Volume 7, Issue 13 – July – December – 2023

Journal-Schools of economic thought and Methology

ISSN-On line 2523-6997

RINOE®

RINOE-Cameroon

Editor in chief
GUZMÁN - HURTADO, Juan Luis. PhD

Executive director
RAMOS-ESCAMILLA, María. PhD

Editorial Director
PERALTA-CASTRO, Enrique. MsC

Web designer
ESCAMILLA-BOUCHAN, Imelda. PhD

Web Diagrammer
LUNA-SOTO, Vladimir. PhD

Editorial Assistants
SORIANO-VELASCO, Jesús. BsC

Philologist
RAMOS-ARANCIBIA, Alejandra. BsC

Journal - Schools of economic Thought and Methology, Volume 7, Issue 13, July - December 2023 is a journal edited semestral by RINOE. Boulevard de la Liberté, Immeuble Kassap, CP-5963.Akwa- Douala - Republic of Cameroon. WEB: www.rinoe.org journal@rinoe.org. Editor in Chief: GUZMÁN - HURTADO, Juan Luis. PhD. ISSN: 2523-6997. Responsible for the latest update of this number RINOE Computer Unit. ESCAMILLA-BOUCHÁN, Imelda. PhD, LUNA SOTO, Vladimir. PhD. S/C Zacharie kamaha, Street: Boulevard de la Liberté, Apartamente: Immeuble Kassap, Akwa- Douala. P.C.: 5963, Republic of Cameroon, last updated December 31, 2023.

The opinions expressed by the authors do not necessarily reflect the views of the editor of the publication.

It is strictly forbidden to reproduce any part of the contents and images of the publication without permission of the National Institute for the Defense of Competition and Protection of Intellectual Property.

Journal-Schools of economic Thought and Methology

Definition of the Journal

Scientific Objectives

Support the international scientific community in its written production Science, Technology and Innovation in the Field of Social Sciences, in Subdisciplines of Microeconomics, Macroeconomics, Econometrics, Quantitative studies, Socialist, Marxist, Historical, Institutional, Evolutionary; History of thought, Economic methodology, Current heterodox approaches.

RINOE® is a Scientific and Technological Company in contribution to the Human Resource training focused on the continuity in the critical analysis of International Research and is attached to CONAHCYT-RENIECYT number 1702902, its commitment is to disseminate research and contributions of the International Scientific Community, academic institutions, agencies and entities of the public and private sectors and contribute to the linking of researchers who carry out scientific activities, technological developments and training of specialized human resources with governments, companies and social organizations.

Encourage the interlocution of the International Scientific Community with other Study Centers in Mexico and abroad and promote a wide incorporation of academics, specialists and researchers to the publication in Science Structures of Autonomous Universities - State Public Universities - Federal IES - Polytechnic Universities - Technological Universities - Federal Technological Institutes - Normal Schools - Decentralized Technological Institutes - Intercultural Universities - S & T Councils - CONAHCYT Research Centers.

Scope, Coverage and Audience

Journal-Schools of economic Thought and Methology is a Journal edited by RINOE® in its Holding with repository in Cameroon, is a scientific publication arbitrated and indexed with semester periods. It supports a wide range of contents that are evaluated by academic peers by the Double-Blind method, around subjects related to the theory and practice of Microeconomics, Macroeconomics, Econometrics, Quantitative studies, Socialist, Marxist, Historical, Institutional, Evolutionary; History of thought, Economic methodology, Current heterodox approaches with diverse approaches and perspectives, That contribute to the diffusion of the development of Science Technology and Innovation that allow the arguments related to the decision making and influence in the formulation of international policies in the Field of Social Sciences. The editorial horizon of RINOE® extends beyond the academy and integrates other segments of research and analysis outside the scope, as long as they meet the requirements of rigorous argumentative and scientific, as well as addressing issues of general and current interest of the International Scientific Society.

Editorial Board

MONTERO - PANTOJA, Carlos. PhD
Universidad de Valladolid

MARTINEZ - LICONA, José Francisco. PhD
University of Lehman College

MOLAR - OROZCO, María Eugenia. PhD
Universidad Politécnica de Catalunya

ARELLANEZ - HERNÁNDEZ, Jorge Luis. PhD
Universidad Nacional Autónoma de México

HERNANDEZ-PADILLA, Juan Alberto. PhD
Universidad de Oviedo

BOJÓRQUEZ - MORALES, Gonzalo. PhD
Universidad de Colima

SANTOYO, Carlos. PhD
Universidad Nacional Autónoma de México

MERCADO - IBARRA, Santa Magdalena. PhD
Universidad de Barcelona

AZOR - HERNÁNDEZ, Ileana. PhD
Instituto Superior de Arte

OROZCO - RAMIREZ, Luz Adriana. PhD
Universidad de Sevilla

Arbitration Committee

GARCÍA - Y BARRAGÁN, Luis Felipe. PhD
Universidad Nacional Autónoma de México

VILLALOBOS - ALONZO, María de los Ángeles. PhD
Universidad Popular Autónoma del Estado de Puebla

ROMÁN - KALISCH, Manuel Arturo. PhD
Universidad Nacional Autónoma de México

CHAVEZ - GONZALEZ, Guadalupe. PhD
Universidad Autónoma de Nuevo León

DE LA MORA - ESPINOSA, Rosa Imelda. PhD
Universidad Autónoma de Querétaro

GARCÍA - VILLANUEVA, Jorge. PhD
Universidad Nacional Autónoma de México

LINDOR, Moïse. PhD
El Colegio de Tlaxcala

PADILLA - CASTRO, Laura. PhD
Universidad Autónoma del Estado de Morelos

CORTÉS, María de Lourdes Andrea. PhD
Instituto Tecnológico Superior de Juan Rodríguez

BAZÁN, Rodrigo. PhD
Universidad Autónoma del Estado de Morelos

MEDA - LARA, Rosa Martha. PhD
Universidad de Guadalajara

Assignment of Rights

The sending of an Article to Journal-Schools of economic Thought and Methology emanates the commitment of the author not to submit it simultaneously to the consideration of other series publications for it must complement the Originality Format for its Article.

The authors sign the Format of Authorization for their Article to be disseminated by means that RINOE® In its Holding Cameroon considers pertinent for disclosure and diffusion of its Article its Rights of Work.

Declaration of Authorship

Indicate the Name of Author and Coauthors at most in the participation of the Article and indicate in extensive the Institutional Affiliation indicating the Department.

Identify the Name of Author and Coauthors at most with the CVU Scholarship Number-PNPC or SNI-CONAHCYT- Indicating the Researcher Level and their Google Scholar Profile to verify their Citation Level and H index.

Identify the Name of Author and Coauthors at most in the Science and Technology Profiles widely accepted by the International Scientific Community ORC ID - Researcher ID Thomson - arXiv Author ID - PubMed Author ID - Open ID respectively.

Indicate the contact for correspondence to the Author (Mail and Telephone) and indicate the Researcher who contributes as the first Author of the Article.

Plagiarism Detection

All Articles will be tested by plagiarism software PLAGSCAN if a plagiarism level is detected Positive will not be sent to arbitration and will be rescinded of the reception of the Article notifying the Authors responsible, claiming that academic plagiarism is criminalized in the Penal Code.

Arbitration Process

All Articles will be evaluated by academic peers by the Double Blind method, the Arbitration Approval is a requirement for the Editorial Board to make a final decision that will be final in all cases. MARVID® is a derivative brand of ECORFAN® specialized in providing the expert evaluators all of them with Doctorate degree and distinction of International Researchers in the respective Councils of Science and Technology the counterpart of CONAHCYT for the chapters of America-Europe-Asia- Africa and Oceania. The identification of the authorship should only appear on a first removable page, in order to ensure that the Arbitration process is anonymous and covers the following stages: Identification of the Journal with its author occupation rate - Identification of Authors and Coauthors - Detection of plagiarism PLAGSCAN - Review of Formats of Authorization and Originality-Allocation to the Editorial Board-Allocation of the pair of Expert Arbitrators-Notification of Arbitration -Declaration of observations to the Author-Verification of Article Modified for Editing-Publication.

Instructions for Scientific, Technological and Innovation Publication

Knowledge Area

The works must be unpublished and refer to topics of Microeconomics, Macroeconomics, Econometrics, Quantitative studies, Socialist, Marxist, Historical, Institutional, Evolutionary; History of thought, Economic methodology, Current heterodox approaches and other topics related to Social Sciences.

Presentation of the content

In the first article we present, *Adjustment and validation of an instrument to measure procrastination in University students*, by BARRADAS-ARENAS, Ulises Daniel, VAZQUEZ, Ma. Rosario, CHURA-MAMANI, Juan Diego and EI HAMZAOUI, Youness, with adscription in the Universidad Autónoma del Carmen, in the next article we present, *Web Application Server for the publication of Integrative Projects of UTJ – CCD Students*, by GONZALEZ-DEL CASTILLO, Edgardo Emmanuel, LÓPEZ-LAGUNA, Ana Bertha, ROMOGONZALEZ, Ana Eugenia and MACÍAS-BRAMBILA, Hassem Rubén, with adscription in the Universidad Tecnológica de Jalisco, in the next article we present, *Prototype design education for the teaching of mechanism kinematics: Application to the Scotch yoke mechanism*, by PERERA-CORTEZ, Miguel Ángel, JACOBO-CORTEZ, Edgar Antonio, HIDALGO-ARCOS, Wilberth and ALMARAZ-CÁRDENAS, Dayana Nayely, with adscription in the Universidad Tecnológica de Campeche, in the last article we present, *Study of the quality of work life of university professors in México*, by QUIROZ-CAMPAS, Celia Yaneth, PELAYO-HERRERA, Elena Yoselin, MURILLO-FÉLIX, Cecilia Aurora and HINOJOSA-RODRÍGUEZ, Carlos Jesús, with adscription in the Instituto Tecnológico de Sonora.

Content

Article **Journal-Schools of economic Thought and Methology**
December, 2023 Vol.7 No.13 1-7

Adjustment and validation of an instrument to measure procrastination in University students

Ajuste y validación de un instrumento para medir la procrastinación en estudiantes Universitarios

BARRADAS-ARENAS, Ulises Daniel†*, VAZQUEZ, Ma. Rosario, CHURA-MAMANI, Juan Diego and EI HAMZAOUI, Youness

Universidad Autónoma del Carmen. Faculty Sciencie of Information

ID 1st Author: *Ulises Daniel, Barradas-Arenas* / **ORC ID**: 0000-0001-7122-6582, **CVU CONAHCYT ID**: 1006490

ID 1st Co-author: *Ma. Rosario, Vázquez* / **ORC ID**: 0000-0002-4570-2546, **CVU CONAHCYT ID:** 826502

ID 2nd Co-author: *Juan Diego, Chura-Mamani* / **ORC ID**: 0000-0003-3312-1514

ID 3rd Co-author: *Youness, EI Hamzaoui* / **ORC ID**: 0000-0001-5287-1594, **CVU CONAHCYT ID**: 292367

DOI: 10.35429/JSETM.2023.13.7.1.7 Received September 21, 2023; Accepted December 30, 2023

Abstract

This research work aimed study the psychometric proprieties about procrastination questionnaire resume and adjusted in the adapted scale of Tuckman and the version of the scale time management (TM), for this study it was used a quantitative methodology with a student population of 234 (129 women's and 105 mans) of the first grade in the science information, administrative economic and education faculties, to make respective analysis to questionnaire item's, it was obtained higher values of 0.30 in the corrected homogeneity, evidencing the significance in each reactive in the measurement of the variables, for the exploratory factorial analysis found with the proposal of four factors, to make confirmatory factorial analysis adjustment indices were obtained GFI = .836; AGFI = .778; CFI = .797; TLI = .756 y NFI = .730, at the same time, submit an Alpha of Cronbach coefficient of 0.893 and McDonald Omega of 0.896 , contributing reliability necessary the instrument, arrived at the conclusion with the instrument is suitable for the application in the region universities.

University procrastination, Measurement instrument, Adjustment index

Resumen

En este trabajo de investigación se tuvo como objetivo estudiar las propiedades psicométricas del cuestionario de procrastinación universitaria retomado y ajustado en la escala adaptada de Tuckman y la versión de la escala de gestión de tiempo (GT), para este estudio se utilizó una metodología de carácter cuantitativo con una población de 234 estudiantes (129 mujeres y 105 hombres) de los primeros semestres de las facultades de ciencias de la información, económico administrativas y educación, al realizar el análisis respectivo a los ítems del cuestionario, se obtuvo valores mayores de 0.30 en el de homogeneidad corregida, evidenciando la significatividad de cada reactivo en la medición de las variables, para el análisis factorial exploratorio se halló con la propuesta de cuatro factores, al realizar el análisis factorial confirmatorio se obtuvieron los índices de ajuste GFI = .836; AGFI = .778; CFI = .797; TLI = .756 y NFI = .730, a su vez, presento un coeficiente de Alfa de Cronbach de 0.893 y un Omega de Mcdonald de 0.896, aportando la confiabilidad necesaria al instrumento, llegando a la conclusión de que el instrumento es apto para su aplicación en universidades de la región.

Procrastinación universitaria, Instrumento de medición, Índice de ajuste

Citation: BARRADAS-ARENAS, Ulises Daniel, VAZQUEZ, Ma. Rosario, CHURA-MAMANI, Juan Diego and EI HAMZAOUI, Youness. Adjustment and validation of an instrument to measure procrastination in University students. Journal Schools of economic Thought and Methology. 2023. 7-13: 1-7

.

* Correspondence to the Author (e-mail: ubarradas@pampano.unacar.mx)
† Researcher contributing as first author.

Introduction

Procrastination has now become common in the university student community. Procrastination is also known as procrastination and has had serious consequences on student performance. Procrastination can be classified as active and passive. In active procrastination the student has the ability to procrastinate activities in such a way that satisfactory results can be achieved. On the other hand, passive procrastination is based on postponing activities to the last minute, so that in most cases the activities lack quality and relevance (Suárez & Feliciano-García, 2020).

In general, university students who constantly delay their tasks have as a main characteristic promises of future fulfilment, avoid guilt, especially in activities that require greater effort (Ramos-Galarza et al., 2017), and are habitually inclined to consume time using the internet to carry out pleasurable activities with minimal effort (Hidalgo-Fuentes, 2022).

It should be noted that information and communication technologies have a direct impact on procrastination, such as the addiction to social networks that causes 80.9% of students to postpone tasks in order to stay connected (Yana-Salluca *et al*., 2022), which reflects a lack of good self-control.

On the other hand, the university is also responsible for procrastination, which causes low student academic performance. The university's under-resourced pedagogical programmes lead to a lack of commitment and inefficiency in the training processes (Gómez-Cano *et al*., 2023). Therefore, procrastination also translates into attrition and the generation of costs. In developed countries such as the United States, student desertion translates into approximately nine billion dollars (Garzón Umerenkova & Gil Flores, 2016), without taking into account the family's economic investment.

In the literature there are proposals for theoretical models related to the study of procrastination such as Garzón Umerenkova & Gil Flores (2016), this model is based on five components that integrate: context, conditions, antecedents, strategies and consequences. These components are directly linked, as students practice it often and some even take it to the extreme.

There are currently several instruments that help to detect different levels of procrastination, but they need to be adapted to the needs and context of the student population such as the Tuckman procrastination scale (Özer *et al*., 2013),

The creation and reuse of operationally determined instruments that show adequate consistency properties in internal and external validity is very useful within the university context and especially when applied to populations with different characteristics for the comparison of results (Pozuelos Estrada *et al*., 2020). (Suárez & Feliciano-García, 2020) used the new scale of active procrastination divided into four dimensions with 16 items, which was used in the Faculty of Education of La Laguna. With this scale, information about students' perceptions and behaviours was collected from a highly reliable instrument.

This paper is organised as follows: In the Methodology section the steps that were carried out are explained. The Results section shows the results obtained in both the exploratory and confirmatory analyses. Finally, the conclusions of the work are provided.

Methodology

For this research, a quantitative, correlational and cross-sectional study was carried out with a pilot sample of 234 university students. This sample was made up of 45% women and 55% men, students from the Universidad Autónoma del Carmen located in Ciudad del Carmen, Campeche. The students are in their first semester and belong to the faculties of Information Sciences, Educational Sciences, as well as the Faculty of Economics and Administration. The sample is representative for both exploratory and confirmatory analysis. (Gravini Donado *et al*., 2021).

The purpose of the research work was explained to the students and the confidentiality of the information was guaranteed. In this work, the instrument proposed by Roblero (2020) was used. Table 1 shows the dimensions of the instrument, which is composed of 34 items and whose responses use the Likert scale, which evaluates each item in the range of 1 to 5, being 1 (strongly disagree) to 5 (strongly agree).

ISSN 2523-6997
RINOE® All rights reserved

Dimensions	Ítems
Objectives and priorities	1,2,3,4,5,6,7,8,9,10,11,12
Management Elements	13,14,15,16,17,18,19
Disorganisation	20,21,22,23,24,25,26
Control	27,28,29,30,31,32,33,34

Table 1 Dimensions of the instrument
Source: Own Creation

Results

For the validation of the instrument, the IBM SPSS software version 25 was used. The reliability of each of the dimensions was evaluated, as well as the reliability of the entire instrument through Cronbach's alpha (Bastarrachea Rodríguez *et al*., 2023). Table 2 shows the number of items in each dimension, as well as their reliability. Dimension D1 refers to objectives and priorities; dimension D2 refers to management items; dimension D3 to disorganisation; dimension D4 to control; and DT refers to the total of the instrument.

Reliability statistics	
Cronbach's alpha	N of elements
D1 .836	12
D2 .751	7
D3 .621	7
D4 .737	9
DT .910	34

Table 2 Reliability analysis
Source: Own Creation

According to the results of the reliability analysis (Gravini Donado *et al*., 2021), the exploratory structural analysis (EFA) was performed, which allows the generation of theoretical model structures considering the number of factors and the relationship between them (González-Peiteado *et al*., 2017). Table 3 shows that in the KMO and Bartlett test, 0.853 was obtained in the Kaiser-Meyer measure. The criterion for selecting the items was that which had a factor loading greater than 0.30 using the parallel analysis selection method (Inman *et al*., 2020).

Kaiser-Meyer-Olkin measure of sampling adequacy		.853
Bartlett's test of sphericity	Aprox. Chi-cuadrado	2839.050
	gl	561
	Sig.	.000

Table 3 KMO and Bartlett's test
Source: Own Creation

Exploratory factor analysis

The factor analysis showed that the items are grouped into four factors (see Table 4), items 9, 17, 18 and 34 were eliminated as they did not present a significant factor load. (Vázquez González *et al*., 2021a).

	D1	D2	D3	D4
Item_4	0.621			
Item_6	0.609			
Item_8	0.584			
Item_11	0.582			
Item_15	0.576			
Item_19	0.538			
Item_29	0.501			
Item_7	0.474		0.352	
Item_1	0.450		0.304	
Item_26	0.330		0.310	
Item_5	0.318			
Item_32	0.423			
Item_24		0.720		
Item_21		0.696		
Item_10		0.647		
Item_14		0.600		
Item_27		0.354		
Item_13		0.486		
Item_2		0.386		
Item_28		0.525		
Item_23			0.655	
Item_25			0.645	
Item_22			0.578	
Item_31			0.430	
Item_30			0.426	
Item_33		0.340	0.389	
Item_12				0.791
Item_3				0.444
Item_20			0.354	0.447
Item_16	0.362			0.412

Table 4 Rotated Factor Matrix
Source: Own Creation

A four-dimensional solution was obtained that provides a reliable interpretation of the factors. Table 5 shows the reallocation of the items to each of the dimensions.

Dimensions	Ítems
Goal setting and prioritisation	4,6,8,11,15,19,29,7,1,26,5,32
Disorganisation, underestimation and distractions	24,21,10,14,27,13,2,28
Setting and controlling activities	23,25,22,31,30,33
Lack of planning and time procrastination	12,3,20,16

Table 5 Dimensions resulting from the exploratory analysis
Source: Own Creation

ISSN 2523-6997
RINOE® All rights reserved

The four dimensions present a significant positive correlation between them (Aguilar-Esteva *et al*., 2021), shown in the Pearson correlation matrix between the factors ranging from 0.599 to 0.653. (González-Peiteado *et al*., 2017) indicates that if students set clear goals and control their activities they can avoid bad disorganisation and occupy their idle time productively (see Table 6).

Factor	Pearson correlation			
	1	2	3	4
Setting goals and priorities	1			
Disorganisation, underestimation and distractions	.642**	1		
Setting and controlling activities	.648**	.653**	1	
Lack of planning and time procrastination	.643**	.602**	.599**	1

Table 6 Correlation analysis of dimensions
Source: Own Creation

Confirmatory factor analysis

The instrument was re-applied to a homogeneous sample, and a consecutive numbering was assigned to each of the items for a better organisation of the information in order to carry out the confirmatory analysis (Morcillo-Martínez *et al*., 2021). This analysis was carried out with Amos version 25 software by correlating the four dimensions.

The indices used were: global goodness of fit (GFI), adjusted global fit (AGFI), geometric square root residual (SRMR), comparative fit index (CFI), Tucker-Lewis incremental (TLI), normalised fit (NFI). It was also intended that the root mean squared error of approximation (RMSE) should be in the range 0.05 - 0.08. Table 7 shows the values for each of the indices. The fit indices were correlated with the items with the highest values in each dimension, which brought the model closer to the expected absolute fit.

Adjustment index	Expected	Initial Model	Final Model
GFI	0.80-1	.706	.836
AGFI	0.80-1	.658	.778
SRMR	0	.133	.112
RMSEA	<0.05-0.08	.093	.094
CFI	0.80-1	.639	.797
TLI	0.80-1	.607	.756
NFI	0.80-1	.546	.730

Table 7 Expected adjustment index
Source: Own Creation

According to the deletion of the items, an increase in the levels recommended by the literature is observed within each of the fit indices (Bollen & Long, 1992), mentioning that the GFI above 0.8 is optimal, in turn, (Bentler & Bonett, 1980) mention that the NFI is close to 0.8 also strengthens the indices of the model.

In Figure 1 it is possible to observe that the factor loadings that, according to the standardised values saturate significantly between a minimum value of 0.18 for item 11, and a maximum of 0.58 for item 26 of the dimension setting goals and priorities, for the dimension disorganisation and underestimation of distracters the loadings are item 28 with . 02 and item 14 with 0.63; the third dimension establishing and controlling activities item 22 with -.01 to 1.01 in item 31, closing with lack of planning and procrastination with 0.15 and 0.58 in items 12 and 20.

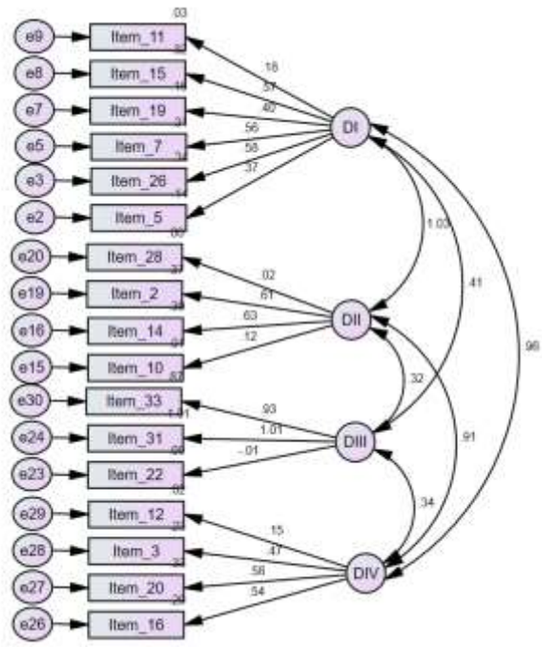


Figure 1 Correlation of dimensions
Source: Own Creation

After the adjustments made, the final indicators are satisfactory as can be seen in Table 8, which shows a mean of more than 3 and a reliability of the instrument of more than 0.7. These results indicate the reasonable fit of the data and the model.

ISSN 2523-6997
RINOE® All rights reserved

Scale Reliability Statistics				
	Media	DE	Cronbach's alpha	McDonald's ω
D1	3.62	0.524	0.758	0.780
D2	3.44	0.536	0.744	0.751
D3	3.44	0.602	0.748	0.806
D4	3.24	0.633	0.709	0.719
DT	3.48	0.481	0.893	0.896

Table 8 Reliability of the corrected instrument
Source: Own Creation

The results of the reliability analysis of the four dimensions show a high level of reliability in both Cronbach's alpha and McDonald's Omega (Bastarrachea Rodríguez *et al*., 2023), therefore, it is considered that the instrument has consistent and reliable values which are above .70.

Discussion

The aim of the present study was to adapt and validate the time management instrument used by Roblero for university students. In the present work it was observed that the confirmatory and exploratory analysis showed variations according to the population of application. The final instrument contains only 30 items compared to 34 items in the base instrument (Roblero, 2020).

The sample of 234 students presented is smaller than Robledo's sample of 289 students and therefore had a smaller impact on reliability. The expected indices of GFI at .836 and CFI at .797 are very close to .8 when the standards recommended by Bollen and Long should reach .9 as the optimal point (Bolleng & Long, 1992). The results obtained for Cronbach's alpha and McDonald's omega reinforce the reliability of the instrument, as they are both above .8.

In relation to Zambrano's study, the sample was 194 students in which the CIPA+ questionnaire was used, giving rise to new factors obtained from the confirmatory analysis of the four that the original instrument had, and no correlation could be observed in the dimensions (Vázquez González *et al*., 2021). In this study, no new factors were generated, but a significant correlation between the dimensions was observed.

For the case of (Suarez & Feliciano-García, 2020) they used the new scale of active procrastination applied to a sample of 330 students, the reliability with a fit index of RMSR =.05; GFI=.92, with an internal consistency between .70 and .83 divided into four dimensions with 16 items, which guides the construction of an effective instrument, it is required to analyze whether the analyses carried out are adapted to the conditions of the student population of the university.

The construction of instruments has been adapted to the needs of the university population under study by means of techniques such as confirmatory and exploratory analysis. All these validations differ according to the environment in which the students develop. With the study carried out, the factorial reliability found by Roblero was low, and one of the main factors was that the analysis was worked on in different careers (Roblero, 2020), the construction of this instrument took a similar methodology, in which the expected index factor had to be adjusted to 0.8 in order to adapt the instrument.

In the case of correlations, the dimensions of the instrument of (Roblero, 2020) are only related in two factors, while the results of the analysis of this instrument show that the four factors establish a high correlation, therefore, this means that the greater the control and establishment of precise objectives, the more procrastination and disorganisation times can be reduced.

The adequacy and validity of the instrument's constructor is complicated because the factors that encompass the student population present diverse variants, therefore, (Vázquez González *et al*., 2021) mentions that it is fundamental to submit to a validity process for the construction of instruments that can generate a support of the attributes that are evaluated.

In turn, the study presented the same difficulties as that of (Yupanqui-Lorenzo *et al*., 2023) in the collection of data, as it was shared electronically and it was not possible to control for bias. Therefore, rigidity in the validation and construction of instruments is necessary.

ISSN 2523-6997
RINOE® All rights reserved

Conclusions

This paper validated an existing instrument in the literature to measure procrastination. Validity was assessed through exploratory and confirmatory factor analysis. The reliability of the instrument was assessed with internal consistency measures through Cronbach's alpha and McDonald's omega. According to the results of the reliability analysis of each of the dimensions, it is shown that the instrument has consistent and reliable values above .70. The result of the analysis is suitable for future research in which specific characteristics and context of students from the southern part of the country are required, given the nature of the study..

References

Aguilar-Esteva, V., Juárez-Hernández, L. G., & Acosta-Banda, A. (2021). Validez de Constructo y Confiabilidad de un Instrumento para Evaluar la Integración del Enfoque Socioformativo en las Prácticas Docentes en Instituciones de Educación Superior en México. Revista Fuentes, 2(23), 178–189. https://doi.org/10.12795/revistafuentes.2021.12905.

Bastarrachea Rodríguez, P. C., Domínguez Castillo, J. G., Vega Cauich, J. I., & Ortega Maldonado, Á. (2023). Diseño y validación de un instrumento para medir la competencia digital en estudiantes de educación primaria. PUBLICACIONES, 53(1), 225–245. https://doi.org/10.30827/publicaciones.v53i1.28059.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin, 88(3), 588–606. https://doi.org/10.1037/0033-2909.88.3.588.

Bollen, K. A., & Long, J. S. (1992). Tests for Structural Equation Models. Sociological Methods & Research, 21(2), 123–131. https://doi.org/10.1177/0049124192021002001.

Garzón Umerenkova, A., & Gil Flores, J. (2016). El papel de la procrastinación académica como factor de la deserción universitaria. Revista Complutense de Educación, 28(1), 307–324. https://doi.org/10.5209/rev_RCED.2017.v28.n1.49682.

González-Peiteado, M., Pino-Juste, M., & Penado-Abilleira, M. (2017). Estudio de la satisfacción percibida por los estudiantes de la UNED con su vida universitaria. RIED. Revista Iberoamericana de Educación a Distancia, 20(1), 243. https://doi.org/10.5944/ried.20.1.16377.

Gravini Donado, M. L., Mercado-Peñaloza, M., & Domínguez-Lara, S. (2021). College Adaptation Among Colombian Freshmen Students: Internal Structure of the Student Adaptation to College Questionnaire (SACQ). Journal of New Approaches in Educational Research, 10(2), 251. https://doi.org/10.7821/naer.2021.7.657.

Hidalgo-Fuentes, S. (2022). Uso problemático de Internet y procrastinación en estudiantes: un meta-análisis. European Journal of Education and Psychology, 1–18. https://doi.org/10.32457/ejep.v15i1.1815.

Morcillo-Martínez, A., Infantes-Paniagua, Á., García-Notario, A., & Contreras-Jordán, O. R. (2021). Validación de la Versión Española de la Escala de Compromiso Académico para Educación Primaria. RELIEVE - Revista Electrónica de Investigación y Evaluación Educativa, 27(2). https://doi.org/10.30827/relieve.v27i2.22769.

Özer, B. U., Saçkes, M., & Tuckman, B. W. (2013). Psychometric Properties of the Tuckman Procrastination Scale in a Turkish Sample. Psychological Reports, 113(3), 874–884. https://doi.org/10.2466/03.20.PR0.113x28z7.

Pozuelos Estrada, F. J., García Prieto, F. J., & Conde Vélez, S. (2020). Evaluar prácticas innovadoras en la enseñanza universitaria. Validación de instrumento. Educación XX1, 24(1). https://doi.org/10.5944/educxx1.26300.

Ramos-Galarza, Carlos, Jadán-Guerrero, Janio, Paredes-Núñez, Lorena, Bolaños-Pasquel, Mónica, & Gómez-García, Antonio. (2017). Procrastinación, adicción al internet y rendimiento académico de estudiantes universitarios ecuatorianos. Estudios pedagógicos (Valdivia), 43(3), 275-289. https://dx.doi.org/10.4067/S0718-07052017000300016.

ISSN 2523-6997
RINOE® All rights reserved

Roblero, G. (2020). Validación de cuestionario sobre gestión del tiempo en universitarios mexicanos. Revista Electrónica de Investigación Educativa, 22, 1–11. https://doi.org/10.24320/redie.2020.22.e01.2136.

Gómez Cano, C. A., Sánchez Castillo, V., & Santana González, Y. (2023). Factores que inciden en la procrastinación académica de los estudiantes de educación superior en Colombia. Universidad y Sociedad, 15(4), 421-431. https://rus.ucf.edu.cu/index.php/rus/article/view/3995/3913.

Suárez, A., & Feliciano-García, L. (2020). Influencia del perfil de procrastinación activa en el rendimiento académico del alumnado de Ciencias de la Educación. Bordón. Revista de Pedagogía, 72(3). https://doi.org/10.13042/Bordon.2020.73642.

Vázquez González, G. C., Jiménez Macías, I. U., & Juárez Hernández, L. G. (2021). Construct validity analysis of the questionnaire "Knowledge Management for educational innovation in universities". Revista Fuentes, 3(23), 329–340. https://doi.org/10.12795/revistafuentes.2021.12361.

Yana-Salluca, M., Adco-Valeriano, D. Y., Alanoca-Gutierrez, R., & Casa-Coila, M. D. (2022). Adicción a las redes sociales y la procrastinación académica en adolescentes peruanos en tiempos de coronavirus Covid-19. *Revista Electrónica Interuniversitaria de Formación Del Profesorado*, *25*(2), 129–143. https://doi.org/10.6018/reifop.513311.

Yupanqui-Lorenzo, D. E., Olivera-Carhuaz, E. S., Pulido-Capurro, V., & Reynaga Alponte, A. A. (2023). Efecto de la autoeficacia y eutrés en la procrastinación: un análisis multigrupo. *Revista Fuentes*, 48–58. https://doi.org/10.12795/revistafuentes.2023.21318.

ISSN 2523-6997
RINOE® All rights reserved

Article **Journal-Schools of economic Thought and Methology**
December, 2023 Vol.7 No.13 8-14

Web Application Server for the publication of Integrative Projects of UTJ – CCD Students

Servidor de Aplicaciones Web para la publicación de Proyectos Integradores de Alumnos UTJ – CCD

GONZALEZ-DEL CASTILLO, Edgardo Emmanuel†*, LÓPEZ-LAGUNA, Ana Bertha, ROMO-GONZALEZ, Ana Eugenia and MACÍAS-BRAMBILA, Hassem Rubén

Universidad Tecnológica de Jalisco – Ciudad Creativa Digital, Independencia No. 55 Centro, C.P. 44100, Guadalajara, Jalisco, México

ID 1st Auhtor: *Edgardo Emmanuel, González-Del Castillo* / **ORC ID**: 0002-6540-7464, **CVU CONAHCYT ID**: 902812

ID 1st Co-author: *Ana Bertha, López-Laguna* / **ORC ID**: 0000-0002-8145-7955, **CVU CONAHCYT ID**: 847437

ID 2nd Co-author: *Ana Eugenia, Romo-González* / **ORC ID**: 0000-0002-4653-2593, **CVU CONAHCYT ID**: 212291

ID 3rd Co-author: *Hassem Rubén, Macias-Brambilla* / **ORC ID**: 0000-0002-8145-7955, **CVU CONAHCYT ID**: 916620

DOI: 10.35429/JSETM.2023.13.7.8.14 Received September 27, 2023; Accepted December 20, 2023

Abstract

The publication of WEB applications corresponds to transmitting the projects carried out by students on the Internet, in this way they can be opened from any point with access to the world wide web. This project aims to publish WEB applications developed as final projects, allowing a favorable impact on the training of students, since it will provide them with a real approach to the development of this type of technological tools in the public and private industry. Derived from the various certifications that the university undergoes, the central final project server will serve as a central repository in the evidence warehouse. Additionally, a central Web system was developed for the management of Integrative Projects carried out at the end of each period at the Technological University of Jalisco at its Ciudad Creativa Digital site, based on the software engineering process, dividing the work into phases and supported by the Scrum agile methodology for the management of each of them.

Resumen

La publicación de aplicaciones WEB corresponde a trasmitir los proyectos realizados por los alumnos en internet, para que de esta manera puedan ser accedidos desde cualquier punto con acceso a la red mundial. El presente proyecto tiene por objetivo la publicación de aplicaciones WEB desarrolladas como proyectos finales, permitiendo un impacto favorable en la formación de los estudiantes, ya que les brindará un acercamiento real en el desarrollo de este tipo de herramientas tecnológicas en la industria pública y privada. Derivado de las diversas certificaciones por las que atraviesa la universidad, el servidor central de proyectos finales servirá como repositorio central en el almacén de evidencias. Adicionalmente se desarrolló un sistema Web central para la gestión de Proyectos Integradores realizados al finalizar cada periodo en la Universidad Tecnológica de Jalisco en su sede Ciudad Creativa Digital, tomando como base el proceso de ingeniería de software dividiendo el trabajo en fases y apoyado de la metodología ágil Scrum para la gestión de cada una de ellas.

Citation: GONZALEZ-DEL CASTILLO, Edgardo Emmanuel, LÓPEZ-LAGUNA, Ana Bertha, ROMO-GONZALEZ, Ana Eugenia and MACÍAS-BRAMBILA, Hassem Rubén. Web Application Server for the publication of Integrative Projects of UTJ – CCD Students. Journal Schools of economic Thought and Methology. 2023. 7-13: 8-14

* Correspondence to Author (e-mail: edelcastillo@utj.edu.mx)
† Researcher contributing as first author.

Introduction

In 2011, Guadalajara won the national competition in search of an area for the development of a Digital Creative City (CCD). Through a long process, supported by academics from the Massachusetts Institute of Technology (MIT), a dozen cities are evaluated for their multiple characteristics, including a macroeconomic outlook, environmental quality, industrial base and economic growth potential (CCD, 2023).

The creation of the Academic Unit of the Technological University of Jalisco (UTJ) in CCD constitutes one of the priority strategic actions for the Secretaría de Innovación, Ciencia y Tecnología (SICyT) of the Government of the State of Jalisco and has the purpose of promoting creativity, learning and the flow of ideas between academics, students, entrepreneurs and businessmen.

The CCD Academic Unit is part of the concept of "University of the Future". Among other things, this University responds to the challenges brought about by the fourth industrial revolution. At the University of the Future, we learn and teach under a model of cognitive and interpersonal skills that is supported by the use of innovative platforms for adaptive learning and artificial intelligence assistants that will boost competitiveness and social mobility in our State.

The study plans offered by the Information Technology division include Engineering in Software Development and Management with an intermediate exit in Higher University Technician (TSU) in Information Technologies area of Multiplatform Software Development and engineering in Virtual Environments and Digital Business with intermediate exit in TSU in Information Technologies area of Virtual Environments and Digital Business, where the Development of WEB Applications is part of the subject curriculum, with the intention of fully covering the thematic contents in the subjects of Web Applications, the last thematic unit corresponds to the publication of applications that is equivalent to allowing access to technological development through any equipment connected to the Internet, this being the culmination of the Integration Project (IP) developed.

Among the concerns of the teacher in the classroom, there is one in particular that corresponds to how the student can apply the knowledge acquired during the time that the different contents of the study programs were reviewed.

In this sense, the PI will be understood as the exercise through which this type of experiences can be evidenced, disseminated and reviewed in a wide disciplinary range that allows the generation of new reflections and contributions to the different lines of research.

The importance and richness of this exercise lies in a social, cultural and technological context that allows comprehensive solutions that approve the development of skills through their critical application to real problems and in contexts that allow social interaction through binding activities with instances of different nature.

Taking into account the above, the CCD academic unit is committed to the PI modality, as an exercise that allows promoting, giving meaning and bringing together the efforts of students and teachers, for the evidence of the acquired competencies, which allow adding value to the certification in study plans.

On the path towards excellence promoted at UTJ, in 2005 the first formats for records and matrices of project deliverables in Information Technology (IT) majors were implemented, carrying out an update of its regulations years later. For 2011, an exhaustive review and new proposals for the process to be followed in IP planning activities will be carried out. The aim is to show and demonstrate to an academic community how important it is to create spaces during the semesters of study, where the student can measure their abilities to apply the knowledge acquired in an integrative project.

For this reason, the need arises for a central server that allows these activities to be carried out, which is why the development of this project begins as a proposed solution, allowing the theoretical knowledge acquired by the students to be reinforced and putting it into practice in an approach to the real world.

ISSN 2523-6997
RINOE® All rights reserved

Methodology

During the September-December 2022 quarter, a review of the project objective for the Web Applications subjects was carried out, which made it possible to determine the technical requirements of the server, according to the characteristics detected and with the support of the Computer Science and Telecommunications Subdirectorate of the UTJ installed the Windows Server 2022, Standard Edition 64-bit operating system, with a database management system in SQL Server V19.1, for publishing services the universal development environment was installed with Full Laragon Stack, which contains Apache 2.4 and PHP 8.2 for Back End work. And it allows secure connections with the Secure Sockets Layer (SSL) protocol, which creates an encrypted link between a web server and a web browser, which required the installation of the corresponding security certificates provided by the UTJ by enabling access in the port 443 of the server.

For software development, it is important to follow some specification that allows developers to have discipline throughout all stages of development, so that they are more coherent and formal, which is why each of the phases that support them must be defined. the development. The central Web server system, being a tool that aims to have application in the university community for the management of final projects, must follow a software engineering process that provides the foundations under which the system will be developed.

The central WEB application for the management of integrative projects was developed taking as reference the software engineering process and the agile SCRUM Methodology for the management of each of its phases. The software engineering process aims to provide the most possible order to the development of the WEB application based on the linear sequential model also known as the waterfall model.

Waterfall development is a linear procedure that is characterized by dividing development processes into successive project phases. Unlike iterative models, each of these phases is executed only once. The results of each of the phases serve as a starting hypothesis for the next and are used, especially, in software development.

The development of the model is attributed to computer science theorist Winston W. Royce. However, Royce is not the inventor of this model. Quite the contrary, in his 1970 essay titled Managing the Development of Large Software Systems, the theorist presents a critical reflection on linear procedures. As an alternative, Royce presents an incremental iterative model in which each of the phases builds on the previous one and verifies its results (Ionos, 2019).

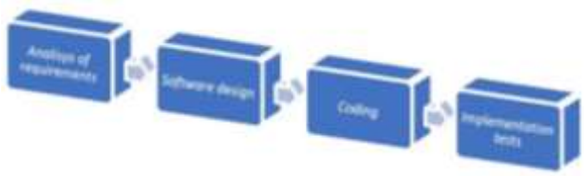


Figure 1 Software Engineering Process
Source: Self Made

With the intention of improving the work continuously and due to a small development team, the agile SCRUM methodology is used as support in the management of activities involved in WEB development since it is not conceived as a solid method or as a technique. of concrete work, but rather as a framework that offers teams fixed reference points to carry out their work.

Figure 2 The Agile SCRUM methodology process
Source: PM- Partners group

The Agile Scrum methodology establishes a framework that can be applied in different situations with the purpose of continually improving both the work method and the product. The framework is made up of roles, events, artifacts, and rules. Within these limits, Scrum teams must achieve the most efficient results possible by offering the customer the best possible product. In Scrum, customers and users take an important position and development is based on their needs (Ionos, 2019).

ISSN 2523-6997
RINOE® All rights reserved

Analisys of requirements

For the initial phase in the software engineering process corresponding to the requirements analysis, collegiate work meetings were held with the PI coordinators to determine the needs in the management of final projects.

In this phase, the services that the system must provide and the restrictions under which it must operate are established. The conditions that determine what the system should do and how it should do it are specified, that is, requirements: Functional, which describe a functionality or service of the system. Non-functional, which are usually restrictions to the system or its development process such as using a certain language (Granollers, 2023).

Software design

During the January-April 2023 quarter, work meetings were reanalyzed for the planning of final projects in the IT division where the design of the central system for project management was carried out, obtaining as a final product the use case diagram taking as reference the Unified Modeling Language (UML) developed in the open source BOUML tool.

This is the phase in which the data structures, functions and behaviors are defined based on the restrictions imposed by the main requirements of the previous phase. In practice, the architecture and structure of the individual components of the system are defined (Asset Studio, 2022).

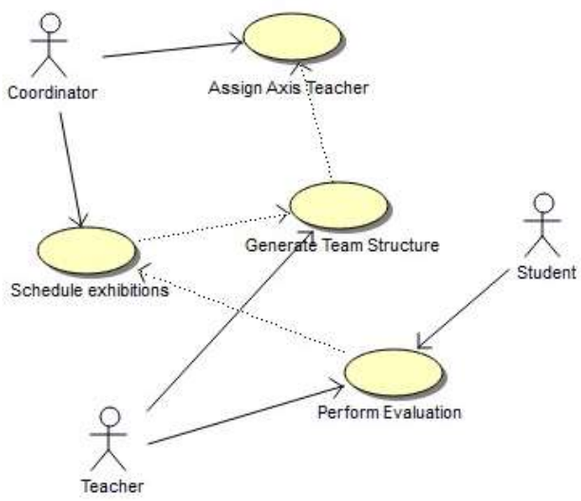


Figure 3 Use Cases Final Projects
Source: Self Made

Coding

After defining the operational instructions for the implementation phase and having documented them in the corresponding diagrams, we proceed to write the source code of the Web application that will manage the collaborative work between teachers and students for the execution of the PI.

To perform the coding, the Visual Studio Code development environment was used. Built on open source, a lightweight but powerful source code editor that runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript, and Node.js and has a rich ecosystem of extensions for other languages and runtimes (Microsoft, 2023).

During the May-August 2023 quarter, the source code was drafted for the Front End, which is the part where the user can directly access the application. The versions of HTML 5, CSS 3 and Javascript ES12 were used in support of the Bootstrap responsive design FrameWork CSS, which is a tool for the development of interfaces, for the development of the Back End, version 8.2 of PHP was used by implementing the Laravel WEB development framework in version 10.x that has an elegant and expressive syntax, following the tool's own framework such as the Model View Controller (MVC).

MVC is a design pattern that considers dividing an application into three clearly identifiable modules with well-defined functionality, the model is a set of classes that represent the real-world information that the system must process, the views are the set of classes that are responsible for showing the user the information contained in the model and the controller is an object that is responsible for directing the flow of control of the application due to external messages, such as data entered by the user or menu options selected by him (Bascon ,2004).

ISSN 2523-6997
RINOE® All rights reserved

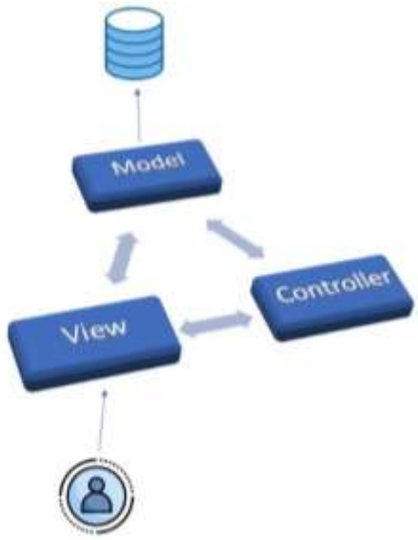


Figure 4 Model View Controller
Source: Self Made

Implementation tests

Once the application is developed, it is tested to determine if it solves the problem satisfactorily, so during the September-December 2023 semester, smoke tests have been carried out with the support of the students of the division in the laboratories of calculation with the prior authorization of the career direction.

Smoke testing is a process used to test software to determine whether the build of the deployed software is stable or not. When performing software smoke testing, you run a series of tests designed to evaluate each of the software's core functionalities. If the product fails the smoke test, it means that the initial version has major defects that need to be fixed before further testing (Zaptest, 2023).

Web Hosting

Web hosting is a service that stores your website or web application and makes it easily accessible across different devices such as desktop, mobile and tablets. Any web application or website is usually made up of many files, such as images, videos, text and code, which must be stored on special computers called servers. The web hosting service provider maintains, configures, and runs the physical servers that you can rent for your files. Site and web application hosting services also provide additional support such as security, backup, and website performance, saving you time to focus on the core functions of the website (Amazon, 2023).

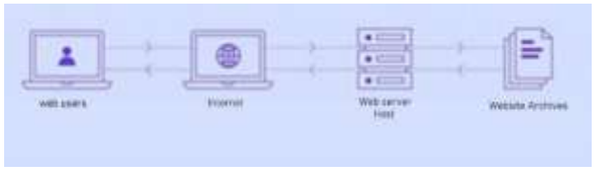


Figure 5 WEB hosting operation
Source: Hostinger (2023)

Choosing a web hosting plan is similar as renting an office space and sometimes the cost is high in relation to the benefit obtained, for this reason the CCD central server seeks to solve the need for WEB hosting for students' integrative projects, allowing you to live the real experience just like when hiring a private service. At the same time, it would allow the storage of the necessary evidence for the quality accreditations that the university undergoes. Serving as a central repository for the warehouse of final projects.

Accreditation is the result of a systematic and voluntary evaluation and monitoring process of the fulfillment of the university functions of a Higher Education Institution (HEI), which allows obtaining reliable and objective information on the quality of the Academic Programs (AP) that it develops. It gives certainty to society regarding the quality of trained human resources and the different processes that take place in an educational institution (COPAES, 2023).

Derived from the accreditation process that the UTJ's Information Technology study plans go through at its CCD headquarters, before the National Council for Accreditation in Informatics and Computing A.C. (CONAIC), which determines the implementation in its evaluation criteria. of IP that allow students to demonstrate the skills acquired throughout their university life.

Specifically in Criterion 3. Curriculum, indicator 3.5.2. The subjects corresponding to the specialty include projects aimed at developing the student's ability to solve real problems in accordance with the technological needs of the program itself (CONAIC, 2023).

In this sense, this integrative project seeks to solve the evidence required in the indicators, allowing success in the acquisition of accreditations.

ISSN 2523-6997
RINOE® All rights reserved

Results

The final result is the implementation of the WEB application on the CCD central server for the management of integrative projects, which will allow the correct administration of the processes involved in the planning and execution of integrative projects carried out at the end of each period at UTJ-CCD.

Figure 6 System interface for project management in CCD
Source: Self Made

Having a central WEB application for IP management will allow the activities of the academic unit in CCD to be carried out in a harmonious and disciplined manner, being functional, efficient and productive in the development of the integrative projects carried out at the end of the quarterly period. , making it easier to obtain consistent information at runtime.

Figure 7 Login to access the system for managing integrative projects
Source: Self Made

Correct management of integrative projects will have benefits in optimizing information flow, improving teamwork, resolving problems, and delivering data in real time. By virtue of its ability to streamline and add more value to both internal and external processes, the implementation of a project management system has ceased to be a plus and has become a necessity, thus positioning itself as an extremely important process for the university development and growth.

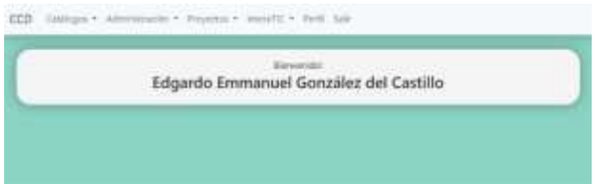


Figure 8 Main menu of the project management system
Source: Self Made

Another result obtained with the CCD central server is the hosting service for integrative projects, since by maintaining a domain and a defined IP number it provides the computing resources to UTJ students to publish their final work on the Internet secure, evidencing the knowledge acquired during the semester, while at the same time concentrating the necessary evidence for accreditations.

Gratitude

We thank Dr. Héctor Pulido González Rector of the Technological University of Jalisco and Professor Soraya Navarro Rayas, Academic Secretary of the institution, for providing the necessary means and mechanisms to carry out the project.

Conclusions

Information technologies are part of the evolution and have taken on great importance in the educational field, providing the necessary tools to teachers, students and administrators to enrich the teaching process.

Establishing the competencies exhibited by students in learning to develop WEB applications mark the areas of improvement to be considered in consecutive periods.

Taking into account the research carried out addressing the management and publication of IP, it can be said that the relevant technological tools for this process are those that allow students to monitor their own learning, allowing the teacher to make use of different motivational strategies for the development of their creativity, critical thinking and autonomy.

To the extent that teachers and students are linked in the learning process, the development of new projects is strengthened in an integrated way with IT.

ISSN 2523-6997
RINOE® All rights reserved

It would be interesting to implement statistical analyzes of the stored data so that, with the support of artificial intelligence, projects could be assigned to students according to their development skills.

References

Amazon (2023). What is Web hosting? Retrieved on 12/07/2023 from: https://aws.amazon.com/es/what-is/web-hosting/

Bascón, E (2004). The Model-View-Controller (MVC) design pattern and its implementation in Java Swing. Retrieved on 12/07/2023 from: http://www.scielo.org.bo/scielo.php?script=sci_arttext&pid=S1683-07892004000100005

CCD (2023). What is Digital Creative City? Retrieved on 12/05/2023 from: https://ciudadcreativadigital.mx/ciudad-creativa-digital-guadalajara/

COPAES (2023). What is Accreditation? Retrieved on 12/07/2023 from: https://www.copaes.org/queesacreditacion.html

Granollers, Toni (2023). Person-Computer interaction course. Retrieved on 12/06/2023 from: https://mpiua.invid.udl.cat/fases-mpiua/analisis-de-requisitos/

IONOS (2019). Scrum: project management with a flexible approach. Retrieved on 12/07/2023 from: https://www.ionos.mx/digitalguide/paginas-web/desarrollo-web/scrum/

IONOS (2019). The waterfall model: sequential software development. Retrieved on 12/07/2023 from: https://www.ionos.mx/digitalguide/paginas-web/desarrollo-web/el-modelo-en-cascada/

Rubio, A. Sánchez, V. Hernández, A. Gonzalez, E (2019). Operational manual for the development and implementation of an integrative project. Retrieved on 12/05/2023 from: https://umg.edu.mx/portal/wp-content/uploads/2019/01/Manual-PI.pdf

W&B Asset Studio (2022). Software design: Phases and Models. Retrieved on 12/06/2023 from: https://www.wbassetstudio.com/blog/diseno-de-software-fases-y-modelos/

Zaptest (2023). What are smoke tests? Retrieved on 12/06/2023 from: https://www.zaptest.com/es/smoke-testing-profundizacion-en-tipos-proceso-herramientas-de-software-de-smoke-test-y-mas

ISSN 2523-6997
RINOE® All rights reserved

Article **Journal-Schools of economic Thought and Methology**
December, 2023 Vol.7 No.13 15-23

Prototype design education for the teaching of mechanism kinematics: Application to the Scotch yoke mechanism

Enseñanza del diseño de prototipos para la enseñanza de la cinemática de mecanismos: Aplicación al mecanismo de yugo ESCOCÉS

PERERA-CORTEZ, Miguel Ángel†*, JACOBO-CORTEZ, Edgar Antonio, HIDALGO-ARCOS, Wilberth and ALMARAZ-CÁRDENAS, Dayana Nayely

Universidad Tecnológica de Campeche, Campeche, México

ID 1st Author: *Miguel Ángel, Perera-Cortez* / **OCR ID**: 0009-0002-9667-1011, **CVU CONAHCYT ID**: 1308525

ID 1st Co-author: *Edgar Antonio, Jacobo-Cortés* / **OCR ID**: 0009-0001-4325-1884

ID 2nd Co-author: *Wilberth, Hidalgo-Arcos* / **OCR ID**: 0009-0005-3929-1575, **CVU CONAHCYT ID**: 804542

ID 3rd Co-author: *Dayana Nayely, Almaraz-Cárdenas* / **OCR ID**: 0009-0005-8343-9506, **CVU CONAHCYT ID**: 1339008

DOI: 10.35429/JSETM.2023.13.7.15.23 Received July 21, 2023; Accepted December 28, 2023

Abstract

The present research focuses on the design, construction and manufacture of a didactic prototype based on the Scottish yoke mechanism. This device aims to provide an effective tool to visualize and understand the fundamental principles of its operation, as well as the associated kinematics. The integration of the traditional method of kinematics, the Velocity Polygon, with modern technologies such as computer-aided design (CAD), additive manufacturing, and automatic control is a key component of this project. The central objective of this controllable didactic prototype is to enable undergraduate students in mechatronics, mechanics, and industry to acquire technical skills and solve specific problems related to the mechanism of the Scottish yoke. To achieve this, an instrumentation system developed in LabVIEW is used to collect real-time information on the kinematics of the mechanism's joints (nodes). In addition, motion simulation is used through CAD design and the graphical method of the Velocity Polygon. A relevant discovery of this research is the confirmation that the device based on the Scotch yoke allows an effective representation of the kinematics, supported by the coincidence of the velocity of the sliding node in the three methods used (database generated by LabVIEW, CAD simulation and graphical method of the Velocity Polygon). This validates the efficacy of the prototype and highlights its usefulness as a practical educational tool for the development of technical skills and the resolution of problems specific to the mechanism of the Scottish yoke.

Kinematics, Mechanisms, Instrumentation

Resumen

La presente investigación se centra en el diseño, construcción y manufactura de un prototipo didáctico basado en el mecanismo de yugo escocés. Este dispositivo tiene como objetivo brindar una herramienta efectiva para visualizar y comprender los principios fundamentales de su funcionamiento, así como la cinemática asociada. La integración del método tradicional de cinemática, el Polígono de velocidades, con tecnologías modernas como el diseño asistido por computadora (CAD), la manufactura aditiva y el control automático constituye un componente clave de este proyecto. El objetivo central de este prototipo didáctico controlable es permitir a los estudiantes de licenciatura en mecatrónica, mecánica e industrial adquirir habilidades técnicas y resolver problemas específicos relacionados con el mecanismo del yugo escocés. Para lograr esto, se utiliza un sistema de instrumentación desarrollado en LabVIEW para recopilar información en tiempo real sobre la cinemática de las juntas (nodos) del mecanismo. Además, se emplea la simulación de movimiento a través del diseño CAD y el método gráfico del Polígono de velocidades. Un descubrimiento relevante de esta investigación es la confirmación de que el dispositivo basado en el yugo escocés permite una representación efectiva de la cinemática, respaldada por la coincidencia de la velocidad del nodo corredera en los tres métodos utilizados (base de datos generada por LabVIEW, simulación CAD y método gráfico del Polígono de velocidades). Esto valida la eficacia del prototipo y destaca su utilidad como herramienta educativa práctica para el desarrollo de habilidades técnicas y la resolución de problemas específicos del mecanismo del yugo escocés.

Cinemática, Mecanismos, Instrumentación

Citation: PERERA-CORTEZ, Miguel Ángel, JACOBO-CORTEZ, Edgar Antonio, HIDALGO-ARCOS, Wilberth and ALMARAZ-CÁRDENAS, Dayana Nayely. Prototype design education for the teaching of mechanism kinematics: Application to the Scotch yoke mechanism. Journal Schools of economic Thought and Methology. 2023. 7-13: 15-23

† Researcher contributing as first author.

Introduction

This scientific paper presents a comprehensive exposition of the design process of a specific mechanism, focusing on the Scottish yoke, along with a kinematic analysis approached both analytically and through simulations. The successful implementation of a prototype designed to validate the operation of the mechanism is highlighted. Throughout the brief, the computer-aided design procedure is painstakingly detailed, with a special emphasis on fabricating the links through 3D printing technology. Kinematic analysis is executed holistically, making use of advanced tools such as SOLIDWORKS MOTION. In addition, a graphical approach is applied to carry out kinematic analysis analytically, thus deepening the understanding of the specific kinematic behavior of the Scottish yoke, both in the virtual domain and in the physical prototype.

A distinctive aspect of this paper is the section devoted to the design of the prototype's instrumentation, which is designed to enable the study of the actual operation of the mechanism of the Scotch yoke. This section complements the information obtained through simulation and virtual analysis. The integration of these elements provides a complete perspective that amalgamates theory with practice, providing a comprehensive view of the specific mechanism addressed. In summary, this document not only delves into the design and analysis of the mechanism of the Scottish yoke in the virtual realm, but also supports these aspects through the manufacture and evaluation of a physical prototype. This comprehensive approach contributes to a deep and applied understanding of the mechanism of the Scottish yoke, highlighting its relevance in disciplines such as computer-aided design, kinematic simulation and prototyping.

Conceptual Framework

A. Didactic Devices

Teaching devices are educational tools specifically designed to facilitate the teaching and learning of theoretical concepts. These devices provide a hands-on, tangible experience that allows students to actively interact with content. According to Johnson (2010), teaching devices help improve understanding, retention, and knowledge transfer Theories of learning.

Diverse learning theories support the importance of hands-on experience and meaningful learning. The constructivist approach, proposed by Piaget (1977), holds that knowledge is actively constructed through interaction with the environment. In addition, Kolb's (1984) theory of experiential learning highlights the importance of direct experience in the learning process.

B. Pedagogy

Pedagogy refers to the study of the methods and approaches used for teaching. In this project, a student-centered pedagogical approach is adopted, where learning is facilitated through active participation and guided exploration. According to Vygotsky (1978), learning occurs in a social context and is strengthened through interaction with others and teacher mediation.

C. Mechanism

A system of mutually matched parts that work together but cannot constitute a complete machine. Designed to transmit and transform movements that can be defined as a powertrain.

D. Computer Aided Design

According to Klockner and Jowers (2015), CAD is defined as "a computational system that allows designers to create, modify and analyze digital representations of objects and systems, with the aim of facilitating decision-making in the design process".

E. Simulation.

According to Bechthold and Maier (2019), motion simulation in SolidWorks is "an analysis and evaluation process that uses digital assembly models to simulate motion and interactions between components in a virtual environment." Through motion simulation, designers can identify potential problems, optimize design, improve motion efficiency, and evaluate system performance prior to manufacturing.

F. Instrumentation.

According to Doebelin and Manik (2014), instrumentation is defined as "the art and science of measuring and controlling physical and chemical variables".

ISSN 2523-6997
RINOE® All rights reserved

It involves the selection and calibration of sensors, the design and assembly of electronic circuits, data acquisition, and signal processing, among other aspects. Instrumentation is applied in a wide range of industries and fields, such as medicine, engineering, scientific research, and industrial automation.

Methodology

In this project, a methodology was adopted that merged experimentation, pedagogical approaches and technical engineering principles, focusing exclusively on the Scottish yoke. This comprehensive approach allowed the project's objectives to be comprehensively addressed, promoting both hands-on learning and the development of technical skills specific to the Scottish yoke.

– Meaningful Experimentation:

Experimentation took on a pivotal role in facilitating empirical testing and analysis of the components and systems of the Scottish yoke. Through experimentation, real data was collected and the behavior of the elements in various conditions and situations specific to the Scottish yoke was evaluated.

– Adjusted Pedagogical Methods:

Pedagogical methods focused on the Scottish yoke were employed to facilitate the learning process. These methods included the use of teaching devices adapted to the Scottish yoke, specific practical demonstrations, contextualized theoretical explanations, and interactive learning activities geared towards the Scottish yoke. These pedagogical strategies not only supported comprehension, but also stimulated the retention of the technical concepts of the Scottish yoke, allowing participants to acquire knowledge effectively.

– Integration Centered on the Scotch Yoke:

The combination of experimentation with pedagogical methods and technical engineering principles, all focused on the Scottish yoke, resulted in a comprehensive and enriching approach to the development of the project.

This methodology not only facilitated the acquisition of specific theoretical knowledge of the Scottish yoke, but also promoted the practical application of the same, leading to significant learning and the successful achievement of the specific objectives of the Scottish yoke.

Position diagram design of the Scotch yoke mechanism

The scotch yoke mechanism is used in industry to perform operations where it is necessary to convert a rotary motion to a linear one, such as the application of automatically opening and closing valves or mechanical gates. In these applications it is often convenient to use constant-speed electric motors, however, servo motors can be used to improve the dynamic behavior of the mechanism.

Figure 1 Position Diagram
Source: Own Source

As can be seen in the image above, the design of the mechanism contains 4 links counting the base or also called origin.

List of Links with Measurement

– Link AB 55.00 mm (crank)
– CD Link 110.00 mm (Vertical Slider)
– EF Link 230.00 mm (Sliding)
– Link AG (base or support)

This position diagram allows you to perform kinematic analysis by graphical method using velocity polygons, as well as position analysis performed using *SolidWorks software*.

Analysis of the velocity polygon

Next, the analysis of the kinematic polygon method of velocities is presented, which consists of evaluating through a graphical method that relates the absolute and relative velocities of the nodes of the mechanism.

ISSN 2523-6997
RINOE® All rights reserved

It is worth mentioning that this method is also known as instantaneous velocity analysis as the conducted nodes experience multiple velocities along their different positions. The AB link is a mechanism known in the theory of classical mechanisms as a motor link which is responsible for receiving the input movement, this element has the main characteristic that its speed is constant throughout the operation of the mechanism so its acceleration is zero. As long as you do not change the input velocity of mechanisms.

The DC link represents the groove where node B will move, which is the link known as the transducer that transforms the circular movement into linear movement of the driven link, it should be noted that this is the main characteristic of the Scotch yoke mechanism
Finally, it is the EF link that is the final or led link, this link can also be considered as an extension of the previous link since it physically belongs to the same piece, but for the purposes of analysis it is considered as an independent element.

To obtain the angular velocity of the crank, the angular velocity in RPM and the length of this link are required. These data are the following 50 RPM and 55 cm of crank length, so we proceed to use the following formulas to find the value of the angular velocity and then obtain the value of the velocity of the EF link, which corresponds to the slide of the Scotch yoke.

$$\omega = RPM * 2\pi$$

A value of 314.15 rad/min is obtained, which represents the angular velocity of the drive link using the general velocity formula for the links.

$$Vb = \omega * AB$$

Where:

Vb = Velocity of node B (cm/min)
ω= Link angular velocity AB (rad/min)
AB= link length(cm)

Performing the proposed formula analysis we obtain that the velocity of node B is equal to 17278.7595 cm/min. Thus obtaining the following velocity polygon representing the velocity of all the nodes of the mechanism in question.

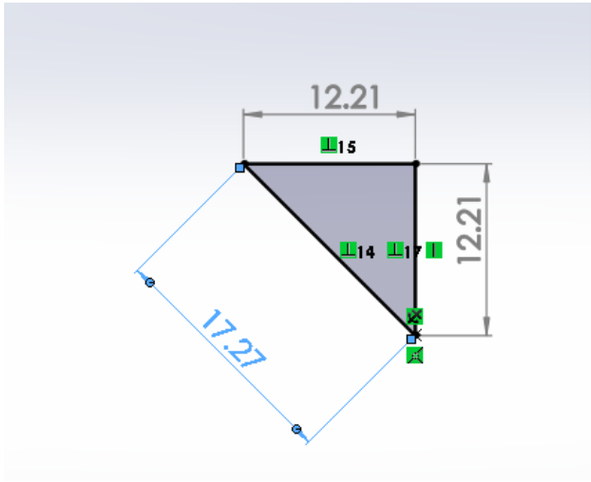


Figure 2 Polygon Velocities
Source: Own Source

Applying the graphical method of velocity polygon, we obtain the results shown in Fig. 2, where the velocity of node B is equal to the vector of 17.27 while the relative and absolute velocities of node F is equal to 12.21.

According to Shigley and Uicker (2007), the velocity polygon method is based on the idea that the velocity of a point in a mechanism is composed of two components: the absolute velocity and the relative velocity. Absolute velocity refers to the velocity of the point with respect to a fixed frame of reference in space, while relative velocity refers to the velocity of the point with respect to another point or body in the mechanism.

CAD design of the prototype

The design of the links that will make up the prototype was carried out by means of the *CAD* software *SolidWorks* in which the measurements proposed in the position diagram were taken into account in order to carry out the movement simulations necessary for this project. Below are the diagrams of the links and base designed for the Scotch yoke mechanism.

1. Base Design

In this piece, the distances of the crank, the height of the encoding motor, the distances of the slides and the thickness of the latter were taken into account. Due to the structure, it was necessary to design the base as a three-piece assembly. It is worth mentioning that internal tunnels were added to hide the cables of the electrical system in question. The design can be seen in this figure.

ISSN 2523-6997
RINOE® All rights reserved

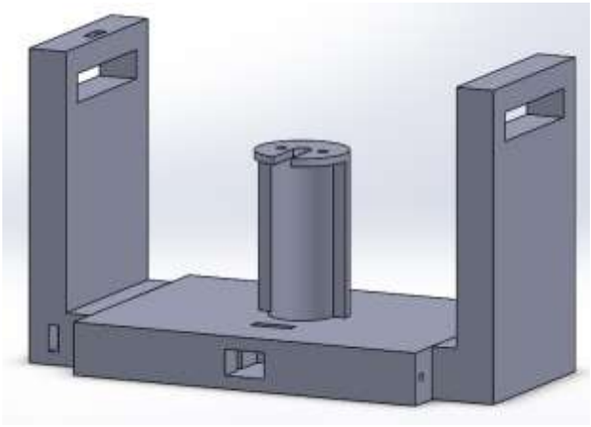


Figure 3 Assembled base design in SolidWorks
Source: Own Source

2. Link Design

The design of the links also respected the measurements propose in the position diagram using the base design. Separations and spaces were considered for the optimized operation of the mechanism taking as an axis the constructive lines of the diagram in *SolidWorks*.

Crank

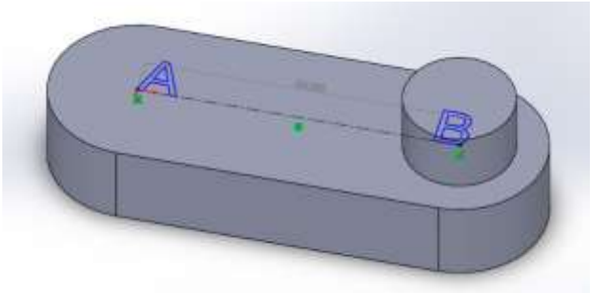


Figure 4 Crank link design
Source: Own Source

The crank is a mechanical component that is used to transform the circular motion into a reciprocating motion or vice versa. It consists of an arm or lever that is connected to a rotating shaft and is used to transmit movement to another component of the mechanism, such as a connecting rod or connecting rod.

In this particular case, the crank is connected to a crank motor, which in turn provides the driving force to rotate the crank. On one end is a hole in which it connects to the motor shaft, while on the opposite end is a pivot that will connect to the vertical slider slot that is part of the slide assembly.

There are two ways to design a crank for this type of mechanism. The first option is to use the design of a disc with the axis and pivot to perform the transmission of movement, but the drawback is the extra use of material when 3D printing it. So you opt for the second option which consists of the arm with the axis and pivot, as it fulfills its purpose, is lighter and does it doesn't take up too much material when 3D printing it.

Vertical slider with slide

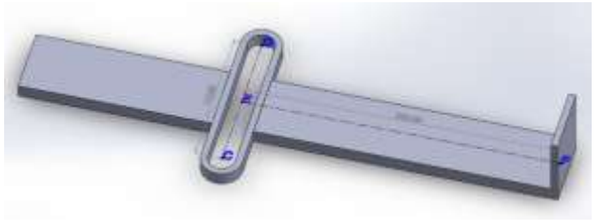


Figure 5 Slide with vertical slider made in SolidWorks
Source: Own Source

The design of this assembly encompasses three fundamental pieces. The first piece corresponds to the vertical slide that is located in the central part of the assembly. This piece is responsible for transmitting the rotary movement produced by the crank and then transforming it into an alternative harmonic linear movement.

On the right side of the image you can see a rectangular piece that is known as a slide, which is responsible for sliding over the support to generate the alternative harmonic linear movement. On the far right of this last piece is a wall that protrudes, whose main purpose is to serve as a barrier for measuring distance using an ultrasonic sensor, which in turn will serve to calculate the speed and acceleration of the sensor when moving.

Finally, an auxiliary bracket is located on the left side of the vertical slider. The function of this auxiliary part is to maintain the stability of the entire assembly at the time of generating the reciprocating linear motion.

ISSN 2523-6997
RINOE® All rights reserved

Motion simulation in SolidWorks Motion

SolidWorks offers a motion simulation engine called SolidWorks Motion in which, in order to perform the kinematic analysis, the corresponding assembly of the links is previously made, which allows limiting the degrees of movements of the model made in order to determine the boundaries that will result in the simulation corresponding to the Motion Studio.

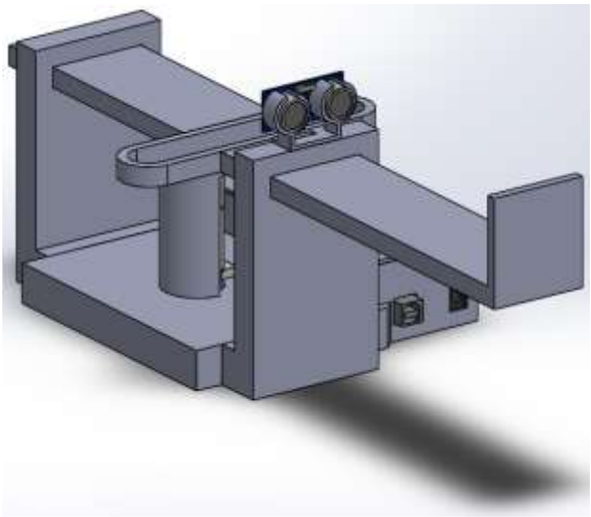


Figure 6 Assembling the links in SolidWorks Motion
Source: Own Source

In the parameters of the kinematic analysis, the study was carried out for the displacement, speed and acceleration of the slide with a constant angular velocity in the crank (link AB) of 50 RPM - SMR. These values were used to produce the following graphs:

In the image below, you can see that the linear displacement of the slide generates a sinusoidal graph over time. This is a characteristic of the Scotch yoke mechanism.

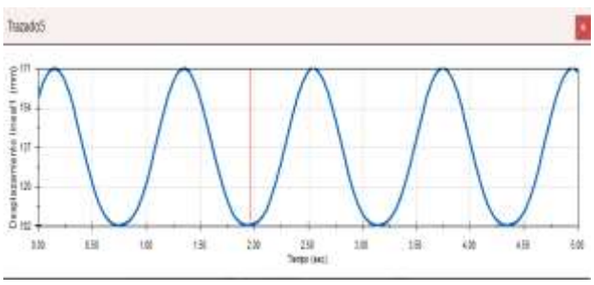


Figure 7 Linear sliding displacement in SolidWorks Motion
Source: Own Source

In the linear velocity graph it can be seen that there are points where the velocity reaches zero and then increases again, giving the illusion of "jumps" or a "rectified sinusoidal signal". This is because the mechanism of the Scotch yoke has a lower velocity at the P.M.S. (Upper Dead Center) and P.M.I. (Lower Dead Center) ends, which are part of the slide end.

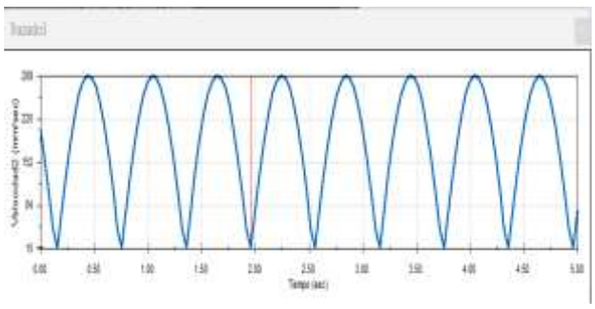


Figure 8 Linear Slider Velocity in SolidWorks Motion
Source: Own Source

In the case of linear acceleration, the peculiarity of the graph is notorious, since it has a lot to do with what was mentioned above for displacement and linear velocity. Because of this, it is possible to see a graph with these representative peculiarities.

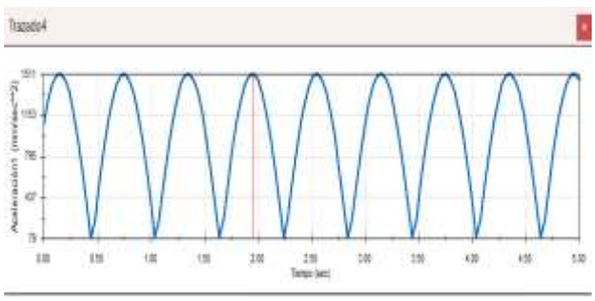


Figure 9 Linear acceleration of the slide in SolidWorks Motion
Source: Own Source

Additive manufacturing (3D printing)

A model of the mechanism designed in SolidWorks was made using additive FMD technology. The mechanism was printed in PLA material in order to carry out the physical instrumentation of the prototype to corroborate the data generated in the simulation and the analysis of the graphic method.

ISSN 2523-6997
RINOE® All rights reserved

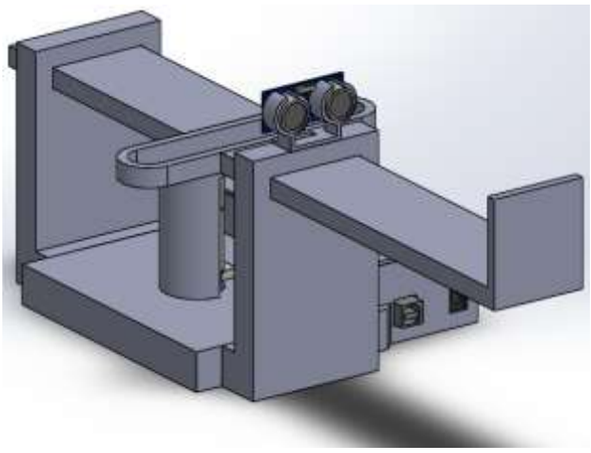


Figure 10 Prototype of the Scottish yoke 3D printed
Source: Own Source

Instrumentation

For this prototype, the following variables were monitored in the 3D-printed Scottish yoke prototype.

Revolutions per minute (RPM).
Displacement (cm).
Linear velocity (m/s).
Linear acceleration (m/s^2).

To measure the RPM of the crank, the Hall effect sensor installed in the encore motor was used, in this way it is possible to calculate its rotational speed. To control the speed of the motor, a PID controller was implemented using an Arduino board.

An HC-SR04 ultrasonic sensor was used to measure the distance between the sensor and the barrier at the end of the slide. The code to calculate the distance in cm was made in the Arduino IDE and then loaded to an Arduino Uno board that is responsible for performing the entire control process and necessary calculations of the variables.

To measure linear velocity, the displacement variable is used together with the time variable. The displacement is sampled from time to time to perform the corresponding operation to obtain the linear velocity of the end of the slide. The formula used is as follows:

Linear velocity = (Distance f – Distance i) / Time

To measure linear acceleration, the velocity variable calculated in the previous point is used, together with the time variable.

The velocity is sampled from time to time to perform the corresponding operation to obtain the linear acceleration of the end of the slide. The formula used is as follows:

Linear acceleration = (Velocity f – Velocity i)/Time

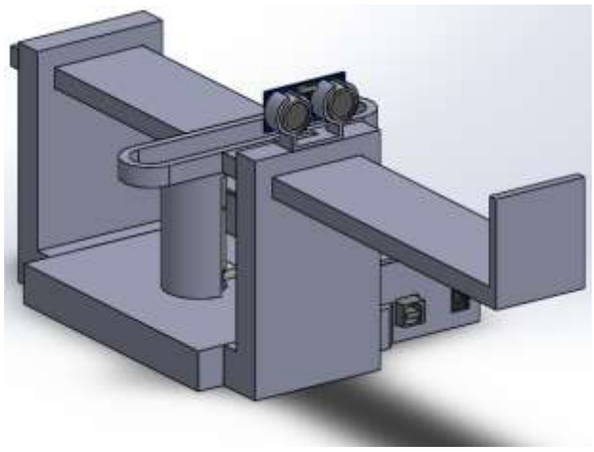


Figure 11 Ultrasonic sensor, enconder motor and Arduino board in the prototype
Source: Own Source

Therefore, *LabVIEW* software *was used for the monitoring panel*. By means of virtual instruments and programming, the interface was created to control and visualize by parameters of the mechanism. The Arduino board transmits the information to the computer using serial communication. On the panel you can control the speed of the enconder motor (RPM) as well as control the direction of rotation of the motor. On the right side of the panel are graphs showing the displacement, speed and acceleration of the slide. The collected data will then be exported to a spreadsheet for comparison of results.

Figure 12 Control and monitoring panel in LabVIEW
Source: Own Source

ISSN 2523-6997
RINOE® All rights reserved

Results

The following are the results obtained in the kinematics simulation of the software as explained above: the velocity and acceleration analysis was performed with respect to node C. with a position of 45° already described above and with a velocity of 50 RPM.

		CORREDERA_LATERAL_SENSOR-1
		Velocidad2 (mm/sec)
Fotograma	Tiempo	Sistema de coordenadas de ref.:
1	0.000	1.5742E+02

Table 1

Acknowledgements

I am very grateful to my collaborators who, with their knowledge and advice, always supported me in the realization of this project, to my students who were also a fundamental part in the development and implementation of the work. Their contributions were key parts in the culmination of this work, and I hope it will be of great use to future generations.

I would especially like to thank the facilities granted to us by the Technological University of Campeche, since the project was successfully developed in its workshops, classrooms and laboratories, and the Rector, Engineer José del Carmen Díaz Martínez, for his financial management for the publication of this article.

Conclusions

In summary, the congruence between the instrumental design and the empirical results showed a proximity that ranged between 5% and 10%. This close alignment is significant in providing users with the ability to discern the concepts inherent in operation and kinematics in diverse contexts.

The design of the instrument, developed through SolidWorks CAD software, was based on specific measurements, and considered the dimensions of the links established in the position diagram. The motion simulation in SolidWorks Motion enabled a detailed analysis of the velocity and acceleration of the mechanism's nodes, thus providing a detailed visual representation of the system's behavior.

The comparison of the results obtained in the simulation, in terms of speed and acceleration, with the theoretical data calculated using graphical methods, showed a close agreement, with a margin of error of 5% to 10%.

This indicates that the device, Designed and simulated, it was able to represent the operating concepts and kinematics of the connecting rod-crank mechanism accurately and reliably with slide.

The close correlation between instrumental design and experimental results is of great technical importance, allowing users to internalize and distinguish theoretical concepts in a practical and tangible environment. Observation of the actual functioning of the mechanism, contrasted with theoretical results, offers students the opportunity to consolidate and strengthen their understanding of the principles of operation and kinematics in various scenarios.

References

Bechthold, M., & Maier, A. (2019). Simulation of Motion. En S. Ahuja (Ed.), SolidWorks 2019

Black Book (pp. 417-437). CADCAMCAE Works Publications.

Doebelin, E. O., & Manik, D. N. (2014). Measurement Systems: Application and Design. McGraw-Hill Education.

Felder, R. M., & Brent, R. (2009). Active Learning: An Introduction. ASQ Higher Education Brief, 2(4), 1-5.

Johnson, D. W. (2010). Didactic devices. In M. L. García Llamas, & A. Gil-Flores (Eds.), Diccionario de la educación (pp. 171-173). Editions Aljibe.

Klockner, H. R., & Jowers, I. (2015). Computer-Aided Design. En I. Herskovic (Ed.), Encyclopedia of Human Computer Interaction (2nd ed.). Idea Group Reference.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice-Hall.

ISSN 2523-6997
RINOE® All rights reserved

Kolb, D. A. (2014). Experiential Learning: Experience as the Source of Learning and Development. FT Press

Norton, R. L. (2012). Machinery Design: Synthesis and Analysis of Mechanisms. Pearson Education.

Piaget, J. (1977). The development of intelligence. Criticism.

Shigley, J. E., & Uicker, J. J. (2007). Theory of Machines and Mechanisms. McGraw-Hill Inter-American.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press

ISSN 2523-6997
RINOE® All rights reserved

Article **Journal-Schools of economic Thought and Methology**
December, 2023 Vol.7 No.13 24-30

Study of the quality of work life of university professors in México

Estudio de la calidad de vida laboral de profesores universitarios de México

QUIROZ-CAMPAS, Celia Yaneth†*, PELAYO-HERRERA, Elena Yoselin, MURILLO-FÉLIX, Cecilia Aurora and HINOJOSA-RODRÍGUEZ, Carlos Jesús

Instituto Tecnológico de Sonora, Unidad Navojoa

ID 1st Author: *Celia Yaneth, Quiroz-Campas* / **ORC ID**: 0000-0002-6068-1552, **CVU CONAHCYT ID**: 281305

ID 1st Co-author: *Elena Yoselin, Pelayo-Herrera* / **ORC ID**: 0000-0003-4826-9458

ID 2nd Co-author: *Cecilia Aurora, Murillo-Félix* / **ORC ID**: 0000-0002-9625-0324, **CVU CONAHCYT ID**: 93702

ID 3rd Co-author: *Carlos Jesús, Hinojosa-Rodríguez* / **ORC ID**: 0000-0002-7576-9338, **CVU CONAHCYT ID**: 237638

DOI: 10.35429/JSETM.2023.13.7.24.30 Received September 18, 2023; Accepted December 29, 2023

Abstract

The present study shows a descriptive study of the quality of work life of 503 university professors in Mexico in order to determine their level and be able to strengthen their professional structure, obtaining a 92.17% overall average result. The methodology used was intentional, where eight universities in Mexico participated as part of an integrating project of the Academic Body of the Technological Institute of Sonora, Organizational Management and Sustainable development, in order to generate productivity with work synergies. The instrument used was tested by expert researchers in the line of research on quality of work life to strengthen this type of research as a contribution to the social sciences. The results affirm that the quality of life in university professors is of vital importance, to have an acceptable living condition, being a very important point within the institutions, achieving a positive result in the satisfaction of teachers in Mexico.

Quality of life, Quality of work life, Teachers

Resumen

El presente estudio muestra un estudio descriptivo de la calidad de vida laboral de 503 profesores universitarios de México para poder determinar cuál es su nivel y poder fortalecer su estructura profesional, obteniendo un 92.17% de resultado promedio general. La metodología utilizada fue de manera intencional, donde participaron ocho universidades de México como parte de un proyecto integrador del Cuerpo Académico del Instituto Tecnológico de Sonora, Gestión Organizacional y desarrollo Sustentable, para poder generar productividad con sinergias de trabajo. El instrumento utilizado fue testeado por investigadores expertos en la línea de investigación de calidad de vida laboral para fortalecer este tipo de investigaciones como contribución a las ciencias sociales. Los resultados afirman que la calidad de vida en profesores universitarios es de vital importancia, para tener una condición da viveza aceptable, siendo un punto muy importante dentro de las instituciones, logrando un resultado positivo en la satisfacción en docentes de México.

Calidad de vida, Calidad de vida laboral, Profesores

Citation: QUIROZ-CAMPAS, Celia Yaneth, PELAYO-HERRERA, Elena Yoselin, MURILLO-FÉLIX, Cecilia Aurora and HINOJOSA-RODRÍGUEZ, Carlos Jesús. Study of the quality of work life of university professors in México. Journal Schools of economic Thought and Methology. 2023. 7-13: 24-30

* Correspondence to the Author (e-mail: cjquiroz@itson.edu.mx)
† Researcher contributing as first author.

1. Introduction

The present study shows an investigation of the quality of work life of university professors in Mexico. Quality of life is a complex concept that reflects objective and subjective social and personal aspects and multiple domains such as physical, emotional, educational and labor.

Quiroz et al., (2022) in their book Measurements of the quality of work life in the educational environment states that it is of utmost importance to evaluate in a general way the variables that can determine the situations that teachers can experience inside and outside their classrooms. tasks and that at a certain moment can affect their environment.

Different disciplines also include the concept of quality of life. For this reason, it has gained importance in medicine in the last century due to the increase in chronic diseases and the possibility of early diagnosis and subsequent treatment, which means prolonging the lives of patients who previously had difficulty surviving. Begin to consider not only quantitative but also qualitative ideas from previous interventions (Bautista, Quality of life as a concept, 2017).

The quality of work life is closely related to the nature of work, these, by definition, are any characteristic that may have influence on the appearance of risks to the safety and health of each individual, professional danger is the possibility that a worker suffer a certain damage derived from their work, reference is made to illnesses, pathologies such as stress from work or exhaustion, and injuries suffered due to activities.

Everything mentioned above is related to the aspects of time lapse on a daily basis, and the coping with problems, which generate changes in education, or in a person's experience itself (Castro et al., 2018; Bairero, 2018).

The conditions related to the work are diverse, these can be the schedules, the remuneration, the operating environment, the benefits and services obtained, the professional career possibilities, human relations, etc., they can be relevant for satisfaction, motivation and professional performance (Abril & Amparo, 2017) within the area of education.

It is of utmost importance that teachers are fully motivated and satisfied to teach the topics programmed in their course planning; since, a good execution of this, would put Mexico in a better position compared to other countries at an educational level.

Work life originated in the 60s and 70s with the appearance of the Organizational Development movement (Segurado, 2002) which seeks to improve the effectiveness and efficiency of an organization; starting from the humanization and values of the environment, aiming at the development of the worker in all the behaviors that affect him or her within the operational scope.

The transformation of the concept was generalizing that quality of life is a fundamental part and not only in the work sector. The subjective enjoyment of vividness being a relevant part; However, it must be distinguished from other notions, since it is possible that a certain effectiveness does not represent satisfaction from the experience. Therefore, this satisfaction is defined as the range in which a person positively evaluates the disposition of their current existence as a whole.

Carrying out this evaluation began to take on importance, for the reason that it is necessary to consider all the criteria that appear in the recruitment of the person: how they feel, how well they meet their expectations, how desirable they consider their time period and which affects their professional performance so much (Castellanos, 2018; Suarez & Maldonado and Santoyo 2022).

According to the studies of Granados (2011) “CVL is defined as favorable work conditions and environments that care for and promote the satisfaction of workers through incentives, guaranteeing professional security and convenience for personal growth.” However, Durán (2010) perceives the term from a conceptual perspective and another philosophical perspective, mentioning that the purpose of said topic focused on the operational time span lies in increasing the situations that directly impact the worker's reality, from a general vision of the fundamental requirements of the human being.

ISSN 2523-6997
RINOE® All rights reserved

Quiroz & Hinojosa (2020) in their book Quality of work life: a perspective from the educational sector of the Mayo Region, mentions that developing this type of research increases the academic production of universities in the short, medium and long term.

2. Methodology

2.1 Method

The research design that will be used for the work will be Mixed, since it has both numerical information and descriptive data, for example, email, sex, type of contract, age, level of education, marital status, seniority and educational program . According to Hernández et., al (2014), the mixed research approach represents a grouping of systematic, empirical and critical research processes that involves the collection and analysis of quantitative and qualitative data, to obtain a report of all the information obtained and being able to achieve a greater judgment of what you want to study (Hernández & Mendoza, 2018).

In a broad sense, Johnson et., al (2006) views this type of research as continuous, where a mixture of both quantitative and qualitative approaches is used, using the results of the instrument variables, which are quality. of life, organizational performance, and organizational management. Giving more weight to one of them or giving it the same, where it is noted that the quantitative method is abbreviated as QUAN and when it comes to the other method it is WHICH.

In addition, the general average of the study of the quality of work life will be taken, to answer the research question and validate which of the hypotheses will be known through the use of the SPSS version 26 statistical package. In summary, the mixed process It uses numerical, verbal, textual, visual, and symbolic data.

This mixed process has an objective which is to achieve a broader and deeper perspective of a phenomenon; In addition to that, the need to use this type of method has been noted, since it is complex to the vast majority of the phenomena or research problems addressed in the different sciences (Newman et., al 2002).

2.2 Participants

The people who took part in the research are university teachers of different sex, age, specialty, schedule, shift and with different studies, focused on different parts of Mexico. The sample design is non-probabilistic, since the author Johnson et., al, (2014) mentions that in this type the choice of elements does not radically depend on probability, but on causes related to the characteristics of the research or the purposes. of the researcher. This procedure is not mechanical nor is it based on probability formulas, it depends greatly on the decision-making of a researcher or a group and the type of criteria selected that (obeys) some specific variations for the analysis sought (Hernández et. al, 2018).

2.3 Instrument

The instrument has a total of 31 questions (Campas, 2021), which in the first section is personal information and has 8 questions. Then they are divided into three more variables, the name of the first section is “Quality of life” and it has a number of 8 questions. The second section is “Organizational Management” with which its development is 10 questions, and the third section is “Organizational Performance” which is divided by 13 questions and finally, the last sections of the instrument include two general questions. .

The types of responses offered are on a Likert scale from 1 to 5, where 1 is totally disagree, and 5 is totally agree. Information for reliability and validity was obtained from the following document Statistical Package for the Social Sciences SPSS version 26.

The validity of the instrument was carried out through a focus group attended by 6 university professors who were experts in different areas, all related to the topic under study, with the objective of achieving the research objectives.

Reliability was determined by determining the Cronbach's Alpha coefficient, in the SPSS version 26 statistical package, where it had a result of 0.955, considering it excellent to be able to perform statistical tests without any problem, obtaining an excellent data collection tool (George, 2003).

ISSN 2523-6997
RINOE® All rights reserved

2.4 Procedure

The procedure used in this work is mixed, it is applied in both methods synchronously (quantitative and qualitative data, these are collected and analyzed at the same time). There are five phases, which will be described below (Hernández & Mendoza, 2008).

Phase 1

Problem statement. The first step in the sequence is to formulate the objectives and quantitative and qualitative questions separate and consecutive from explicit questions for mixed methods. The second phase is based on writing several mixed questions, and dividing them into quantitative and qualitative to answer each branch.

The last point in the sequence consists of writing questions for each phase of the research related to the evolution of the study; For example, when obtaining data from the instrument, a qualitative part is raised first and then the quantitative ones, but they will be obtained at the same time.

Phase 2

Literature review. Based on the mixed study, an exhaustive and complete verification of the literature focused on the quality of life of teachers in Mexico was carried out. Everything explained clearly and with relevant topics that help solve the problem statement.

Phase 3

Hypothesis. In this mixed method, the hypotheses include “in and for” the quantitative part or phase, when through our study we aim for some confirmatory or evidentiary purpose with an exploratory nature.

Phase 4

Design. Each mixed study involves a unique work and its own design, which is why it is a more “artisanal” task than the qualitative designs themselves. For this work, the concurrent mixed design will be used, which consists of collecting data from both quantitative and qualitative at the same time and not separate them, then analyze the results, and have a discussion.

Phase 5

Data analysis. The statistical package SPSS version 26 was used, descriptive statistics including the mean, median, mode and standard deviation, considering the results of the universities under study.

Campas et al., (2022) states that to carry out quality of life studies in workers it is important to use in-depth analysis for greater understanding.

3. Results and discussion

This section shows the results of the instruments applied to the 503 university teachers; The primary objective is to evaluate the quality of work life of teachers in Mexico, of which it obtained 92.17% within the subjects, obtaining a good level of quality of work life in university teachers in Mexico.

In the general data, 68% are women and 32% men, the ages range between 53% from 31 to 40 years, from 22 to 30 years 18%, from 41 to 50 years 12%, and over 50 years with 17%. 69% are married and 31% are single. The majority of teachers are contracted with a percentage of 83% and 17% work permanently, 62% of teachers studied until postgraduate, 38% only bachelor's degree.

Variables	Results
Quality of life	4.05
Organizational Management	4.48
Organizational Performance	4.36

Table 1 Variable results

The Organizational Management variable obtained a result of 4.48 out of 5.00, being the one that was best evaluated, the Organizational Performance variable obtained 4.36 and the Quality of Life variable obtained 4.05, being the worst evaluated.

Cronbach's alpha	Number of elements
.955	37

Table 2 Reliability statistics

This table shows the reliability of the results obtained in the surveys, where Alpha obtained .955 and the Number of elements 37.

RINOE® All rights reserved

Ítem	Half
In the new remote modality, spaces are promoted to interact with staff in activities other than daily work.	3.34
I believe that I have the necessary resources, equipment, tools and materials to carry out my activities adequately.	3.76
The quality of life promoted in the institution is adequate.	3.81
I have enough time to do my job within the work day.	3.93

Table 3 Descriptive statistics of the lowest items

This table describes the questions that obtained the lowest score in the survey carried out. The lowest item is "in the new remote modality, spaces are promoted to interact with staff in activities other than daily work."

Ítem	Half
I consider that my work contributes to the objectives of the institution.	4.73
I am proud of my work that I do at the institution.	4.71
I am clear about my responsibilities in the institution.	4.69
The relationship with my coworkers is appropriate for a healthy coexistence at work.	4.66
I feel totally identified with the objectives of the institution.	4.63

Table 4 Statistics of the highest items

The table shows the questions with the highest scores from the survey that was carried out. The highest item was "I considered that my work contributes to the objectives of the institution."

Gratitude

To the Technological Institute of Sonora for the support provided for this research.

Financing

This work has been funded by the Technological Institute of Sonora.

Conclusions

The general result obtained from the study carried out was 92.17%% of quality of work life in university teachers, giving an effective result, the INEGI (2022), states that the average satisfaction with life should be 8.4 and an equal percentage of 84.00%, giving a positive result to the results in the workplace of university teachers.

On the other hand, Peña's (2015) research mentions that the average quality of life at work obtained in his research was 3.54. The project to be compared obtained different results within three variables, which exceed the author's acceptable range. The variables mentioned are organizational management with 4.48, organizational performance with 4.36 and quality of life with 4.05.

Therefore, Gallego (2019) 56% represents a high level of satisfaction regarding the quality of work life in his research work, where 41 teachers were surveyed, comparing the percentage obtained with that of the author, this work exceeds the positive satisfaction index.

Quiroz et al., (2023) in their book Research on quality of work life and business management for organizational development consider that involving the business sector can help generate new variables for future research.

The Hypothesis of the research work states that the quality of life in university teachers is essential to have an acceptable living condition, being a very important point within the institutions, achieving a positive result in the satisfaction of teachers in Mexico.

Quiroz et al., (2023) carried out a comparative study of the quality of life of university professors from Sonora and Sinaloa in Mexico and found a similarity in the results of their research with the one presented in this article, where the professors feel committed to their work institution.

References

April, J., & Amparo, F. (2017). Quality of Life of Health Workers. The Cases of Mexico and Chile [Graduation thesis]. University Santo Tomas. https://repository.usta.edu.co/bitstream/handle/11634/4389/2017AbrilGarciaJenniferGarciaFannyAmparotrabajodegrado.pdf?sequence=1&isAllowed=y

Bautista-Rodríguez, L. M. (2017). Quality of life as a concept. Science and Care Magazine, 14(1), 5–8. https://doi.org/10.22463/17949831.803

RINOE® All rights reserved

Bairero-Aguilar, M. Stress and its influence on quality of life. MULTIMED [online magazine]. 2018 http://www.revmultimed.sld.cu/index.php/mtm/article/view/688

Castro, P., Cruz, E., Hernández, J., Vargas, R., Luis, K., Gatica, L., & Tepal, I. (2018). A perspective on the Quality of Work Life. Ibero-American Journal of Sciences, 5(6), 118-128. https://ciencialatina.org/index.php/cienciala/article/view/558/721

Castellanos, R. (2018). Subjective well-being as a sign of progress. Satisfaction with life, objective indicators and social context. In Millán, R. and Castellanos, R. (coords.), Subjective well-being in Mexico (pp. 21-51). Institute of Social Research of the National Autonomous University of Mexico. https://www.scielo.org.mx/pdf/ride/v12n24/2007-7467-ride-12-24-e022.pdf

Campas, C. Y. Q., Miranda, F. B., Zazueta, L. A., Lirios, C. G., & Corral, A. G. (2022). ANALYSIS OF THE QUALITY OF WORKING LIFE OF A HIGH EDUCATION INSTITUTION IN THE SOUTH OF SONORA, THROUGH THE ANALYSIS OF ARTIFICIAL NEURAL NETWORKS. Journal of Positive Psychology and Wellbeing, 6(2), 1938-1949. https://journalppw.com/index.php/jppw/article/view/13018

Durán, M. (2010). Psychological well-being: stress and quality of life in the work context. National Journal of Management, 1(1), 71-84. https://dialnet.unirioja.es/servlet/articulo?codigo=3698512.

Gallego Echeverria, L. A. (2019). Relationship between quality of work life and engagement in university professors in the private sector in the city of Armenia [master's degree in human talent management]. University of Manizales. https://ridum.umanizales.edu.co/xmlui/handle/20.500.12746/5605

Granados, I. (2011). Quality of work life: history, dimensions and benefits. Journal of Research in Psychology, 14(2), 209-221. https://www.researchgate.net/publication/348634170_Generalidades_en_la_calidad_de_vida_laboral_de_los_docentes_en_educacion_basica_en_el_norte_de_Mexico

George D, Mallery P (2003) SPSS for Windows Step by Step: A Simple Guide and Reference (11.0). 4th ed. Allyn & Bacon. https://wps.ablongman.com/wps/media/objects/385/394732/george4answers.pdf

Indicators of self-reported well-being of the urban population. (2022). INEGI. https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2022/biare/biare2022_02.pdf

Johnson, B. & Onwuegbuzie, J. (2006). The Validity Issue in Mixed Research. Mid-South Educational Research Association. https://www.researchgate.net/publication/228340166_The_Validity_Issues_in_Mixed_Research

Peña Herrera-Larenas, Fabián, Cárdenas-Cobo, Jesennia, & Cedillo-Fajardo, Miguel. (2015). Perception of the quality of work life of university teachers. University, Science and Technology, 19(77), 166-173. http://ve.scielo.org/scielo.php?script=sci_arttext&pid=S1316-48212015000400003&lng=es&tlng=es.

Hernández, R., Fernández, C., & Baptista, P. (2014). Investigation methodology. 6th Sampieri Edition. McGRAW-HILL / INTERAMERICANA EDITORES, S.A. DE C.V. https://www.uca.ac.cr/wp-content/uploads/2017/10/Investigacion.pdf

Hernández Sampieri, R., & Mendoza, C. P. (2008) The qualitative quantitative marriage: the mixed paradigm. https://www.redalyc.org/pdf/1350/135043653001.pdf

Hernández-Sampieri, R. & Mendoza, C (2018). Investigation methodology. 5th Sampieri Edition. McGRAW-HILL / INTERAMERICANA EDITORES, S.A. DE C.V. https://www.icmujeres.gob.mx/wp-content/uploads/2020/05/Sampieri.Met.Inv.pdf

Maldonado Suárez, Neiber, & Santoyo Telles, Felipe. (2022). Theoretical elements for research in psychology and quality of life. RIDE. Ibero-American Journal for Educational Research and Development, 12(24), e022.

ISSN 2523-6997
RINOE® All rights reserved

Newman, I., Ridenour, C. S., Newman, C. & De Marco, G. M. (2002). A typology of research purposes and its relationship to mixed methods in social and behavioral research (pp. 167-188). Thousand Oaks, CA, USA: Sage. https://dialnet.unirioja.es/descarga/articulo/7083551.pdf

Quiroz, C. Y. Q., Barreras, I. G. M., Morales, F. E., Lirios, C. G., Félix, C. A. M., & Mellado, E. I. A. (2021). Design and validation of an instrument to measure the quality of work life in workers of higher education institutions in southern Sonora, Mexico. Interciencia, 46(11), 423-430. https://www.interciencia.net/wp-content/uploads/2021/11/03_6858_Com_Quiroz_v46n11_8.pdf

Quiroz Campas, C. Y., López Arellano, J. R., Vega Arellano, A. H. and Galván Corral, A. (2023). Impact of COVID-19 on the quality of life of university professors in Sonora and Sinaloa (Mexico). Cuadernos de Geografía: Revista Colombiana de Geografía, 32(2), 474–491. https://doi.org/10.15446/rcdg.v32n2.105358

Quiroz Campas Celia Y. & Hinojosa Rodríguez Carlos J. (2020). Quality of work life: a perspective from the educational sector of the Mayo Region. Rosa Ma. Porrúa Editions

Quiroz Campas, C., Armenta Zazueta, L., Murillo Félix, C., Galván Corral, A. (2022). Measurements of the quality of work life in the educational environment. Publisher:Mc Graw-Hill Interamericana Editores.

Quiroz Campas, Celia Y., Méndez Hernández, Pablo., Galván Corral, Alberto., Hernández Vicente Irma A. (2023). Research on quality of work life and business management for organizational development. Cromberger Editores e Impresiones, S.A. of C.V. https://crombergereditores.com/libro/investigaciones-de-calidad-de-vida-laboral-y-gestion-empresarial-para-el-desarrollo-organizacional/

Segurado, A. and Agulló, E. (2002) Quality of work life: towards an integrative approach from Social Psychology, Psicothema. https://www.psicothema.com/pdf/806.pdf

ISSN 2523-6997
RINOE® All rights reserved

[Title in Times New Roman and Bold No. 14 in English and Spanish]

Surname (IN UPPERCASE), Name 1st Author†*, Surname (IN UPPERCASE), Name 1st Coauthor, Surname (IN UPPERCASE), Name 2nd Coauthor and Surname (IN UPPERCASE), Name 3rd Coauthor

Institutional Affiliation of Author including Dependency (No.10 Times New Roman and Italic)

International Identification of Science - Technology and Innovation

ID 1st author: (ORC ID - Researcher ID Thomson, arXiv Author ID - PubMed Author ID - Open ID) and CVU 1st author: (Scholar-PNPC or SNI-CONAHCYT) (No.10 Times New Roman)

ID 1st coauthor: (ORC ID - Researcher ID Thomson, arXiv Author ID - PubMed Author ID - Open ID) and CVU 1st coauthor: (Scholar or SNI) (No.10 Times New Roman)

ID 2nd coauthor: (ORC ID - Researcher ID Thomson, arXiv Author ID - PubMed Author ID - Open ID) and CVU 2nd coauthor: (Scholar or SNI) (No.10 Times New Roman)

ID 3rd coauthor: (ORC ID - Researcher ID Thomson, arXiv Author ID - PubMed Author ID - Open ID) and CVU 3rd coauthor: (Scholar or SNI) (No.10 Times New Roman)

(Report Submission Date: Month, Day, and Year); Accepted (Insert date of Acceptance: Use Only RINOE)

Abstract (In English, 150-200 words)

Objectives
Methodology
Contribution

Abstract (In Spanish, 150-200 words)

Objectives
Methodology
Contribution

Keywords (In English)

Indicate 3 keywords in Times New Roman and Bold No. 10

Keywords (In Spanish)

Indicate 3 keywords in Times New Roman and Bold No. 10

Citation: Surname (IN UPPERCASE), Name 1st Author†*, Surname (IN UPPERCASE), Name 1st Coauthor, Surname (IN UPPERCASE), Name 2nd Coauthor and Surname (IN UPPERCASE), Name 3rd Coauthor. Paper Title. Journal Schools of economic Thought and Methology. Year 1-1: 1-11 [Times New Roman No.10]

* Correspondence to Author (example@example.org)
† Researcher contributing as first author.

Introduction

Text in Times New Roman No.12, single space.

General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

Explanation of sections Article.

Development of headings and subheadings of the article with subsequent numbers

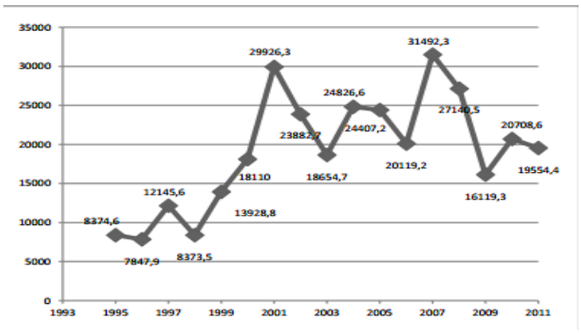
[Title No.12 in Times New Roman, single spaced and Bold]

Products in development No.12 Times New Roman, single spaced.

Including graphs, figures and tables-Editable

In the article content any graphic, table and figure should be editable formats that can change size, type and number of letter, for the purposes of edition, these must be high quality, not pixelated and should be noticeable even reducing image scale.

[Indicating the title at the bottom with No.10 and Times New Roman Bold]



Graphic 1 Title and Source (in italics).

Should not be images-everything must be editable.

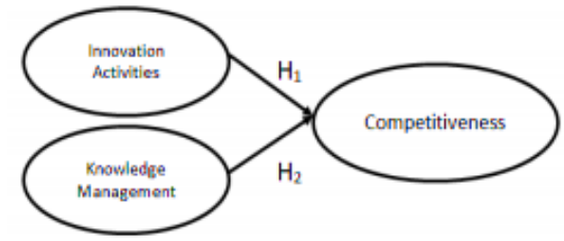


Figure 1 Title and Source (in italics).

Should not be images-everything must be editable.

			OLS	I-OLS	IM-OLS	OLS	I-OLS	IM-OLS
		λ	Panel A. Bias			Panel B. RMSE		
ρ = 0.0	γ = 0.0	1	−0.00011	−0.00003	0.00013	0.0267	0.0398	0.0378
		2	0.00051	0.00039	0.00015	0.0267	0.0414	0.0395
		3	−0.00091	−0.00143	−0.00065	0.0286	0.0461	0.0429
		4	0.00034	0.00041	0.00115	0.0301	0.0498	0.0471
		5	0.00011	0.00040	0.00018	0.0324	0.0537	0.0507
		10	−0.00010	−0.00079	−0.00013	0.0455	0.0861	0.0763
	γ = 0.3	1	0.01477	0.00378	0.00274	0.0342	0.0435	0.0360
		2	0.01778	0.00754	0.00618	0.0361	0.0472	0.0391
		3	0.02092	0.01064	0.00925	0.0388	0.0518	0.0438
		4	0.02340	0.01364	0.01236	0.0418	0.0555	0.0471
		5	0.02652	0.01721	0.01454	0.0448	0.0607	0.0516
		10	0.04198	0.03247	0.03146	0.0641	0.0952	0.0829
ρ = 0.3	γ = 0.0	1	−0.00085	−0.00021	−0.00073	0.0364	0.0545	0.0531
		2	0.00019	−0.00015	−0.00011	0.0374	0.0565	0.0550
		3	0.00015	0.00076	0.00046	0.0400	0.0627	0.0597
		4	0.00043	−0.00011	−0.00070	0.0417	0.0711	0.0668
		5	0.00165	0.00206	0.00213	0.0454	0.0791	0.0711
		10	0.00073	0.00136	0.00112	0.0661	0.1267	0.1128
	γ = 0.3	1	0.02299	0.00570	0.00458	0.0490	0.0643	0.0527
		2	0.02818	0.01123	0.01035	0.0523	0.0676	0.0561
		3	0.03264	0.01611	0.01445	0.0571	0.0720	0.0620
		4	0.03581	0.01957	0.01907	0.0591	0.0773	0.0690
		5	0.04081	0.02569	0.02416	0.0647	0.0872	0.0754
		10	0.06063	0.04727	0.04458	0.0914	0.1369	0.1187

Table 1 Title and Source (in italics**).**

Should not be images-everything must be editable.

Each article shall present separately in **3 folders**: a) Figures, b) Charts and c) Tables in .JPG format, indicating the number and sequential Bold Title.

For the use of equations, noted as follows:

$$Y_{ij} = \alpha + \sum_{h=1}^{r} \beta_h X_{hij} + u_j + e_{ij} \qquad (1)$$

They must be editable and number aligned on the right side.

Methodology

Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

Results

The results shall be by section of the article.

Annexes

Tables and adequate sources thanks to indicate if they were funded by any institution, University or company.

ISSN 2523-6997
RINOE® All rights reserved.

Conclusions

Explain clearly the results and possibilities of improvement.

Explain clearly the results and possibilities of improvement.

References

Use APA system. Should not be numbered, nor with bullets, however if necessary numbering will be because reference or mention is made somewhere in the Article.

Use Roman Alphabet, all references you have used must be in the Roman Alphabet, even if you have quoted an Article, book in any of the official languages of the United Nations (English, French, German, Chinese, Russian, Portuguese, Italian, Spanish, Arabic), you must write the reference in Roman script and not in any of the official languages.

Technical Specifications

Each Article must submit your dates into a Word document (.docx):

Journal Name
Article title
Abstract
Keywords
Article sections, for example:

1. Introduction
2. Description of the method
3. Analysis from the regression demand curve
4. Results
5. Thanks
6. Conclusions
7. References

Author Name (s)
Email Correspondence to Author
References

Intellectual Property Requirements for editing:

- Authentic Signature in Color of Originality Format Author and Coauthors.
- Authentic Signature in Color of the Acceptance Format of Author and Coauthors.
- Authentic Signature in blue colour of the Conflict of Interest Format of Author and Co-authors.

ISSN 2523-6997
RINOE® All rights reserved.

Reservation to Editorial Policy

Journal-Schools of economic Thought and Methology reserves the right to make editorial changes required to adapt the Articles to the Editorial Policy of the Journal. Once the Article is accepted in its final version, the Journal will send the author the proofs for review. RINOE® will only accept the correction of errata and errors or omissions arising from the editing process of the Journal, reserving in full the copyrights and content dissemination. No deletions, substitutions or additions that alter the formation of the Article will be accepted.

Code of Ethics - Good Practices and Declaration of Solution to Editorial Conflicts

Declaration of Originality and unpublished character of the Article, of Authors, on the obtaining of data and interpretation of results, Acknowledgments, Conflict of interests, Assignment of rights and Distribution.

The RINOE® Management claims to Authors of Articles that its content must be original, unpublished and of Scientific, Technological and Innovation content to be submitted for evaluation.

The Authors signing the Article must be the same that have contributed to its conception, realization and development, as well as obtaining the data, interpreting the results, drafting and reviewing it. The Corresponding Author of the proposed Article will request the form that follows.

Article title:

- The sending of an Article to Journal-Schools of economic Thought and Methology emanates the commitment of the author not to submit it simultaneously to the consideration of other series publications for it must complement the Format of Originality for its Article, unless it is rejected by the Arbitration Committee, it may be withdrawn.

- None of the data presented in this article has been plagiarized or invented. The original data are clearly distinguished from those already published. And it is known of the test in PLAGSCAN if a level of plagiarism is detected Positive will not proceed to arbitrate.

  - References are cited on which the information contained in the Article is based, as well as theories and data from other previously published Articles.

- The authors sign the Format of Authorization for their Article to be disseminated by means that RINOE® in its Holding Cameroon considers pertinent for disclosure and diffusion of its Article its Rights of Work.

- Consent has been obtained from those who have contributed unpublished data obtained through verbal or written communication, and such communication and Authorship are adequately identified.

- The Author and Co-Authors who sign this work have participated in its planning, design and execution, as well as in the interpretation of the results. They also critically reviewed the paper, approved its final version and agreed with its publication.

- No signature responsible for the work has been omitted and the criteria of Scientific Authorization are satisfied.

- The results of this Article have been interpreted objectively. Any results contrary to the point of view of those who sign are exposed and discussed in the Article.

Copyright and Access

The publication of this Article supposes the transfer of the copyright to RINOE® in its Holding Cameroon for its Journal-Schools of economic Thought and Methology, which reserves the right to distribute on the Web the published version of the Article and the making available of the Article in This format supposes for its Authors the fulfilment of what is established in the Law of Science and Technology of the United Mexican States, regarding the obligation to allow access to the results of Scientific Research.

Article Title:

Name and Surnames of the Contact Author and the Co-authors	Signature
1.	
2.	
3.	
4.	

Principles of Ethics and Declaration of Solution to Editorial Conflicts

Editor Responsibilities

The Publisher undertakes to guarantee the confidentiality of the evaluation process, it may not disclose to the Arbitrators the identity of the Authors, nor may it reveal the identity of the Arbitrators at any time.

The Editor assumes the responsibility to properly inform the Author of the stage of the editorial process in which the text is sent, as well as the resolutions of Double-Blind Review.

The Editor should evaluate manuscripts and their intellectual content without distinction of race, gender, sexual orientation, religious beliefs, ethnicity, nationality, or the political philosophy of the Authors.

The Editor and his editing team of RINOE® Holdings will not disclose any information about Articles submitted to anyone other than the corresponding Author.

The Editor should make fair and impartial decisions and ensure a fair Double-Blind Review.

Responsibilities of the Editorial Board

The description of the peer review processes is made known by the Editorial Board in order that the Authors know what the evaluation criteria are and will always be willing to justify any controversy in the evaluation process. In case of Plagiarism Detection to the Article the Committee notifies the Authors for Violation to the Right of Scientific, Technological and Innovation Authorization.

Responsibilities of the Arbitration Committee

The Arbitrators undertake to notify about any unethical conduct by the Authors and to indicate all the information that may be reason to reject the publication of the Articles. In addition, they must undertake to keep confidential information related to the Articles they evaluate.

Any manuscript received for your arbitration must be treated as confidential, should not be displayed or discussed with other experts, except with the permission of the Editor.

The Arbitrators must be conducted objectively, any personal criticism of the Author is inappropriate.

The Arbitrators must express their points of view with clarity and with valid arguments that contribute to the Scientific, Technological and Innovation of the Author.

The Arbitrators should not evaluate manuscripts in which they have conflicts of interest and have been notified to the Editor before submitting the Article for Double-Blind Review.

Responsibilities of the Authors

Authors must guarantee that their articles are the product of their original work and that the data has been obtained ethically.

Authors must ensure that they have not been previously published or that they are not considered in another serial publication.

Authors must strictly follow the rules for the publication of Defined Articles by the Editorial Board.

The authors have requested that the text in all its forms be an unethical editorial behavior and is unacceptable, consequently, any manuscript that incurs in plagiarism is eliminated and not considered for publication.

Authors should cite publications that have been influential in the nature of the Article submitted to arbitration.

Information services

Indexation - Bases and Repositories

V|LEX (Global Legal Intelligence Platform)
RESEARCH GATE (Germany)
GOOGLE SCHOLAR (Citation indexes-Google)
MENDELEY (Bibliographic Reference Manager)

Publishing Services

Citation and Index Identification H
Management of Originality Format and Authorization
Testing Article with PLAGSCAN
Article Evaluation
Certificate of Double-Blind Review
Article Edition
Web layout
Indexing and Repository
ArticleTranslation
Article Publication
Certificate of Article
Service Billing

Editorial Policy and Management

Boulevard de la Liberté, Immeuble Kassap, CP-5963.Akwa- Douala - Cameroon. Phones: +52 1 55 1260 0355, +52 1 55 6159 2296, +52 1 55 6034 9181; E-mail: contact@rinoe.org www.rinoe.org

Journal-Schools of economic Thought and Methology

Editor in chief
GUZMÁN - HURTADO, Juan Luis. PhD

Executive director
RAMOS-ESCAMILLA, María. PhD

Editorial Director
PERALTA-CASTRO, Enrique. MsC

Web designer
ESCAMILLA-BOUCHAN, Imelda. PhD

Web Diagrammer
LUNA-SOTO, Vladimir. PhD

Editorial Assistants
SORIANO-VELASCO, Jesús. BsC

Philologist
RAMOS-ARANCIBIA, Alejandra. BsC

Advertising & Sponsorship

(RINOE® - Cameroon), sponsorships@rinoe.org

Site Licences

03-2010-032610094200-01-For printed material, 03-2010-031613323600-01-For Electronic material,03-2010-032610105200-01-For Photographic material,03-2010-032610115700-14-For the facts Compilation,04-2010-031613323600-01-For its Web page,19502-For the Iberoamerican and Caribbean Indexation,20-281 HB9-For its indexation in Latin-American in Social Sciences and Humanities,671-For its indexing in Electronic Scientific Journals Spanish and Latin-America,7045008-For its divulgation and edition in the Ministry of Education and Culture-Spain,25409-For its repository in the Biblioteca Universitaria-Madrid,16258-For its indexing in the Dialnet,20589-For its indexing in the edited Journals in the countries of Iberian-America and the Caribbean, 15048-For the international registration of Congress and Colloquiums. financingprograms@rinoe.org

Management Offices

Boulevard de la Liberté, Immeuble Kassap, CP-5963.Akwa- Douala – Cameroon.

2523 6997
ISSN 2523-6997
www.rinoe.org