women's overload. Moreover, consumption has become an additional area.

Although men's participation in consumption has been discussed from different theoretical positions and marketing strategies, it embodies those structural aspects that shape femininity and that continue to configure a feminine imaginary of consumption.

Beyond changes in fashion, aesthetics in dress and concern for the body, the new man is not to be found in this sphere of consumption, but rather in the domestic-family space. The question is whether changes are taking place that will lead to more egalitarian societies in terms of work and domestic responsibility.

The majority of men do not struggle, do not find meaning, do not value, and are not willing to assume and enter the private sphere represented by domestic-family work, according to data and scholars of this domestic-family work. Consumption as a social practice is another area where these disparities are reflected.

On the other hand, the belief that in order to create a credit history it is necessary to get into debt with all financial institutions, gives rise to the presence of financial problems that can last for years or decades to pay off the debt, which is why having an adequate financial education from a young age becomes fundamental to create awareness in women about spending, debts, illness, financial pillars, which leads to forging financial health.

Indebtedness is not only about acquiring or buying non-essential items, it is also present when people make plans for the future by making use of an income they do not yet have and hope to obtain, without the certainty that current conditions may change from one moment to the next, generating constant uncertainty about how to pay off the debts they are thinking of acquiring.

Such situations can become stressors that impact on their physical and mental quality of life. A radical change in lifestyle will provide the balance necessary for women to be functional in their environment and at the same time be aware of the external and internal factors that influence their decision making and quality of life.

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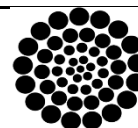
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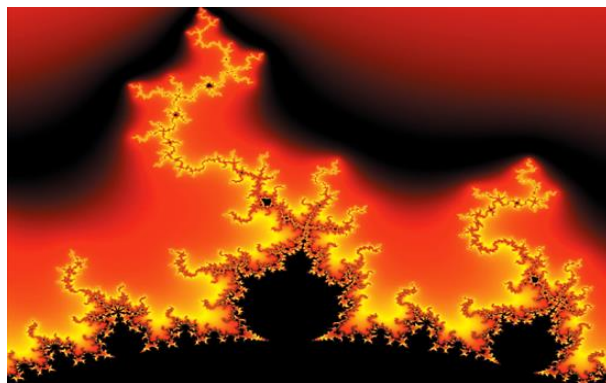


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