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*Artículos científicos*

## **Eficiencia de una app fiscal como herramienta de aprendizaje sobre contribuciones en una universidad pública**

*Efficiency of a tax app as a learning tool about contributions in a public university*

*Eficiência de um aplicativo fiscal como ferramenta de aprendizagem sobre contribuições em uma universidade pública*

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### **Resumen**

El objetivo de este estudio es mostrar la eficiencia de una *app* fiscal como herramienta en el estudio del régimen simplificado de confianza entre los alumnos de la licenciatura en Contaduría de la Universidad Autónoma del Estado de México (UAEM). La *app* se creó considerando la norma ISO 13047, el contenido y procedimientos específicos de las disposiciones fiscales del impuesto sobre la renta (ISR) y el impuesto al valor agregado (IVA) vigentes al periodo 2022. Para evaluar la eficiencia de la *app*, se aplicó un cuestionario considerando la normatividad de calidad ISO 25010. Dicho instrumento fue aplicado a 129 alumnos de segundo, cuarto, sexto y octavo semestre de la licenciatura en cuestión. Los resultados muestran que estadísticamente el uso de la *app* para el aprendizaje de las contribuciones tiene un nivel excelente de eficiencia, debido a su facilidad de uso, seguridad, función, confianza, mantenibilidad y portabilidad. La *app* refuerza las competencias profesionales de los educandos, incluyendo la de proporcionar asesoría o consultoría a los contribuyentes por medio de tecnología inteligente.

Asimismo, este tipo de desarrollos pueden ser considerados por el Gobierno federal para mejorar la gestión en la recaudación fiscal en México.

**Palabras clave:** *app*, aprendizaje, contribuciones, fiscal.

## Abstract

The objective of this study is to show the efficiency of a tax app as a tool in the study of the simplified trust regime among students of the Bachelor's Degree in Accounting at the Universidad Autónoma del Estado de México (UAEM). The app was created considering the ISO 13047 standard, the content and specific procedures of the income tax and value added tax provisions in force for the period 2022. To evaluate the app's efficiency, a questionnaire was applied considering ISO 25010 quality standards. This instrument was applied to 129 students in the second, fourth, sixth and eighth semesters of the degree program in question. The results show that statistically the use of the app for learning contributions has an excellent level of efficiency, due to its ease of use, security, function, reliability, maintainability, and portability. The app reinforces the professional competencies of the learners, including the ability to provide advice or consultancy to taxpayers through smart technology. Likewise, this type of development can be considered by the federal government to improve tax collection management in Mexico.

**Keywords:** *app*, learning, income tax, taxation.

## Resumo

O objetivo deste estudo é mostrar a eficiência de um aplicativo fiscal como ferramenta no estudo do regime simplificado de confiança entre os alunos do curso de Ciências Contábeis da Universidade Autônoma do Estado do México (UAEM). O aplicativo foi criado considerando a norma ISO 13047, o conteúdo e os procedimentos específicos das disposições fiscais do imposto de renda (ISR) e do imposto sobre valor agregado (IVA) em vigor para o período de 2022. Para avaliar a eficiência do aplicativo, foi aplicado um questionário considerando a norma de qualidade ISO 25010. Esse instrumento foi aplicado a 129 alunos do segundo, quarto, sexto e oitavo semestre do curso em questão. Os resultados mostram que estatisticamente o uso do aplicativo para contribuições de aprendizagem tem um excelente nível de eficiência, devido à sua facilidade de uso, segurança, funcionalidade, confiabilidade, manutenibilidade e portabilidade. O aplicativo

reforça as competências profissionais dos alunos, inclusive de assessoria ou consultoria aos contribuintes por meio de tecnologia inteligente. Da mesma forma, este tipo de desenvolvimento pode ser considerado pelo governo federal para melhorar a gestão da arrecadação de impostos no México.

**Palavras-chave:** app, aprendizagem, contribuições, impostos.

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## Introduction

### History of the problem

The Magna Carta of the United Mexican States establishes the obligation of Mexicans to contribute, proportionally and equitably, to the public expenses of the federation and of the states and municipalities in which they reside (Political Constitution of the United Mexican States, article 31, section IV). The obligation to pay the tax is based, therefore, on the constitutional principle of the economic capacity of the taxpayer for the performance of his activity and the consequent obtaining of income in relation to the payment of the tax.

Based on the provisions contained in the Mexican Constitution, a legal-tax relationship is created between the tax authority and the taxpayer. In this relationship, the tax authority is represented by the Tax Administration Service (SAT), which is endowed with tax power to require taxpayers to pay taxes throughout the Mexican national territory, while the taxpayer is the subject obliged to comply with the regulations established in the tax laws, including the payment of contributions. For Ríos (2003): "The collection is due to the efficiency of the very management of the contributions", he also concludes that "the tax administration system must aspire to be neutral, efficient, accurate, simple, fair, effective and flexible" (p. 1029).

De la Garza (2008) refers that both the State and other public subjects must carry out actions aimed at obtaining income to apply them to services provided by the State itself. This is called financial activity of the State, which is paid for by obtaining the income obtained from contributions and other tax concepts and expenses applied to social service. To comply with the tax collection activity, the State appointed the Ministry of Finance and Public Credit (SHCP) as the person in charge, which designs and executes strategies in order to benefit the taxpayer to comply with their obligations. Among them,

it has established electronic government platforms, which transform the traditional paradigm of the administrative State into a new modern governmental way of providing goods and services. (Naser y Concha, 2011).

Valladares, Carrera and Borja (2015, p. 28) point out that the Government, with the support of information and communication technologies (ICT) has designed electronic platforms that provide facilities to taxpayers in the determination and full payment of taxes, in the execution of various procedures and in having a greater control in the issuance of tax verification documents.

While in one of the articles on the Thomson Reuters Mexico site (October 8, 2021) it is emphasized that, currently, without the help of technology it is practically impossible to meet the requirements of the SAT:

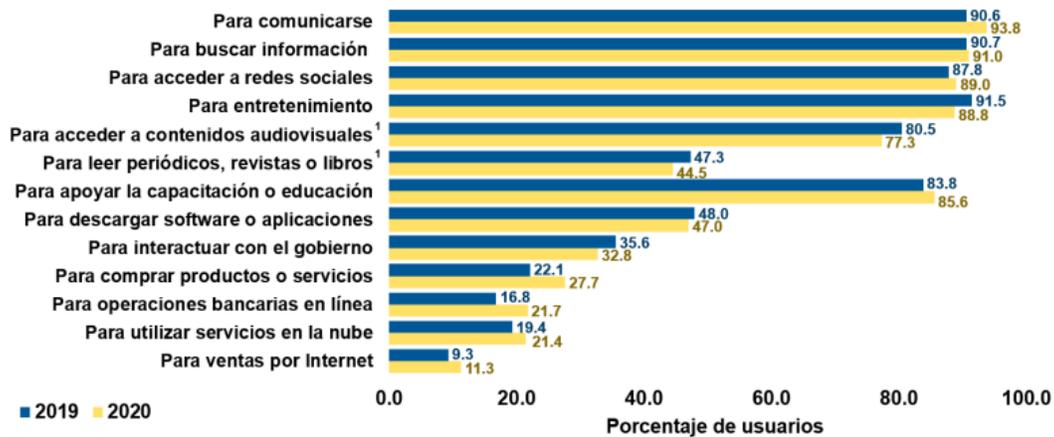
- Access information on operations in real time.
- Collect tax information.
- Monitor transactions to identify deviations and be able to apply corrective measures.

In addition to allowing these three actions to be carried out with agility, technology increases the productivity of tax management, as well as offers the SAT more control and faster data processing.

Thus, with this technological development, electronic government or digital government has been promoted, which takes advantage of ICT "to achieve better administration, in the federal government, by establishing certain modernization, efficiency and quality measures in order to offer greater benefits and better services to society" (Public Function Secretariat, January 16, 2009, Introduction, para. 2).

Some data provided by the National Institute of Statistics and Geography [Inegi] (June 22, 2021) reveal that users use the Internet for activities such as information search, to read, support training or education, download software or applications among others (figure 1).

**Figure 1.** Internet users by type of use, 2019 and 2020



Source: Inegi (22 de junio de 2021)

For its part, the Federal Institute of Telecommunications [IFT] (2018) refers (Figure 2) that:

Educational level is the sociodemographic characteristic that has the greatest effect on the use of mobile phones. While ICT users without education have a probability of 30.1%, those with higher education have a probability of 97.7%” (p. 30).

**Figure 2.** Probability of mobile phone adoption by educational level



Source: IFT (2018)

From the obligation to contribute to public spending, obtaining tax collection, the growing impact of electronic government, the use of technologies, due to the increase in the use of the Internet focused on education, specific factors that promote the development of the present investigation. Undoubtedly, for future accountants it is necessary to have a comprehensive education that allows them to develop the knowledge, skills and strengths that the contemporary professional world demands, and that the

teacher provides the necessary tools to expedite the learning process, together with the possibility of be used in both educational and professional settings.

### Theoretical framework

To understand the impact of the use of devices and applications in the educational environment, it is necessary to know the concepts of e-learning, m-learning and b-learning. Regarding the first of these, the Permanent Training Center (CFP) of the University of Seville the University of Seville (2021) points out the following:

Teaching-learning processes that are carried out through the Internet, characterized by a physical separation between teachers and students, but with the predominance of both synchronous and asynchronous communication, through which continuous didactic interaction is carried out. . In addition, the student becomes the center of training, having to self-manage their learning, with the help of tutors and classmates. (párr. 4).

Márquez (2013) defines e-learning training as "that which is carried out entirely at a distance through the use of information and communication technologies as a means to support the teaching-learning process" (p. 5).

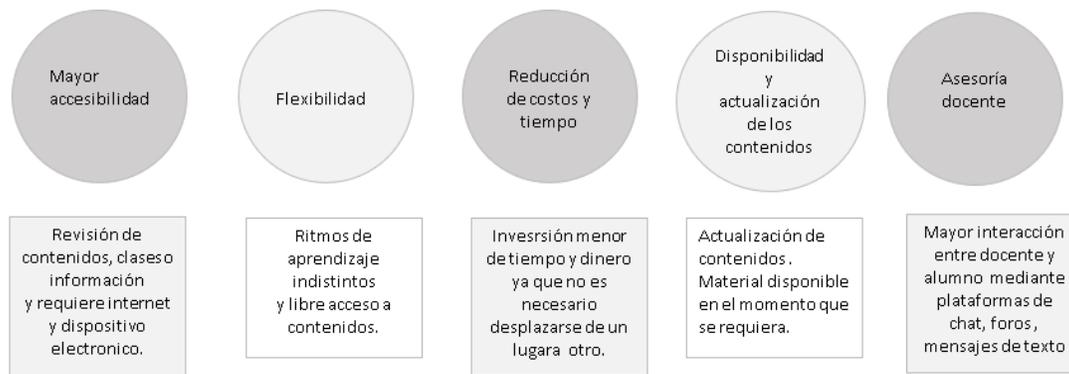
Likewise, Badillo (August 11, 2021) specifies that "e-learning is a training modality strongly based on information and communication technologies, also called 'virtual training', 'online or online training' (para. two).

For its part, Santander Universities (March 30, 2022) defines e-learning as "all training activities that are given exclusively through a device connected to the network, which is usually called electronic learning, teletraining, training online or virtual learning" (E-learning: what it is and what it is not, para. 1). In e-learning, the non-face-to-face model stands out and the use of the Internet is emphasized as a gateway to content and academic activities and interaction and communication as essential pillars of this type of training (Gros Salvat, 2018). .

E-learning is also characterized as a learning model based on an asynchronous modality that reinforces its structure through the use of electronic devices connected to the Internet, which serve as a platform for rapprochement between student and teacher for the development of content, activities and jobs for teaching. CognosOnline (May 6, 2022) points out that e-learning "is not only useful for teaching in educational institutions,

but it is a great option for training and training within organizations" (Characteristics of e-learning, para 1). It also specifies some characteristics of this model (figure 3).

**Figure 3.** e-learning features



Source: Own elaboration based on CognosOnline (6 de mayo de 2022)

On the other hand, Salinas (2003, cited in de Pablo, 2008) defines b-learning as "teaching and learning approaches that are student-centered, with degrees of freedom in time, place, and teaching and learning methods. , and that they use the appropriate technologies in a networked environment" (p. 6).

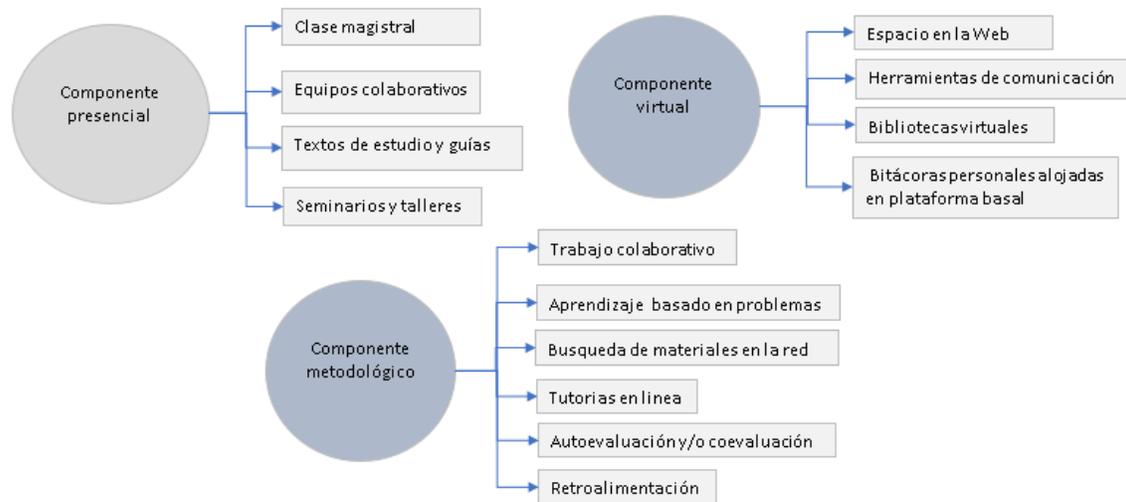
On the website of the Universidad de los Andes Colombia (2016) it is mentioned that b-learning is "one of the educational modalities with the greatest impact today. It integrates pedagogical and technological strategies in learning environments that take advantage of the best of the face-to-face and virtual world" (para. 1).

Some authors such as Coaten and Marsh (2003, cited in Bartolomé, 2004) refer to blended learning as "that learning model that combines face-to-face teaching with non-face-to-face technology" (p. 11).

Based on the information provided by the aforementioned authors, we can define b-learning as a learning model focused on virtual education that integrates pedagogical and technological strategies that guarantee synchronous and asynchronous learning with student-oriented approaches.

Precisely, Vera (2008) emphasizes some resources that b-learning requires to function as a successful learning strategy (figure 4).

**Figure 4.** b-learning resources



Source: Own elaboration based on Vera (2008)

Finally, Ally and Samaka (2016, cited in Rodríguez and Juárez, 2017) consider that m-learning is all kinds of learning that originates without the student being in a specific place, as well as the acquisition of knowledge granted through Mobile technology.

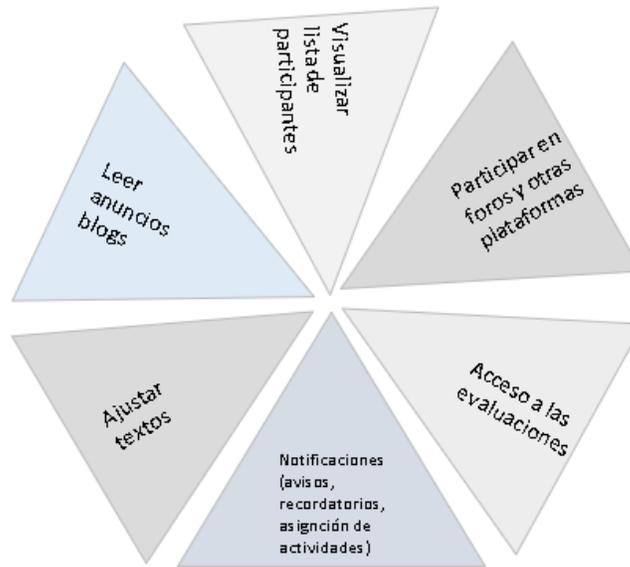
Brazuelo and Gallego (2011 cited in Vigil, Acosta, Andarcio, Dumpierrés and Licor, 2020) define it as "the educational modality that facilitates the construction of knowledge, the resolution of learning problems and the development of various skills or abilities autonomously and ubiquitous thanks to the mediation of portable mobile devices" (p. 202).

Rodríguez (2015) considers m-learning as "a teaching and learning methodology that uses small mobile devices, such as mobile phones, or any handheld device that has some form of wireless connectivity" (p. 36).

Based on these definitions, we understand m-learning as a model in which virtual education is combined with mobile technological devices that facilitates and promotes the construction of knowledge, development of skills and abilities in which the student acts as a self-taught person.

Santiago, Trbaldo, Kamijo and Fernández (2015) specify some of the activities and functions that teachers can carry out (see figure 5).

**Figure 5.** Functions to execute with m-learning

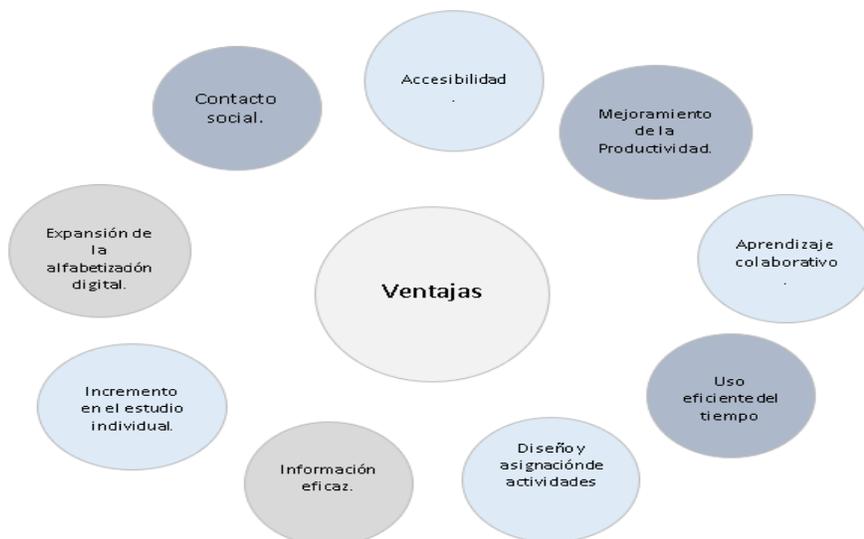


Note: in the distance learning environment it is more practical to access the contents from any mobile device.

Source: self made

Zambrano (2019) highlights some advantages such as the use of time, the growing use of mobile technology focused on literacy, devices within the reach of people, contact between classmates and tutors at any time, faster teaching-learning processes, responsibility and motivation for part of the student, synthesized and complete information, creation of materials, etc. (figure 6)

**Figure 6.** Advantages of m-learning



Source: self made

Lenovo (2022) defines the smartphone as "mobile or cell phone that runs on a mobile operating system (OS) and functions as a minicomputer. Smartphones also function as portable media players, digital cameras, camcorders, and GPS navigation devices.

The smartphone is a mobile technological tool for interaction with unlimited capacity that can be carried by the user and can be used anytime, anywhere. This technological tool contains several functions that allow the user to communicate by voice, images, texts, videos and sounds. Likewise, it is used as an entertainment device with games of skill, abilities and strategies, access to the information superhighway and various useful activities with practical application that benefit the social, work and professional role of the user (Malo, Casas, Figuer and Gonzalez, 2006).

The Royal Spanish Academy [RAE] (n.d.) defines it as a "mobile terminal that offers advanced communications services (Internet access and email), as well as calendar and personal organizer services with a higher degree of connectivity than a conventional mobile terminal." ”.

The students of the degree in Accounting of the Autonomous University of the State of Mexico (UAEM) Ecatepec University Center, specifically those who study the subject of Contributions, require digital media that simplify the learning process of tax issues, such as the regime simplified trust; an instrument that provides the notions of concepts, determination and obligations that must be fulfilled before the tax authority. The use of the smartphone is constantly evolving in the educational environment: it promotes the creation, models and fiscal procedures attached to Mexican legislation. From the sum of both factors, the fundamental purpose of this work is to develop intelligent applications that strengthen the performance of the student and teacher in the teaching-learning environment against specific practical cases.

## Method

The six stages that were applied for data collection and processing are described below, always attached to the general and specific objective related to technological efficiency applied to the fiscal practice carried out by the teacher in order to provide students with tools state-of-the-art to facilitate your learning in the tax field.

## Method Description

- a) Design and development of the tax app. For the design of the tax tool, the current Mexican tax provisions applied to the simplified trust regime were considered. In the development, the methodology established in the ISO 13407 standard was adhered to. It is a methodology used for the creation of computer programs.
- b) In order to justify the efficiency of the app on the smartphone, business scenarios of the study regime were created, considering the financial movements made by taxpayers, which are necessary to obtain tax information.
- c) Determination and calculation of income tax (ISR). The development and determination of the calculation of the monthly and annual ISR for the year 2022 was carried out manually. The income for the period multiplied by the ISR rate, decreased by the withholdings made to the taxpayer, all of which results in the ISR to pay or in favor of the period.
- d) Determination of value added tax (VAT). The procedure to determine the VAT was carried out manually. The income for the period actually collected was considered to identify the tax transferred or collected and withheld from the taxpayer. Likewise, the purchases and expenses made to identify the creditable VAT and subsequently carry out the calculation. Once this information was obtained, the reduction of the tax withheld and the creditable tax was applied to the transferred tax, the result of which is the VAT payable for the period.
- e) Filling out the form. Once the results are obtained in the app, they are used to assist the taxpayer in filling out the electronic format on the SAT platform, to subsequently obtain the acknowledgment of receipt. This receipt must be presented before the authorized offices or the bank closest to the taxpayer, or through the electronic page of the bank institution.
- f) Evaluation of the app. For the evaluation of the technological tool, the questionnaire was applied to 129 students of the degree in Accounting of the second, fourth, sixth and eighth semester, currently enrolled in the educational institution belonging to the UAEM Ecatepec University Center. All study subjects have knowledge of the concepts and buttons specified in the tax tool to determine and calculate Income Tax (ISR) and Value Added Tax (VAT).

## Implementation of the method

### First phase

At the beginning of the evaluation, the study subjects were explained the general objective of their participation: to use a tax application to solve a real practical case and later evaluate the app through a questionnaire designed based on the ISO 25010 standard.

- a) The participants were told that the tax application has to be installed on their smart device in order to obtain tax information on the tax regime by reading and with voice, as well as to obtain quantitative information on federal taxes, ISR and VAT, for fiscal year 2022.
- b) In addition, the fiscal cases and situations where the fiscal tool can be used were specified. Likewise, it was specified that the content and structure of the fiscal model was prepared based on the provisions contained in the respective current fiscal laws.
- c) The study subjects were provided with the "RESICO22.apk" application through different connection channels, bluetooth and WhatsApp, to install it on their personal device, and be able to use said tax tool as a resource in tax practice and finally be able to participate in the evaluation process.

### Second stage

In the second, the general content was mentioned, the different modules that make up the tax application and the concepts involved in the determination of taxes were described.

- a) The importance of knowing the tax regime, its obligations and the requirements to remain in it was explained.
- b) The data to be incorporated to obtain the amounts of the monthly and annual ISR were indicated.
- c) The data to be incorporated to obtain the monthly VAT amounts were indicated.
- d) The option that activates the procedure guide for the use of the platform offered by the SAT to comply with the obligation to submit provisional income tax returns and definitive VAT returns was indicated.

### Third Stage

In this process, the evaluation questionnaire was provided with 30 items (Annex 1, Table 3), which was previously tested with a sample of 20 active student subjects in the database of the university institution, who specified that the questions They did not contain any problems for their understanding, so they proceeded to the evaluation.

### Fourth Stage

In this phase, a group practice was carried out. With a time of approximately one hour, the tax intelligent mobile application was presented, its function was mentioned and later practices were developed manually with data from taxpayers with commercial activities, leasing of goods and provision of independent professional services; Next, we proceeded to use the tax app as a tool to solve the practical cases and later compare them with those carried out manually and verify that the results shown in the app are the same as those calculated manually. Once the practice was finished, the application of the instrument continued in order to start with the obtaining of data and its processing.

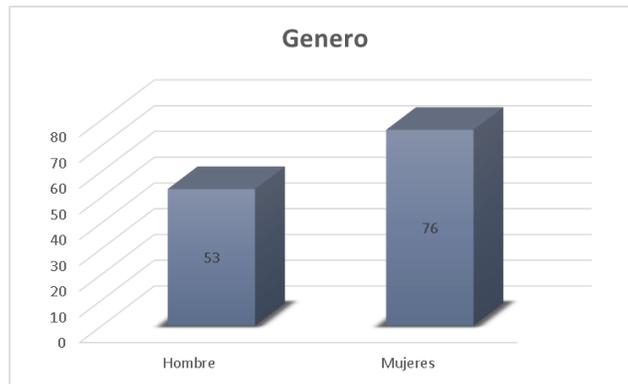
### Fifth Stage

At this stage, the process and study of the data obtained was carried out. To carry out this, the statistical computer program called SPSS, version 22.0, was used. In the descriptive analysis, with the objective of having a profile of the participants and obtaining their opinion in relation to the use of the app in tax practices, a study was carried out through the statistics of measures of central tendency in the variables by sex, age, semester and finally by each of the indicators that measure efficiency.

In the inferential analysis, with the aim of replicating the assertions of the participants, linear regression was carried out; also multiple regression, with the objective of knowing the behavior of the dependent variable in relation to the independent variables, and Student's t-test, to justify the opinion of the efficiency of the mobile application among the groups of participants.

The population was 129 subjects, all voluntarily agreed to be in the study. Regarding gender, 47% (n = 53) were men and 53% (n = 76) were women, all of them used the tax tool on their electronic device as a resource to obtain tax information on the study regime and income taxes. ISR and VAT (figure 7).

**Figure 7.** Gender of the participants



Note: This representation was made based on the data obtained in the study by gender.

Fuente: Elaboración propia

Regarding the age of the study subjects, the following data was obtained: 18.0% (n = 23) were 20 years old, 18.0% (n = 23) were 21 years old, 18.0% (n = 23) were 22 years, 18.0% (n = 23) were 23 years old, 18.0% (n = 23) were 24 years old and 10.0% (n = 13) were 25 years old (Table 1).

**Table 1.** Age of the participants

Edad	Frecuencia	Porcentaje
20 años	23	18.0 %
21 años	23	18.0 %
22 años	23	18.0 %
23 años	23	18.0 %
24 años	14	10.0 %
25 años	23	18.0 %
Total	129	100.0 %

Source: self made

Regarding the group by semester to which the participants belong, 27.90% (n = 36) were from the sixth semester, 26.36% (n = 34) were from the eighth semester, 26.36% (n = 34) were from the second semester and 19.38% (n = 25) were from the fourth semester (Table 2).

**Table 2.** Participating groups

Grupo	Frecuencia	Porcentaje
LCN 2	34	26.36 %
LCN 4	25	19.38 %
LCN 6	36	27.90 %
LCN 8	34	26.36 %
Total	129	100.0 %

Source: self made

The results in the measures of central tendency show that the mean ( $\mu$ ) and standard deviation ( $\sigma$ ) on the predictive indicators of efficiency have a uniform behavior in the subscales of Functionality, Reliability, Usability, Security, Maintainability and Portability (Figure 8 ).

**Figure 8.** Efficiency indicators

Variables y dimensiones	Media	Desviación estándar
<b>Funcionalidad</b>	1.05	0.05
<b>Completo</b>	1.05	0.05
<b>Correccion</b>	1.05	0.05
<b>Pertinencia</b>	1.05	0.05
<b>Usabilidad</b>	1.0	<b>0.01</b>
<b>Adecuacion</b>	1.0	<b>0.01</b>
<b>Aprendizajes</b>	1.0	<b>0.01</b>
<b>Uso</b>	1.0	<b>0.01</b>
<b>Proteccion</b>	1.0	<b>0.01</b>
<b>Estetica</b>	1.0	<b>0.01</b>
<b>Accesibilidad</b>	1.0	<b>0.01</b>
<b>Confiabilidad</b>	<b>1.0</b>	<b>0.01</b>
<b>Madurez</b>	1.0	<b>0.01</b>
<b>Disponibilidad</b>	1.0	<b>0.01</b>
<b>Fallos</b>	1.0	<b>0.01</b>
<b>Recuperación</b>	1.0	<b>0.01</b>

<b>Seguridad</b>	<b>1.4</b>	<b>0.01</b>
<b>Confidencialidad</b>	1.4	<b>0.01</b>
<b>Integridad</b>	1.5	<b>0.01</b>
<b>No repudio</b>	1.3	<b>0.01</b>
<b>Responsabilidad</b>	1.3	<b>0.01</b>
<b>Autenticidad</b>	1.5	<b>0.01</b>
<b>Mantenibilidad</b>	<b>1.5</b>	<b>0.01</b>
<b>Modularidad</b>	1.5	<b>0.01</b>
<b>Reusabilidad</b>	1.4	<b>0.01</b>
<b>Analizabilidad</b>	1.6	<b>0.01</b>
<b>Modificación</b>	1.5	<b>0.01</b>
<b>Prueba</b>	1.5	<b>0.01</b>
<b>Portabilidad</b>	1.5	<b>0.01</b>
<b>Adaptabilidad</b>	1.5	<b>0.01</b>
<b>Instalación</b>	1.5	<b>0.01</b>
<b>Reemplazamiento</b>	1.5	<b>0.01</b>

Source: self made

Derived from data processing, the relationship between the dependent variables and the independent variable of efficiency, it is observed that there is a significant relationship in a linear regression between the factors: Usability, Functionality and Maintainability (figure 9).

**Figure 9. Variables**

Variables de eficiencia							
	Funcionalidad	Fiabilidad	Usabilidad	Seguridad	Mantenibilidad	Portabilidad	Eficiencia
Funcionalidad	1.0						
Fiabilidad	.962	1.0					
Usabilidad	.952	.910	1.0				
Seguridad	.946	.905	.960	1.0			
Mantenibilidad	.952	.906	.961	.970	1.0		
Portabilidad	.964	.907	.962	.971	.970	1.0	
Eficiencia	.965	.911	.960	.970	.970	.980	1.0

Note: there is a positive relationship between the dependent and independent variables

Source: self made

### Discussion of statistical analysis

The study consisted of the participation of 53% of the male gender and 47% of the female gender. In this research there is a small variation between the participation of the participants, which reflects an opportunity for technological balance between genders. The participants were in an age range between 20 to 25 years, the most representative data indicates that 72.0% belong to the range of 20 to 23 years. It should be noted that all the participants had good control and management of the technological device, they use it in their daily life, therefore, they extend the maximum use of technological resources, generating confidence, objectivity and security in the evaluation of the questionnaire for measuring the efficiency.

The total of the study sample are students who belong to the Accounting degree, but not all the participants are familiar with the tax regime, as well as with the specific terms used within the application, since they do not belong to the same academic degree. (26.36% were in the second semester, 19.38% in the fourth semester, 27.90% in the sixth semester and 26.36% in the eighth semester). The distribution of the population was designed with the intention of showing if the application has the same efficiency for all the participants and can be operated with positive results at any time during the degree. The technological application of the simplified trust regime serves as a teaching support tool that maximizes the learning of future accountants, since it is an instrument by which precise and timely

results are obtained comparable with the manual calculations carried out in the study subjects.

The questionnaire used to measure efficiency obtained a Cronbach's alpha coefficient of 0.921, which shows an excellent level of confidence in direct relation to the Efficiency variable.

The opinion of the participants indicates a great compliance with respect to the functionality, since the content seemed very complete. The application showed that the information presented can be corrected and the results it provides are pertinent and correspond to what was requested ( $\mu = 1.05$  and a standard deviation of 0.05); Regarding usability, results with a high level of satisfaction were reflected, since the content of the application is convenient; the structure is understandable, therefore, the access is easy to operate ( $\mu = 1.0$  and a standard deviation of 0.01); Regarding reliability ( $\mu = 1$  and a standard deviation of 0.01), the application did not present failures in the sample; Regarding security ( $\mu = 1.4$  and a standard deviation of 0.01), the tool provided confidentiality in the data entered and the results obtained depend on the use of whoever operates it; Regarding maintainability, excellent results were obtained ( $\mu = 1.5$  and a standard deviation of 0.01) when modifying the data, derived from the fact that the application allows entering new data, sending the results by mail and re-entering new data. Finally, in terms of portability, there was a good trend towards compliance with the criteria, since the app is adaptable to any mobile device, its installation is simple and it can be installed or uninstalled whenever required ( $\mu = 1.5$  and a standard deviation of 0.01), the above highlights a uniform standard deviation in terms of the perception of the study subjects.

In the results obtained in the Pearson correlation, 21 correlations were obtained between the subscales of the Efficiency variable, which shows that the use of technology can be applied in tax practice.

The subscales with a high level in the prognosis on the Efficiency variable are Portability ( $r^2 = 0.980$ ), Security ( $r^2 = 0.970$ ) and Maintainability ( $r^2 = 0.970$ ); at a moderate level we find the Functionality ( $r^2 = 0.965$ ) and Usability ( $r^2 = 0.960$ ) subscales, and with a slightly lower prediction level we find the Reliability subscale ( $r^2 = 0.911$ ). These results reveal an optimal and relevant level with respect to the Efficiency variable.

## Conclusions

The opinions of the participants showed unification regarding the use of the mobile application for the determination of the simplified regime of trust. This result highlights an opportunity for improvement in the teaching-learning process, and reveals a complete, useful, adequate, functional, and reliable tool to guarantee optimal professional performance.

At the moment that ICTs are incorporated into the higher education scenario, a synergy is created that strengthens the analysis, identification and immediate resolution of practical cases; it is possible to develop knowledge, skills, aptitudes, intercontextual attitudes, and the autonomous acquisition of new personal and professional competences is promoted; The use of specialized apps in the tax context not only promotes skills, but also creates a new form of interaction between the teacher and the student to search for information or solve problems they have in the classroom, whether in a virtual or face-to-face environment.

Using specialized mobile applications in the subject of contributions guarantees efficiency in portable smart devices; It promotes blended learning and changes the paradigm that the teacher is the provider of information, all of which gives the student autonomy, grants certainty and reliability in the results and information presented. The application fulfills the purposes for which it was designed. That is why the execution of the tool is optimal to be used in higher level institutions that have a degree in accounting. For future lines of research, it is intended to evaluate the implementation of the mobile application in the current labor context for the advice, determination and presentation of information of taxpayers who are taxed in the simplified trust regime.

## Future lines of research

As future work, it is considered to analyze the use of this tool in work environments and to carry out a comparison and link between the results obtained, which will allow us to know if this type of tool can be useful in two different environments; Another line that is intended to be addressed in future work is to create a training procedure for students to use a tax application in different tax regimes as a solution tool in practical cases with active taxpayers.

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## Appendix 1

**Table 3.** Questionnaire to measure the efficiency of mobile applications in tax management

Eficiencia de la <i>app</i> fiscal en el régimen simplificado de confianza 2022					
<p>El propósito de este cuestionario es obtener información sobre la eficiencia que tiene la aplicación fiscal para el régimen simplificado de confianza.</p> <ul style="list-style-type: none"> <li>• ¿Cuál es su género?: (M) (F)</li> <li>• ¿Cuál es su edad?: _____</li> <li>• Descarga aplicaciones: (Gratis) (Pago) (Po lo hago)</li> <li>• Cuentas con internet en tu dispositivo: (Tus datos) (Wifi)</li> <li>• ¿Qué semestre cursa?: (2) (4) (6) (8)</li> <li>• ¿Has utilizado alguna <i>app</i> para solucionar algún problema académico?: (Varias veces) (Algunas veces) (Nunca).</li> </ul> <p>Marque con un X en la casilla que corresponda de acuerdo con sus percepción o consideración. Lea cuidadosamente.</p>					
Variables y dimensiones	1 Muy desacuerdo	2 En desacuerdo	3 Indiferente	4 De acuerdo	5 Muy de acuerdo
Funcionalidad					
Completitud					
1) Todas las funciones especificadas en la <i>app</i> realizan su operación con normalidad					
2) Consideras que la <i>app</i> funcional para realizar las prácticas fiscales					
Corrección					

3) Los resultados mostrados son claros y correctos					
Pertinencia					
4) El dispositivo es funcional para realizar la tareas fiscales					
5) Considera que el dispositivo electrónico es funcional para la práctica fiscal					
Usabilidad					
Adecuación					
6) El contenido que se presenta es adecuado					
Aprendizajes					
7) Considera que con el uso de la app es una herramienta de aprendizaje					
Uso					
8) Es fácil de operar					
9) la controla con facilidad					
Protección					
10) Presenta algún error al momento de usarlo					
Estética					

11) El diseño es agradable					
12) Satisface plenamente mis necesidades fiscales					
Accesibilidad					
13) Considera que sea utilizado por personas sin conocimientos fiscales					
14) Considera que sea utilizada por personas con conocimientos fiscales					
<b>Confiabilidad</b>					
Madurez					
15) Es confiable la información y las opciones presentadas en su contenido					
Disponibilidad					
16) Se puede operar en cualquier momento					
Fallos					
17) Presenta fallos al momento de utilizarla					
Recuperación					
18) En caso de cerrar la aplicación, se					

vuelve a operar con normalidad					
Seguridad					
Confidencialidad					
19) Considerar que los datos generados sean compartidos					
Integridad					
20) Las modificaciones de los datos que se hacen operar con normalidad					
No repudio					
21) Considera que no es útil la <i>app</i> en las prácticas fiscales					
Responsabilidad					
22) Considera que este tipo de tecnología favorece la responsabilidad del contribuyente					
Autenticidad					
23) Con la información presentada reconoce al tipo de contribuyente					
Mantenibilidad					
Modularidad					

24) Considera apropiados los módulos contenidos					
Reusabilidad					
25) Considera importante hacer varios cálculos en una misma app					
Analizabilidad					
26) Considera importante visualizar todos los elementos para determinar y calcular el impuesto					
Modificación					
27) Considerar apropiado modificar los datos para obtener resultados eficientes					
Prueba					
28) Considera importante hacer pruebas para verificar los datos que sean correctos					
Portabilidad					
Adaptabilidad					
29) Consideras que se adapta para la práctica fiscal					
Instalación					

30) Se instala con facilidad					
Reemplazamiento					
31) Puede ser trasladada de un lugar a otro para su uso					

¡Gracias por su tiempo!

Observaciones:

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Sugerencias:

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Note: The instrument was developed based on the ISO 25010 standard

Source: self made