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"El saber de mis hijos hará mi grandeza"

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RESEARCH

Teachers' authority and its implications in student training at Universidad de Sonora

Autoridad profesoral e implicaciones en la formación de estudiantes en la Universidad de Sonora

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Abstract

The objective of the study is to describe the meaning of teacher's authority that students at the University of Sonora have, the types of teacher authority links that they recognize, and also explore how such authority is involved in their formation. In the conceptual framework, the concepts of meaning, teacher authority and formation are analyzed. The research was guided by an interpretative approach and the phenomenological method, through the interview technique. The experience that the students of the University of Sonora have with the teaching authority was the starting point of the investigation. The results show the presence of three meanings of teacher authority: power, respect and distinction; and that the types of links established with teachers are based on these meanings, which affect their formation. The study has been resumed, as part of a doctoral research, now focused on the analysis of the implications of teacher authority in the formation of students and the possible relationship of gender stereotypes in both processes (authority and formation).

Keywords: Authority, teacher, meaning, formation.

JEL Code: I23, I21, I29

Resumen

El objetivo del estudio es describir el significado de autoridad profesoral que tienen los estudiantes de la Universidad de Sonora, los tipos de vínculos de autoridad profesoral que reconocen y explorar, además, cómo tal autoridad está implicada en su formación. En el marco conceptual se analizan los conceptos de significado, autoridad profesoral y formación. La investigación se orientó por un enfoque interpretativo y el método fenomenológico, a través de la técnica de entrevista. La experiencia que tienen los estudiantes de la Universidad de Sonora con la autoridad profesoral fue el punto de partida de la indagación. En los resultados se advierte la presencia de tres significados de autoridad profesoral: el poder, el respeto y la distinción; y que los tipos de vínculos establecidos con sus maestros se basan en esos significados, lo cual repercute en su formación. El estudio se ha retomado, como parte de una investigación doctoral, enfocado ahora al análisis las implicaciones de la autoridad profesoral en la formación de los estudiantes y en la posible relación de los estereotipos de género en ambos procesos (autoridad y formación).

Palabras clave: Autoridad, profesor, significado, formación.

Código JEL: I23, I21, I29

Introduction

In everyday life, the term authority regularly carries a negative connotation, attributable to a certain preconception of the relationship established and characterized by the power of some people over others, laden with hierarchical and controlling practices, which even tend toward arbitrariness and intransigence. In other words, it is a relationship based on the idea of an authority that "... sanctions facts or thoughts that have become established as a right to issue orders from superior to subordinate so that these are complied with" (Federico, 2003, in Carmona and Abreu, 2014, p. 91).

However, authority is a polysemic term whose meaning varies according to the context and disciplinary field addressed. In this work, it will refer to professorial authority in the context of higher education institutions, from a pedagogical perspective.

In recent years, a complex environment has been observed, with technological challenges, socio-environmental crises, limited employment opportunities for university graduates, as well as educational shortcomings in schools. This is closely linked to a series of controversial economic, political, and social challenges that have resulted in the so-called "new normal," affecting educational spaces and dynamics, and apparently also the way professorial authority is conceived and exercised in formal educational systems.

Within this context, several studies focused on the teacher-student dyad (Duarte and Abreu, 2014; Pierella, 2014; Greco, 2007) have observed that authority is associated with a relationship of authorization and recognition of power and/or knowledge, but also of fear. It is in this line of research on the educational process where extreme situations have been identified, ranging from cases where the authority link is expressed negatively in authoritarianism, to those in which the teacher-student relationship lacks recognition of authority. Between these extremes are cases in which such authority arises from a proactive, knowledgeable, sensitive, and committed teacher who promotes constructive pedagogical dialogue, assumes authority in the teaching-learning process, and earns recognition of authority among students through the strength of their word, deeds, and discourse (Greco, 2007; Durán, 2010; Klein, 2011).

Pierella (2014) discusses what professorial authority represents in the university setting. According to the author, it is in the university environment where generations can meet based on the acceptance of their different positions and recognition of equality. Thus, considering professorial authority as a phenomenon where the paradoxes and ambivalences of social bonds are expressed, it deserves to be questioned, especially because in that university world of adults, whether professors or students, future professionals who will join society are being formed. Furthermore, today the figure and role of the teacher seem to be fading. Students know they can access knowledge using the internet, watching tutorials, or reading books, so the role of the teacher in the teaching-learning process tends to be disrupted; it can be said that the teacher's role as an educational authority is in crisis.

In the past, teaching mechanisms were based on reward and punishment; in the 19th century, mass education emerged, and knowledge resided unequivocally in the teacher. However, today educational reforms have focused on placing the student as the constructor of their own learning, with the teacher remaining as a guide of that process. This has led to the weakening of teacher authority and even to its questioning by students, who, taking advantage of technological advances and their command of ICTs, with just a "click" on their phones, can verify the veracity of what the teacher presents in class, an act that may reflect doubt about the teacher's expertise. Hence, managing ICTs to leverage them in the classroom is a major challenge for teachers, especially those of the old school who are unfamiliar with or not updated on these technologies.

Now, in any formal educational system (basic or higher), it can be accepted that the teacher, as the course content leader, is the authority and that this figure holds power in the classroom. However, the question remains of how that power is exercised and whether the teacher is aware of it. Placing these concerns in the university environment justifies the following questions: Is the teacher aware of the role they play in student formation? Are university students still in the formation process and thus in need of guidance? Or is it that universities no longer need teachers?

Regarding the Universidad de Sonora, a review of the Plan de Desarrollo Institucional and the

Derechos Universitarios report reveals weaknesses on the part of teachers and complaints referring to the treatment and abuse of authority between professors and students. These facts justify analyzing the meaning that students and teachers at the Universidad de Sonora attribute to professorial authority, how these meanings could be typified, how they are expressed in pedagogical practice, and how they affect university student formation.

Although the world has changed and information acquisition has become easier through new technologies, this study recognizes that even with these innovative and practical ways of acquiring information, the presence of the teacher — the guide, the subject participating in the educational process who motivates, facilitates, and directs the student in knowledge acquisition — is necessary in the formal education system. However, it is important to analyze how that figure acts in the classroom and how they are perceived by students to identify why they are respected — if that is the case — or why they are feared or ignored.

One of the main problems and goals in higher education is quality and effectiveness, which is approached from different angles and perspectives in various guidelines, laws, and programs proposed by UNESCO, the National Development Plan (PND), and the OECD, some of which are integrated into the Plan de Desarrollo Institucional (PDI) of the Universidad de Sonora (OECD, 2015; OECD, 2012; PDI, 2013-2017; PND, 2013-2018). For example, to address effectiveness and quality issues, different curricular reforms, as well as teacher training, development, and incentive plans, have been proposed. At the same time, in programs designed to motivate teachers, there has been an increased demand for research and management tasks, which seems to have led to neglecting the role of teaching.

On the other hand, what happens day to day in the school experience concerning the intended effectiveness and quality is the expression of the teacher's actions and the site of student formation. Within this context, it is common to blame the teacher when a student fails or performs poorly, assuming the teacher is responsible — perhaps because they are too strict or demanding, or because they are negligent or uninterested in motivating their students to learn. This is often the case in higher education institutions, but there is also positive valuation of professorial authority — those teachers whose daily actions earn them the title of good teacher, responsible, who teach well, motivate students, etc.

Other aspects expressed in universities include power relations and sexism, both of which can generate abusive power and violence, hindering learning. Some cases have been raised through complaints and reports by affected individuals within Universidad de Sonora's Plan de Desarrollo Institucional (PDI, 2017-2021). Perhaps for this reason, during the 2016-2017 academic year, the need arose to develop an action procedure to respond to gender violence cases at Universidad de Sonora. Thus, the Plan de Desarrollo Institucional (PDI 2017-2021) includes a normative instrument titled *Protocolo para la prevención y atención de casos de violencia de género en la Universidad de Sonora.*

Regarding professorial authority, it can be said that to date, research around sexism and gender violence problems has been scant. The few existing studies focus on student experiences, leaving aside the opinions and experiences of the investigated group — the teachers. Nor is the role or influence of gender stereotypes in the exercise of such authority or in the teacher-student, student-student relationship addressed. Therefore, it is proposed to integrate gender stereotypes into the analysis of professorial authority to identify if and how they are expressed in pedagogical practice, particularly in the student-teacher relationship. As a first approach to this issue, this work is based on the following research questions: What types of professorial authority are present at the University of Sonora? How do university students perceive professorial authority? What types of professorial authority do they distinguish, and how do they value them? The main objective is to analyze the meaning of professorial authority among students at Universidad de Sonora, and the implications of that meaning in their formation.

Conceptual development

Below are some definitions of the term professorial authority, with emphasis on those elements of these concepts that are used to guide the present study. According to the aims of this research, the concept of professorial authority from studies on authority in the university by Pierella (2014) is adopted. Pierella states that authority is above all a bond, "...a social and intersubjective relationship, in which it is necessary for at least two people to exist... that implies not only attributes or principles, but recognized principles," therefore, "it only exists if it is received" (De Certeau, 2006, in Pierella, 2014). This concept of professorial authority is considered more relevant because it focuses on that bond involving characteristics of admiration, respect, and leadership, or alternatively characteristics of domination, control, or fear; and it is assumed that depending on which of these prevail, they will influence student formation.

In everyday life, the concept of "authority" is commonly associated with negative aspects of rigorous and strict exercise of command by a person or entity (tyranny, arbitrariness, hierarchy, or despotism). But paradoxically, the Latin origin of the word refers to the verb auctoritas (to increase, to grow), meaning 'to help to grow,' a word that relates to the characteristics of a virtuous person who acts in accordance with morality. It is this moral imperative of authority, situated in the educational sphere and in teacher-student interaction, which for the purposes of this research is expressed in three types of authority: moral, pedagogical, and emancipatory. Clearly, these three types of authority differ from hierarchical or arbitrary authority.

Furthermore, Espot and Nubiola (2011), when studying the performance and social perception of the teacher, describe how this figure weaves together characteristics linked to high esteem, solid reputation, or good credit attributed according to performance; in this sense, the word prestige also denotes authority. Thus, a teacher with prestige is someone who cares for their intellectual formation by reading, updating, and reflecting on what is learned. Espot and Nubiola specify that these teachers have been entrusted with the task of educating students, a task predisposed by society, so that the responsibility to bring out the best in each student falls upon them. To carry out this task, teachers need prestige, professional and personal authority that supports their professional work. University teachers need to be aware of the important role they play in their students' formation process.

Another important aspect of authority, according to Cruz Soto (2009), was put forth by Aristotle, who held that authority is sustained by the community and is coordinated with other activities such as work and virtue, as an indispensable element to guide the destiny of citizens for the benefit of the community: "...whenever someone is superior in virtue and in capacity to perform the best actions, it is noble to follow them and just to obey them. But they must possess not only virtue but also the capacity that makes them fit for action" (Soto, 2009, p. 57). This assertion implies that if a person stands out from others by displaying behavior, aptitudes, values, skills, or abilities—possessing such qualities (fit, confident, and aware of what they do)—it is good to consider them a leader or authority. This Aristotelian precept is also echoed by Gadamer, who states:

> *Authority is not the superiority of a power that demands blind obedience and forbids thinking. The true essence of authority lies in its inability to be irrational, in being an imperative of reason, in presupposing in the other a superior knowledge that exceeds one's own judgment. To obey authority means understanding that the other is also the voice resonating from tradition and that authority may perceive something better than oneself" (Gadamer, 2000, pp. 58-59).*

Thus, in this Aristotelian perspective, teachers become the voices of reason who guide students in their formation and are admired for their behavior, values, skills, and dexterity—characteristics that students learn day by day, since these leaders are daily examples in the classroom, and what they say and do impacts students' beliefs and opinions. Undoubtedly, this type of valuation of the teacher and professorial authority leads to reflection on whether it still persists in the current era.

Weber associates authority with domination, which is seen in the superiority of the official school language. He understands it as a state of affairs in which a manifested will ("command") of the "dominator" or "dominators" influences the acts of others (the dominated), so that socially relevant acts take place as if the dominated have themselves adopted the content of the command as the principle of their behavior ("obedience"). According to Weber, there are three types of authority: legal authority (characterized by obedience to established rules); traditional authority (characterized by patriarchal domination, i.e., sanctity followed out of will, tradition, or loyalty); and charismatic authority (characterized by belief or recognition, seen as a duty fulfilled by faith and personal recognition). Based on these Weberian propositions, it can be said that teachers dominate in the classroom and thus their word should be obeyed by students; also, within this logical thinking framework, the existence of three forms of domination permeating the school space is recognized—one given by normativity, another by belief, and the other by tradition.

Pedagogical authority, according to Zamora and Zerón (2009), implies a teacher-student relationship mediated by knowledge, learning, and culture. The cited authors emphasize that just as a teacher alone is not authority, neither can authority be reduced to a mere strategy by the teacher to be recognized by students; therefore, without knowledge, pedagogical authority does not exist. It is fundamental that the educational relationship between actors be oriented toward student learning. This type of authority distances itself from classroom control tactics that only seek blind obedience; instead, it is built in the daily teacher-student interaction, consciously, clearly, and planfully guided by a reflective and solitary work by the teacher on their own pedagogical practice. From this perspective, professorial authority becomes a social phenomenon constructed in the everyday pedagogical interaction and the daily teaching-learning exercise between students and teachers, which has not changed much in recent years.

In this daily teaching practice, arbitrary authority sometimes appears, which according to Ramo (2005), leads to rejection and rebellion; this type of authority has led to abandoning the exercise of "true authority" as proposed by the old Aristotelian tradition recognizing the leader for their abilities, aptitudes, and moral or pedagogical aspects. But moral authority can also appear, understood as that which implies attitudes, behaviors, and traits of trust that open the way for respect. The teacher earns respect from their students in this way and tends to be a figure to be imitated, conceived as a leader or example to follow by students. According to Rojas and Lambrecht (1998), this type of authority is based on technical knowledge and the ability to design and implement classes with methodologies that capture students' attention, interest, and motivation; but also on the teacher's attitudes, behaviors, and personal traits, which provide students with confidence and an atmosphere of tranquility, peace, and civility.

A broader definition of professorial authority is offered by Giroux and McLaren (1998), representatives of the new sociology of education from a critical perspective, when they propose and define the concept of emancipatory authority. These authors challenge the dominant view of teachers as basically technicians or public servants whose role is to execute rather than conceptualize pedagogical practice. They emphasize that such authority dignifies teaching work by considering it an intellectual practice with respect to its formal characteristics and the nature of the content discussed. They assume that student formation in higher education goes beyond transmission and updating of information, knowledge, and skills for preparing professions and technical skills for the labor market. In addition to the instructional function that the teacher performs in higher education, they play a humanistic, moral, and social role by contributing to the formation of people in values and social norms shared by the tradition and culture of a given socio-historical context. Emancipatory authority is based on the instructional and formative function the teacher plays in the pedagogical process. This authority aims to form individuals within a certain tradition and culture, taking into consideration socially shared values and norms. It is the type of authority expected to be predominant among higher education teachers.

Finally, by gender stereotypes, we understand the role that men and women play in society based on the cultural baggage that establishes, shapes, and gives meaning to a set of ideas, beliefs, and evaluations about what it means to be a man or a woman, based on behaviors, characteristics, and even thoughts and emotions deemed appropriate for each human being, grounded in this network of consensual ideas that trigger gender stereotypes (Díaz and Rocha, 2005).

Methodological strategy

The informants are students precisely because they have direct and daily contact with university professors and, therefore, in their school experience have lived the professorial authority. The selection of participants considered that they should be informed, communicative, willing to participate, and physically accessible within the university space. Four criteria were considered in relation to these questions: Who has relevant information? Who is more physically and socially accessible? Who is more willing to provide information? And who is more capable of communicating information accurately? A typological checklist was created to note these desirable attributes of possible informants, deriving four discriminant criteria: 1) being a currently enrolled student at the Universidad de Sonora, male or female; 2) willingness to participate in the interview; 3) regular and consistent attendance to classes; 4) being recognized by peers as responsible, reflective, and critical students. A total of 15 semi-structured interviews were conducted with Universidad de Sonora students, using the snowball sampling technique, which involves a chain of informants sharing common traits, where each interviewee is asked to recommend another person who, in their judgment, has the desirable attributes for the same interview (Colás, 1998; Hernández, 2006). The sample closed at fifteen subjects due to saturation of responses. All participants were Universidad de Sonora students aged 22 to 26.

The phenomenological-hermeneutic or interpretative approach was used for analysis since this perspective studies the meaning of human experience, is based on descriptions of lived experiences, and works with descriptive language to, through reflection, reveal experience and discover the truths of one's own thoughts. It attempts to discover themes or approaches manifested as illustrations of subjects' perceptions of the world and through them establish interpretative patterns (Buendía, Colás, Hernández, 1998).

Phenomenology is understood as the systematic study of subjectivity (Tesch, 1990, cited in Sandín, 2003), focusing on the individual and highlighting subjective experience (Rodríguez, 1999). Thus, the phenomenological method is used because it centers on how subjects live experiences from their own perspective (Martínez, 2009) and because it is of interest how students signify their conception of authority or rather how they perceive it based on their experiences.

Since the aim is to understand the perceptions and experiences (Buendía, Colás, and Hernández, 1998) that students have regarding the professorial authority of their university teachers, the qualitative interview technique was used because it provides deeper information about people belonging to certain social settings, in a face-to-face encounter with the informant, aimed at understanding the perspectives of the informants, in this case the students, exploring their lived experiences and lives, all expressed in their own words (Taylor and Bogdan, 1994).

Argumentation of results

All students participating in the interviews expressed a basic idea of what authority is; however, defining it was not easy for them. This was noticeable in the surprised expressions they showed when asked the key questions. The mental image of what authority represents for them was not easy or simple to put into words; yet, when reflecting on this aspect, on how they see it and have experienced it as university students, they concluded that many times they are not aware of what is happening in the interaction or bond with their teachers. As stated in the conceptual framework, drawing on Sennett (1982), for whom the authority bond is almost invisible to the eyes but alive in students' experience; and the ideas from Klein (2011) regarding educational rites.

The results show the presence of meanings of professorial authority related to power, respect, and recognition. These three concepts are associated with the qualities of authority understood as a bond, as specified in the theoretical-conceptual chapter: security, superior judgment, capacity to impose discipline, and the ability to instill fear (Sennett, 1982). For Sennett, the qualities of authority are to have knowledge (superior judgment), to be able to impose discipline and fear. Although these three qualities are reflected in the authority meanings found, the ability to instill fear was related to imposition; and respect was connected to fear of failing or facing the consequences of not complying with rules.

It was found that bonds are built day by day in the interaction processes between professors and students. Another meaning identified was recognition, which at first was considered as distinction and shortly after learning, but upon further analysis of its properties and dimensions, it remained as recognition. In any case, this category is related to the notion of prestige presented in the conceptual framework, focused on bringing out the best in the student. It refers to achieving good learning in the student. Formative aspects began to emerge here, which are better expressed in the bond of professorial authority.

It is important to clarify that this work started with the expectation of finding types of professorial authority, but during the process of analysis, reflection, and understanding, it was discovered that what was really being sought were bonds, hence the concept adopted from Pierella (2012). We found three types of bonds based on the meanings mentioned, which are: the bond of professorial authority based on power, the bond of professorial authority based on respect, and the bond of professorial authority based on recognition. Like Pierella, it is confirmed that bonds of professorial authority are built daily through various interaction processes between professors and students.

Bonds of professorial authority (BPA) are expressed in education. Depending on the bond (power, respect, or recognition), the implications in education will differ. The implications in education of BPA based on power, respect, or learning can be formative or not. What determines whether BPA implications are formative? According to the interviewed students, power belongs to the teachers, but respect does not always. It is a decision made by the student to establish such a bond based on respect. When this is the case, a BPA based on respect achieves education when combined with learning and the objective of the class (course). The student recognizes the teacher's knowledge, but above all that the teacher knows how to teach and transmit that knowledge, doing so with respect towards the students, motivating them to study and learn.

In the research results, students refer to authority as something negative, but as the interview developed and they were asked to reflect on professorial authority, some derived a negative conception of the term. This perception of authority as negation can be associated with the idea presented by Sennett (1982) in his work on authority: "...a culture that the author needs to reject, a culture worth rejecting, but a culture that the author needs". The meaning of professorial authority has been adapted, rather than changed, to include aspects of comprehensive education. Thus, understanding professorial authority as power, respect, and recognition allowed rethinking in this study the meaning it has in everyday discourse.

Conclusions and implications

Although the research objective was to find out what meaning today's students have of their professors' authority, it was concluded that perhaps the discussion is not about professorial authority per se, since by delving into students' narratives and analyzing the interviews interpretatively, it was discovered that authority is associated with and refers to a bond built daily in the pedagogical interaction processes established between professors and students.

More than identifying meanings, this work has allowed reflection on the authority bond privileged by the current educational system between professors and university students—a bond often ignored but always present and with implications for student formation. This way of learning to see professorial authority benefits the institution, students, professors, and the relationship between them, precisely because of its possible implications for the comprehensive education of students pursued by Universidad de Sonora.

It is also necessary to acknowledge the study's limitations, especially the scarce bibliography on this topic, at least in the main libraries of higher education institutions in the region. The few identified studies, mostly available online, are articles about professorial authority research conducted in other countries, mostly referring to basic education. There are very few studies on this topic in higher education, and no studies were found conducted in Mexico. Additionally, the limited time to carry out the empirical work led to focusing the study on only three categories of analysis and considering only students.

Regarding practical, theoretical, and methodological implications related to the topic, it is concluded that practically, the study results can help design intervention programs addressing the issue of complaints filed by students with the Universidad de Sonora's Comisión de los Derechos Universitarios. A course-workshop could be designed and scheduled for professors on the formative implications of professorial authority bonds as a response to complaints about abuse of authority by faculty, as expressed by students to the university rights commission. The objective of this course-workshop would be to raise professors' awareness about the role they play when recognized as authority figures by their students. Different meanings, types of bonds, and how these are involved in the comprehensive education pursued by the University could be presented.

On the other hand, the theory described and analyzed in this work can be added to that of other existing studies in various countries in this research line, focusing on conceptions of professorial authority but now from the perspective of university students in Sonora, Mexico. Thus, it can serve as a reference for future research within and outside the country. The methodological implication would help develop future instruments for researchers interested in the topic, taking into account the three analysis categories: meaning of professorial authority, types of bonds of professorial authority, and implications for student formation, to develop a working instrument such as the semi-structured interview. In summary, this work can serve as a reference for future studies; the topic could even be projected to other settings. Doing so, the meanings can be contrasted with those of students—precisely what is proposed in the ongoing doctoral research, analyzing the same problem from professors' perspective and incorporating other dimensions, particularly integrating gender stereotypes.

Without a doubt, this first approach to the topic of professorial authority from the perspective of students at Universidad de Sonora Mexico, should continue with other educational subjects and integrate other dimensions and contextual considerations. It is important to note that institutional customs influence everyday school life, particularly the teacher-student relationship and therefore the teaching-learning process. These customs involve a social imaginary loaded with representations, ideas, and beliefs affecting both professors and students in their bond present in daily pedagogical processes and practices, whether they are aware of such institutional influence or not. According to Klein (2011), when such customs become routines and predictable, they tend to become rituals that strengthen the teacher's work, which they adopt, adapt, and transfer mechanically into their pedagogical actions, norming their work to such a degree that these become beliefs about what a teacher should do.

It is in these rituals that permeate what a teacher should be and do, where certain forms of professorial authority are configured and consolidated, and where gender stereotypes emerge and become present. In this regard, Cubillas et al. (2016) state that gender stereotypes together with gender identity and ideology permeate discriminatory behaviors based on the differentiation of a person as man or woman. The author affirms that gender roles and beliefs manifest in the learning process that takes place in social interaction, which is the socialization process where identities of how a man and a woman should be are constructed. The ongoing doctoral research takes up these kinds of proposals to analyze precisely how student formation can be affected by professorial authority through gender stereotypes occurring in the bonds established between teachers and students in everyday educational experiences.

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RESEARCH

Sustainable management and determinants of the debt ratio in the federal entities of Mexico

Manejo sostenible y determinantes de la tasa de endeudamiento en las entidades federativas de México

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Abstract

The essay tries to identify the importance of the factors that determine the growth of the indebtedness rate of the 32 states of Mexico. Likewise, it is proposed to measure an indicator of the primary balance and another of the sustainable primary balance of state public finances.

Likewise, the technique of measuring the primary deficit and the sustainable primary deficit of state public finances is developed based on the formula of the government's budget restriction. Given the lack of opportunity to publish the results of the primary balance of the states, an indirect measurement of the primary balance and the sustainable primary balance is made, and the results are discussed in light of the recent situation of the slowdown and subsequent deepening recession for the COVID-19 pandemic. Recommendations for the sustainable management of state public finances are also proposed.

Based on the indicators proposed to measure the primary balance and the sustainable primary balance, it can be seen that there is a trend towards the loss of financial room for maneuver by the states due to the unsustainable management of public finances. This problem has worsened with the prolongation of the recession due to the stoppage of activities and confinement, leading to higher levels of public debt.

Keywords: Deficit and Surplus; Debt and Debt Management; Budget forecasts Deficit and Debt.

JEL Codes: H62, H63, H68

Resumen

El ensayo trata de identificar la importancia de los factores que determinan el crecimiento de la tasa de endeudamiento de las 32 entidades federativas de México. Asimismo, se propone la medición de un indicador de balance primario y otro de balance primario sostenible de las finanzas públicas estatales.

Asimismo, se desarrolla la técnica de medición del déficit primario y del déficit primario sostenible de las finanzas públicas estatales a partir de la fórmula de la restricción presupuestaria del gobierno. Ante la falta de oportunidad en la publicación de resultados del balance primario de las entidades federativas, se realiza una medición indirecta del balance primario y del balance primario sostenible y se discuten los resultados a la luz de la coyuntura reciente de la desaceleración y posterior recesión profundizada por la pandemia del COVID-19. También se proponen recomendaciones para el manejo sostenible de las finanzas públicas estatales.

En base a los indicadores propuestos para medir el balance primario y el balance primario sostenible,

se puede advertir como hay una tendencia hacia la pérdida de márgenes de maniobra financieros por parte de las entidades federativas, debido al manejo no sostenible de las finanzas públicas. Este problema se ha agudizado con la prolongación de la recesión por la paralización de actividades y el confinamiento, llevando a mayores niveles de endeudamiento público.

Palabras claves: Déficit y Superávit; Deuda y Gestión de la deuda; Previsiones presupuestarias, déficit y deuda

Códigos JEL: H62, H63, H68

Introduction

Given the importance that the problem of financial deficits and debt of the federative entities in Mexico has acquired, it has been considered appropriate to carry out a diagnosis of the sustainability condition of the debt faced by the states. To this end, first a review is made of the theory regarding the regulatory function of the State through fiscal policy, contrasting the arguments in favor of rules and automatic stabilizers with those related to the discretionary action of public powers to regulate economic activity. Once the limitations and opportunities of fiscal policy and its possible application at the level of federative entities are defined, an analysis is carried out of the determinants of the debt rate of the 32 federative entities of Mexico, deriving policy recommendations for sustainable debt management based on the calculation of a sustainable financial balance. Subsequently, confirmatory evidence is provided on the increase in financial fragility of the federative entities in the economic context from 2019 to 2020, explained not only by low economic growth but also by increased fiscal deficits and a higher percentage of the guarantee of participations of new credits or of the debt restructurings themselves.

1. Cyclical regulation, budgetary policy, and public deficit

It is difficult for states to escape the impacts that the economic cycle causes on their public finances. Therefore, it is essential to review the main approaches regarding the role of budgetary policy and the public deficit in regulating the economic cycle and promoting economic growth.

The theoretical references regarding the stabilizing action of the economy relate to the debate between supporters of automatic stabilizers and advocates of active policies compensating economic fluctuations. From the neoclassical perspective, there is an internal budget flexibility (built-in flexibility) from which automatic stabilizers derive. Income tax is one of the automatic stabilizers since taxes are sensitive to the economic cycle. Economic expansion is automatically curbed by taxation, considering a tax elasticity greater than one and positive marginal tax rates. Conversely, stabilization via taxes operates in the downturn phase of the economic cycle, the recession.

Regarding post-Keynesian compensatory public finances, emphasis is placed on subordinating budgetary and fiscal policy to the demands of managing effective demand. Taxation is considered a discretionary instrument to regulate the economic cycle, particularly to avoid inflation, unemployment, or their combined effect through stagflation.

Supporters of the neoclassical viewpoint argue the superiority of automatic stabilizers based on three points: 1) Automaticity avoids the forecasting difficulties inherent in discretionary actions, both regarding precise prediction of economic cycle changes and the intensity and modalities of stabilizing action; 2) Automaticity avoids the destabilizing effects of discretionary fiscal policy, and; 3) Automaticity limits public powers' intervention and fits within a liberal theoretical framework.

On the other hand, proponents of post-Keynesian compensatory fiscal policies acknowledge the forecasting difficulties inherent in economic cycles but recognize that advances in economic cycle analysis and econometrics have improved forecast reliability. Therefore, to think that automatic stabilizers can correct economic imbalances is to assume they have no margin for error. Advocates of compensatory public finances argue that stabilizing action should be more "fine-tuned," applying selective and differentiated policies at the sectoral level, thus going beyond automatic stabilizers.

As is well known, regulatory deficits are classified as automatic deficits and discretionary deficits. The former are spontaneously induced by reduced tax revenues and increased certain expenditures (unemployment benefits, subsidies, etc.), allowing some automatic stability. However, automatic deficits cannot reduce the amplitude of fluctuations.

Cyclical stabilization policy can lead public authorities to implement active fiscal policies, either through temporary tax cuts or payment facilities. Likewise, they can use available operational savings for public investments and, where appropriate, fiscal deficits. However, sometimes state governments run autonomous deficits without macroeconomic justification. The most emblematic case is electoral fiscal policy, for which empirical evidence exists at the state level and in municipalities that host state capitals in Mexico, as demonstrated in works by Gámez and Ibarra (2009), Ramírez and Erquizio (2012), Amarillas and Gámez (2014), Mejía, Reyes, and Melquíades (2016), and Amarillas and Gámez (2018).

Another case that may lead to destabilizing fiscal policy is when aggregate demand in the economy is too strong and real production is above equilibrium or trend production. In this case, it is recommended that budgetary policy be restrictive, and that stabilization or amortization funds be preferably created to face contingencies in times of resource austerity. Due to the lack of timely statistics to estimate potential or trend GDP for Mexican states, it is recommended to use cyclical indicators at the state level, such as Índice Trimestral de Actividad Económica Estatal (ITAEE), the índice Cíclico Regional (ICR) de Banco de México, and the índice Coincidente por Entidad Federativa (ICEF), developed by (Erquizio y Ramírez, 2011). Active fiscal policies also assume the complementarity of the federal stabilization fund for federative entity revenues, whose operational rules came into effect on March 26, 2009. According to the Article 19 of the Ley Federal de Presupuesto y Responsabilidad Hacendaria, 25% of the surplus revenue remaining from the Ley de Ingresos will be allocated to the FEIEF (Fondo de Estabilización de Ingresos de Entidades Federativas).

As a consequence of the increase in fiscal deficits, debts have tended to rise and, therefore, debt service increases and its share of total public expenditure grows, reducing the maneuvering room of state governments. However, these debt accumulations can be reduced if monetary policy and fiscal policy are used jointly. During recession periods, public deficits grow, and interest rates tend to stagnate or decline, which allows debt not to accumulate as rapidly. Therefore, debt accumulates during periods when monetary policy is restrictive and fiscal policy is used to compensate economic activity.

The three problems faced by fiscal policy as an instrument to stabilize the economic cycle are:

a) Estimating the trend GDP by federative entities is difficult. This causes governments to not respond timely to the economic cycle due to a lack of timely information, making them overly optimistic about economic recovery, tending to spend resources that should be allocated to an amortization or cyclical stabilization fund, such as the one established recently in Mexico City in 2014, whose resources began to be used compensatorily from 2017 (Navarro, 2017).

b) Active fiscal policy, like automatic stabilizers, must reverse cyclical measures. That is, once the economy exits recession, taxes should increase and social benefits expenditures decrease, so that fiscal deficits are not persistent and do not force tax increases at the end of the government term.

c) Avoiding the electoral cycle in state public finances. Despite the application of the Financial Discipline Law in federative entities from 2017 onward, the maneuvering margins for marginal indebtedness left to the federative entities remain open for electoral purposes, diverting resources that could be used to regulate the economy and promote medium-term growth.

2. Sustainability of state public debt

A policy of permanent indebtedness is sustainable if its debt volume grows in the long term at a rate lower than the economic growth rate. Others also argue that when the real interest rate is lower than the real economic growth rate, debt sustainability is possible, as long as primary deficits do not disrupt this favorable effect and reverse it (Blanchard, 2017; Greffe, 1991; Greffe, 1995). If debt volume growth exceeds economic growth, the situation may worsen and generate a snowball effect, where the real interest rate exceeds the growth rate and persistent primary deficits cause payment default problems.

Precisely, the initiative for the Ley de Disciplina Financiera of federative entities and municipalities was developed to address financial risk problems that the debt of states and municipalities might generate within the Mexican financial system. Therefore, it was deemed appropriate to periodically regulate states and municipalities to avoid default or payment delinquency problems and their temporary or permanent exit from the credit market. This law was approved on March 17, 2016, in the Diario Oficial de la Federación.

Among the budgetary control measures highlighted in the transitory articles of the LDFEyM are the following:

Seventh.- The percentage referred to in article 12 of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, related to debts from the previous fiscal year of federative entities, will be 5% for 2017, 4% for 2018, 3% for 2019, and from 2020 onward the percentage established in the cited article will be observed.

Eighth.- The registration system for productive public investment projects of each federative entity and the registry and control system of personal services expenditures, referred to in article 13, section III, second paragraph, and section V, second paragraph, respectively, of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, must be operational no later than January 1st, 2018.

Ninth.- The surplus revenues derived from free disposal revenues mentioned in article 14, section I of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, may be used to reduce the negative budget balance of previous years from the entry into force of this law until the 2022 fiscal year.

Regarding the last paragraph of Article 14 of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, surplus revenues from free disposal revenues may additionally be allocated to current expenditures until the 2018 fiscal year, provided that the federative entity is classified as having a sustainable debt level according to the Sistema Alerta.

As can be seen, the budgetary control measures are aimed at regulating indebtedness to suppliers and contractors, as well as other pending debts to be paid (ADEFAS), the expenditures of available surplus revenues applied to current spending, and deficits in the budget balance. Clearly, a new weighting is assigned to investment expenditure to the detriment of current expenses, giving crucial importance to infrastructure expenditures for competitiveness, consistent with new endogenous growth theories that favor this type of spending due to spillover effects or positive externalities.

Another important aspect concerns the developments on the topic of debt sustainability, where we find several mathematical formalizations and operational calculations that coincide, although they reach the results in different ways (Blanchard, 2017; Albi, González, Urbanos, and Zubiri, 2015; Cansino, 2011; Greffe, 1991). Thus, we first define the government's budget constraint in year t:

$$B_t = (1+i)\, B_{t-1} + G_t - T_t \qquad \text{[Ec. 1]}$$

The debt in the current year t equals the debt from year t-1 plus the interest on the debt plus the primary deficit (difference between public spending without interest and taxes). Let i be the nominal interest rate and g the nominal economic growth rate.

$$Y_t = (1+g)\, Y_{t-1} \qquad \text{[Ec. 2]}$$

Assuming g and i are constant over time. Dividing [1] by [2] yields:

$$B_t = \frac{1+i}{1+g}\, b_{t-1}\, d_t \qquad \text{[Ec. 3]}$$

Where lowercase letters represent percentages of GDP for the year, and dt is the ratio of the primary deficit GDP. Subtracting Bt-1 from both sides of equation [3] leads to a basic expression to evaluate debt sustainability:

$$\Delta b_t = \frac{1-i}{1+g}\, b_{t-1} + d_t \qquad \text{[Ec. 4]}$$

Where $\Delta b_t = b_t - b_{t-1}$. Therefore, debt is unsustainable if Δb_t is permanently greater than zero, which can occur if the primary deficit is persistently higher than the difference between i and g. To assess how high a deficit is, given a debt ratio b, the value of the primary deficit must exceeed a critical value d*:

$$d^* = \frac{g-i}{1+g}\, b \qquad \text{[Ec. 5]}$$

Where $b = b_{t-1}$. Therefore, if $d_t > d^*$ permanently, the debt is unsustainable because its volume grows continuously. Condition [5] has two implications. First, if i>g, sustainability requires a primary surplus (d*<0). Conversely, if a primary deficit exists, a snowball effect would occur, making debt unsustainable. Second, if i<g , the economy allows a persistent primary deficit as long as its level is less than or equal to d* . In this case, economic growth exceeds debt growth, providing room for a certain deficit level.

Similarly, the evolution of the debt-to-GDP ratio, or debt rate, can be expressed as follows:

$(B_t/Y_t) - (B_{t-1}/Y_{t-1}) = (r - g)\ B_{t-1}/\ Y_{t-1} + G_t - T_t\ /\ Y_t$ [Ec.6]

This formula expresses the change in the debt ratio as equal to the sum of two terms (Blanchard, 2017). The first is the difference between the real interest rate and the growth rate multiplied by the initial debt ratio. The second is the ratio of the primary deficit to GDP.

This equation implies that the debt-to-GDP ratio will be higher:

- The higher the nominal interest rate;
- The lower the nominal GDP growth rate;
- The higher the initial debt ratio;
- The higher the ratio of the primary deficit to GDP.

3. Determinants of debt change and sustainable primary balance

To calculate the determinants of changes in the debt rate, it can be done either at current or constant prices. We have opted for the most direct method, based on current prices, as follows:

1. The change in the debt rate of federative entities and public organizations relative to GDP can be taken from data publishes on the Secretaria de Hacienda y Crédito Público (S.H.C.P.) portal, under the link for Disciplina Financiera de Entidades Federativas y Municipios. The fourth quarter of the year is taken as the annual closing period.
2. The weighted average interest rate (TIPP) of the various state debt contracts has also been taken from the S.H.C.P. portal under the link for Disciplina Financiera de Entidades Federativas y Municipios. Similarly, the last quarter of the year is used as the annual closing period for the weighted average interest rate.
3. The primary balance of federative entities has been calculated residually using the formula for the determinants of debt change:

$$\frac{\mathrm{B\,t}}{\mathrm{PIB\ t}} = \frac{\mathrm{B\,t}-1}{\mathrm{PIB\ t}-1} * \left(\frac{1+\mathrm{i}}{1+\mathrm{g}}\right) + \frac{\mathrm{Dp\ t}}{\mathrm{PIB\ t}} \qquad \text{[Ec. 7]}$$

Where:

$\frac{\mathrm{B\,t}}{\mathrm{PIB\ t}}$ = Current debt rate

$\frac{\mathrm{B\,t}-1}{\mathrm{PIB\ t}-1}$ = Debt rate of previous year

i = Weighted average interest rate at year-end

g =Nominal GDP growth rate

$\frac{\mathrm{Dp\ t}}{\mathrm{PIB\ t}}$ = Primary balance relative to GDP

From this expression, the primary balance has been calculated as a residual based on debt-to-GDP coefficients, weighted average interest rates, and GDP growth, ensuring its result is logically consistent.

4. The economic growth rate of the states has been calculated using INEGI figures of GDP at current prices from the Banco de Información Económica.

The sustainable primary balance was calculated from the expression that keeps the debt rate unchanged over time.

$$\frac{\mathrm{Dps\ t}}{\mathrm{PIB\ t}} = \frac{\mathrm{B\,t}-1}{\mathrm{PIB\ t}-1} * \frac{g-i}{1+g} \qquad \text{[Ec. 8]}$$

The results of the primary balance measurement by federative entity, calculated as a residual, is an indicator not available in all state public account, nor is reported in the Estadísticas Estatales y Municipales published by INEGI. Although estimates from credit rating agencies (Fitch Ratings, Standar and Poors, etc.) exist, these suffer from limited application to all federative entities and are frequently revised without detailed explanation.

According to the primary balance statistics by state, it can be observed that there was a higher frequency of states with a fiscal deficit in 2016, reaching a total of 29 observations. The lowest frequency was recorded in 2013, with 21 observations. From 2016 to 2018, states began to reduce their shortfalls in the

Table 1. Primary balance relative to the GDP of federative entities (2012-2018)

State	2012	2013	2014	2015	2016	2017	2018	2019
Aguascalientes	0.13	0.27	0.51	0.28	0.29	0.33	0.49	0.11
Baja California	-0.01	0.38	-0.15	0.46	0.09	0.67	1.03	0.76
Baja California Sur	0.23	-0.16	0.25	0.48	0.09	0.34	0.93	-0.02
Campeche	0	0.02	-0.07	-0.14	0.11	0.02	-0.34	0.23
Coahuila	1.39	1.33	1.53	0.87	1.27	1.65	1.72	0.93
Colima	0.34	-0.24	0.53	-0.15	0.43	0.58	0.37	1.43
Chiapas	-0.35	-0.34	1.2	0.52	0.52	1.61	-0.11	0.41
Chihuahua	-0.57	-2.84	1.84	2.57	0.16	2.16	3.36	1.34
Ciudad de México	0.22	0.35	0.21	0.29	0.36	0.37	0.42	0.33
Durango	0.35	-0.02	-0.12	-0.37	0.5	0.89	0.09	0.48
Guanajuato	0.28	0.18	0.41	0.35	-0.09	0.4	0.12	0.19
Guerrero	0.34	-0.01	0.45	0.25	0.19	-0.83	0.29	0.61
Hidalgo	0.36	0.07	0.2	-0.18	0.25	0.7	0.63	0.34
Jalisco	0.14	0.31	0.43	0.38	0.12	0.36	0.42	0.19
México	0.2	0.64	0.42	0.27	0.36	0.36	0.31	0.28
Michoacán	0.46	0.71	0.51	0.49	0.07	1.13	1.4	1.08
Morelos	0.15	-0.8	-0.43	0.57	0.64	-0.04	0.24	0.34
Nayarit	-0.24	1.15	1.15	1.32	1.13	0.99	1.08	0.48
Nuevo León	-0.35	0.29	0.06	0.94	0.59	0.73	1.04	1.28
Oaxaca	0.2	-1.57	0.79	-0.17	0.84	0.69	-0.15	1.23
Puebla	0.26	0.25	0.16	0.24	0.23	0.27	0.29	0.16
Querétaro	0.07	0.1	0.1	0.11	0.05	0.15	0.1	0.08
Quintana Roo	0.21	0.37	0.76	1.09	1.66	1.57	1.66	1.38
San Luis Potosí	0.28	0.33	0.28	0.33	0.12	0.39	0.36	0.15
Sinaloa	-0.52	0.47	0.28	0.48	0.34	0.35	0.3	0.32
Sonora	0.18	0.55	-0.25	0.31	-0.2	1.11	1.43	0.72
Tabasco	-0.35	-0.01	0.14	-0.31	0.28	0.07	-0.06	-0.28
Tamaulipas	0.42	0.4	0.08	0.25	0.29	0.55	0.33	0.15
Tlaxcala	0	0	0	0	0	0	0	0.00
Veracruz	-1.14	0.68	0.67	-0.04	0.68	0.94	0.7	1.22
Yucatán	0.2	0.23	0.19	0.18	0.01	-0.27	0.42	0.19
Zacatecas	-0.65	-0.4	-0.17	0.71	0.39	0.96	-0.06	0.46

(-) **Primary surplus** (+) **Primary deficit**

Source: Own estimates based on data from Disciplina Financiera de la S.H.C.P., and INEGI.

Table 2. Sustainable primary balance as a percentage of state GDP (2012-2018)

State	2012	2013	2014	2015	2016	2017	2018	2019	Fiscal position (2019)
Aguascalientes	0.38	-5.00	0.53	1.70	0.91	0.33	-0.88	-1.21	Not sustainable
Baja California	-0.14	-5.65	-0.21	0.99	0.23	0.74	0.80	-0.18	Not sustainable
Baja California Sur	-0.47	0.05	-0.01	0.14	-0.05	0.07	0.04	-0.22	Not sustainable
Campeche	1.73	-21.17	1.30	1.73	0.86	1.71	-2.02	0.24	Sustainable
Coahuila	0.26	-0.29	0.37	0.10	0.09	0.56	-0.48	-6.17	Not sustainable
Colima	0.43	-26.26	1.29	-18.05	-1.44	-14.99	-10.49	0.47	Sustainable
Chiapas	2.05	-6.35	1.64	5.03	2.59	0.74	-3.89	-19.96	Not sustainable
Chihuahua	0.11	-0.79	-0.41	0.17	-0.15	-0.14	-0.60	-0.40	Not sustainable
Ciudad de México	0.57	0.03	0.38	0.37	1.03	-0.81	-1.96	-2.43	Not sustainable
Durango	0.44	0.03	0.52	0.46	0.13	0.32	-0.10	-0.48	Not sustainable
Guanajuato	0.23	-0.77	0.23	0.00	-0.03	-0.15	-0.50	-1.85	Not sustainable
Guerrero	0.92	-4.94	0.91	0.97	-1.37	0.89	0.22	-1.65	Not sustainable
Hidalgo	0.41	-0.60	0.50	0.51	0.28	0.08	-0.27	-4.46	Not sustainable
Jalisco	0.77	-0.48	0.46	0.69	0.15	0.42	-0.45	-0.90	Not sustainable
México	0.29	-2.37	1.66	-0.97	1.49	3.02	-2.07	-8.55	Not sustainable
Michoacán	-0.11	0.14	-0.33	0.30	0.61	0.40	-4.84	-2.77	Not sustainable
Morelos	-3.73	-2.09	1.74	1.94	1.10	-0.16	-3.77	-7.57	Not sustainable
Nayarit	0.91	-9.24	0.89	1.98	0.08	1.24	-0.41	-3.88	Not sustainable
Nuevo León	0.89	-5.00	1.35	1.44	-7.13	1.00	1.22	2.92	Sustainable
Oaxaca	0.67	-2.83	0.06	0.43	0.17	0.26	-0.31	-8.71	Not sustainable
Puebla	0.14	-0.20	0.20	0.20	0.11	0.07	-0.03	-0.89	Not sustainable
Querétaro	1.01	-1.66	1.69	0.30	2.00	-0.06	-0.29	-0.16	Not sustainable
Quintana Roo	0.61	-0.26	0.54	0.68	0.31	0.42	0.10	-13.70	Not sustainable
San Luis Potosí	0.42	-1.14	-0.51	0.92	0.57	-0.15	-0.45	-0.76	Not sustainable
Sinaloa	0.92	-0.29	0.40	1.67	1.47	0.29	-2.70	-0.13	Not sustainable
Sonora	-0.01	0.12	-0.12	0.56	-0.94	0.12	-3.67	-9.03	Not sustainable
Tabasco	0.14	-2.42	-0.86	0.92	-0.25	0.02	-0.68	-0.59	Not sustainable
Tamaulipas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	Sustainable
Tlaxcala	1.66	-19.56	-1.95	-2.72	-5.95	-1.11	-1.40	0.00	Sustainable
Veracruz	0.50	-0.38	0.40	0.26	0.28	0.19	-0.14	4.00	Sustainable
Yucatán	-0.03	0.50	0.88	1.28	0.94	-0.34	-9.44	0.10	Sustainable
Zacatecas	0.66	-0.28	1.06	0.83	0.64	0.22	0.09	-25.36	Not sustainable

(-) **Primary surplus** (+) **Primary deficit**

Source: Own estimates based on data from Disciplina Financiera de la S.H.C.P., and INEGI.

primary balance. This was a sign of greater caution due to the gradual implementation of the Ley de Disciplina Financiera para Entidades Federativas y Municipios. However, from the economic slowdown in 2019 onward, this process began to reverse, as the number of states with a primary deficit increased, reaching 29 states in 2019.

When attempting to measure the sustainable primary balance, one can more clearly observe the growing financial fragility of the federative entities. While in 2012 only five states were required to run primary surpluses to maintain a sustainable debt rate, by 2019 a total of 25 federative entities needed to generate a primary surplus to keep their debt levels sustainable. Excluding the case of Tlaxcala, which by constitutional mandate cannot incur debt financing, there remain six entities with a slight margin of maneuver to increase their primary balance without raising their debt rate. Given the low growth observed in 2019 and the unfavorable prospects for 2020—due to the international recession and the effects of the COVID-19 pandemic—along with new legal and institutional restrictions imposed by the Ley de Disciplina Financiera de Entidades Federativas y Municipios, a scenario of worsening financial flexibility for state public finances can be expected.

There are two signs that reveal the growing fragility of state public finances, On the one hand, there was an increase in the weighted average interest rate of federative entities from 2015 to 2018, rising from 5.4% to 9.2%. Although there was a slight decrease in 2019 to an average of 8.1%, and further declines occurred in 2020 due to the countercyclical monetary policy implemented by the Banco de México to address the health crisis and the effects of the global recession, the federal government's austerity-focused fiscal policy did not complement the central bank's active monetary policy. This has resulted in reductions in output and employment. Another indicator is the increase in the percentage of pledging (guarantees) of total financing from 2019 to 2020. The number of states increasing the percentage of their revenue participations allocated to debt guarantees rose from 7 in the first quarter of 2019 to 23 states by March 2020. Some states have pledged 100% or even more than 100% of their financing.

Table 3. Percentages of revenue participations pledged for financing by federative entity, January-March (2018-2020)

State	2018	2019	2020
Aguascalientes	94	78	80
Baja California	83	80	70
Baja California Sur	59	59	67
Campeche	26	24	26
Coahuila	90	82	92
Colima	58	79	78
Chiapas	27	24	27
Chihuahua	83	62	54
Ciudad de México 1_/	100	100	100
Durango	82	52	56
Guanajuato	50	48	47
Guerrero	81	81	87
Hidalgo	30	29	29
Jalisco	91	65	77
México	83	84	88
Michoacán	72	74	78
Morelos	64	65	66
Nayarit	80	36	49
Nuevo León	83	76	107
Oaxaca	50	56	35
Puebla	29	27	26
Querétaro	23	22	23
Quintana Roo	89	85	86
San Luis Potosí	87	82	84
Sinaloa	41	40	41
Sonora	75	69	73
Tabasco	24	24	25
Tamaulipas	37	45	46
Tlaxcala	0	1	1
Veracruz	61	59	82
Yucatán	40	32	47
Zacatecas	53	52	54
Aumentos:		7	23

1_/ As of January 30th, the Distrito Federal is officially known as Ciudad de México.

Source: Unidad de Coordinación con Entidades Federativas, SHCP.

Both the effect of the increase in the debt stock on the interest rate, as well as the rise in the interest rate itself, contribute to an increase in the interest payments. The higher guarantees required translate into a higher percentage of credits pledged through revenue shares, reducing the margin for additional borrowing. Some states may even present a path of increasing fiscal deficits and economic growth rates lower than the interest rate over the medium term, leading to the snowball effect—a scenario in which debt grows explosively due to increasing principal, interest rates, and increasingly restrictive borrowing conditions.

Final considerations

First, a conceptual framework was developed to distinguish between those who prioritize the role of automatic stabilizers in short-term economic stabilization, and those who support active fiscal policy aimed at more discretionary and selective demand management. Additionally, the role of autonomous fiscal deficits was highlighted—primarily driven by the electoral cycle of public spending variables rather than by macroeconomic fundamentals.

Among the main contributions of this study on the sustainability of state public debt is the proposal of a methodology to measure the importance of the determinants of the debt-to-GDP ratio at the state level, along with the calculation of a sustainable primary balance indicator.

In this study, the primary balance was calculated as a residual factor based on the formula of the determinants of the debt ratio. This was due to the lack of transparency and accessibility of the primary balance indicator in the public accounts and in the official Finanzas Públicas Estatales y Municipales statistics published by INEGI.

A sustainable financial balance was also estimated for all 32 federal entities. Based on the relationship between economic growth and the real interest rate, as well as the size of the primary balance relative to GDP, it is possible to assess whether the financial policy pursued by state governments is sustainable or not.

There is clear evidence of decreasing fiscal space for state governments in the face of the challenges brought on by the low growth in 2019 and the problems resulting from the international recession and the economic shutdown caused by the COVID-19 pandemic starting in the first half of 2020. It is argued that there has been an increase in the percentage of credits pledged with revenue shares from 2018 to 2020, along with a scenario of low or negative economic growth. This situation is further complicated by a macroeconomic management approach at the federal level that prioritizes fiscal austerity, while the central bank pursues an active monetary policy of interest rate cuts. Other contributing factors include the drop in oil production, and in the reference price established in the general criteria of economic policy, as well as new legal and institutional constraints imposed by the Ley de Disciplina Financiera para Entidades Federativas y Municipios, all of which have reduced the fiscal space of state public finances and hinder the sustainable management of debt in this difficult economic environment.

What remains pending is the use of a trend-cycle filter to measure the potential or trend GDP of Mexico's federal entities, enabling better monitoring of fiscal policy and its influence on economic conditions. Also needed is an ex-post analysis of the implications of the new fiscal rule-based discipline policy implemented in Mexico since 2017. Lastly, follow-up is required on the experience of Mexico City's income stabilization fund to evaluate its results and assess the feasibility of expanding this approach to other states in Mexico.

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Interdisciplinary Faculty of Economic and Administrative Sciences

RESEARCH

Identification of attitudes and attributes among people from Sonora regarding non-industrialized coffee beans

Identificación de actitudes y atributos por parte de los sonorenses en relación con el café de grano no industrializado

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Abstract

The seed of the coffee tree, oval in shape, rounded on one side and with a longitudinal groove on the other, which is about a centimeter long and is greenish-yellow in color; In its many transformations, it is marketed roasted in different degrees and also ground. Its harvesting process can be carried out industrially with the help of specialized machinery, or without the use of machines, which means collecting it by hand, which allows harvesters to select the best coffee beans. The proposed research reveals, and also evaluates, attributes and attitudes that predominate in non-industrial coffee consumption by the inhabitants of Hermosillo, Sonora. It is exploratory research, with a literary review, and later with qualitative parts where in-depth interviews and focus groups were carried out, and quantitative with contrasting variables, which allowed giving a content and apparent validity to the hypotheses of the conceptual model. Notable findings on intrinsic attributes such as color, aroma and aroma, and extrinsic attributes such as price, brand, and packaging are noted.

Keywords: Coffee, consumer motivation, intrinsic, extrinsic and reliance attributes.

JEL Classification: Q13

Resumen

La semilla del cafeto, de forma ovalada, redondeada por una cara y con un surco longitudinal en la otra, que mide alrededor de un centímetro de largo y es de color amarillo verdoso; en sus numerosas transformaciones se comercializa de manera tostada en diferentes grados y también de forma molida. Su proceso de cosecha se puede realizar industrialmente con ayuda de maquinaria especializada, o sin uso de máquinas, lo que significa, recogerlo a mano, mismo que permite a los cosechadores seleccionar los mejores granos de café. La investigación planteada revela, y también evalúa, atributos y actitudes que predominan en el consumo de café de manera no industrial por los habitantes de Hermosillo, Sonora. Es investigación exploratoria, con una revisión literaria, y posteriormente con partes cualitativa donde se efectuaron entrevistas a profundidad y grupos de enfoque, y cuantitativa con contrastación de variables lo que permitió darle una validez estadística y aparente a las hipótesis del modelo conceptual. Se señalan hallazgos destacables sobre atributos intrínsecos como el color, aroma y aroma, y atributos extrínsecos como el precio, marca y el empaque.

Palabras clave: Motivación de consumo, atributos intrínsecos, extrínsecos y de creencia, café

Código JEL: Q13

Introduction

Coffee is a highly desired beverage due to its organoleptic characteristics, making it one of the most consumed drinks in the world. It contains an immense variety of chemical compounds responsible for its sensory quality and physiological effects, such as caffeine, which is a well-known stimulant of the central nervous system and impacts an individual's alertness (Gotteland et al., 2007).

Simón, L. (2014), states that coffee processed in a traditional way (i.e., not industrial or at least not in mass industry) is hand-picked, allowing harvesters to select the best coffee beans. Moreover, the coffee is sun-dried instead of being dried in industrial silos. The transformation of coffee is done through traditional methods and not in a mass-production manner.

To define craftsmanship and distinguish it from industry, Eutimio Tovar Rodríguez, in "La artesanía su importancia económica y social," (UNAM, México. 1964) proposed the following definition of craftsmanship: "Any creative manual technique used to individually produce goods and services." For many people, craftsmanship lies halfway between design and art. One of the main challenges of craftsmanship is competition from low-cost industrial products that resemble handcrafted goods but are lower in price and quality.

The research objectives are set out below:

General Objective:

To determine the intrinsic, extrinsic, and belief-based attributes that most influence the purchase intention of non-industrialized coffee beans among middle-upper class C+ residents of Hermosillo, Sonora.

Specific Objectives:

a. To evaluate the intrinsic attributes that prevail in the purchase intention of non-industrialized coffee beans among C+ residents of Hermosillo, Sonora.

b. To determine the extrinsic attributes that prevail in the purchase intention of non-industrialized coffee beans among C+ residents of Hermosillo, Sonora.

c. To identify belief-based attributes that influence the purchase intention of non-industrialized coffee beans among C+ residents of Hermosillo, Sonora.

Characteristics of the coffee bean, commonly known as "coffee"

Aroma: The pleasant and penetrating fragrance of the beverage, attributed to the natural essences of coffee, captured by olfactory receptors during cupping (Becker y Freytag, 1992).

Flavor: The organoleptic qualities like acidity and body, in different degrees and intensities, complement each other and give each cup a unique flavor depending on the variety and origin (Menchù, 1967).

Acidity: This gives the drink a fruity taste and indicates high-quality coffee (Becker y Freytag, 1992).

Body: The result of multiple perceptions experienced during cupping, including a sense of fullness and consistency, and the amount of dissolved particles in the brew (Menchù, 1967).

Coffee cupping: The sensory analysis of roasted and ground coffee is a complex process requiring extensive experience and exclusive facilities with strict cleanliness and order (Becker y Freytag, 1992).

Coffee bean varieties and production in Mexico

According to Subsecretaría de Agricultura de la SAGARPA (2017), Mexico's national coffee production in the 2016–2017 cycle reached 3,385,552 bags of green coffee. In the previous cycle (2015–2016), it was 2,346,084 bags (60 kg each). Chiapas is the leading producer, accounting for 39% of national output, followed by Veracruz (30%) and Oaxaca (13%). Other significant producers include Puebla, Guerrero, Hidalgo, Nayarit, and San Luis Potosí.

SAGARPA reported that Chiapas harvested 207,052 hectares, producing 1,317,011 bags of green coffee, with an average yield of 2.032 tons of cherry coffee per hectare. Veracruz harvested 115,630 hectares and produced 1,029,219 bags of gold coffee, averaging 2.844 tons/ha. Oaxaca harvested 111,754 ha and produced 438,130 bags, with an average yield of 1.252 tons/ha. Mexico exports coffee to 42 countries, with over 50% going to the United States.

López-García et al. (2016) summarize that in Veracruz, coffee (Coffea arabica L.) is mostly grown under shade. Main varieties: Typica, Bourbon, and Caturra, with low average yield per plant compared to other countries. Their study evaluated cherry coffee production, cherry-to-parchment yield, and beverage quality across 20 cultivars over five production cycles (1998–2003).

The study can continue, stating that the varieties with the highest average fruit production (coffee cherry) over those five years were: Catuai Amarillo (23.8 kg/plant), Caturra Rojo (22.6 kg/plant), Colombia Brote Café (23.2 kg/plant), and Colombia Brote Verde (22.5 kg/plant). The variety with the highest agro-industrial cherry-to-parchment yield was Pluma Hidalgo 177 with 237.3 kg. The parchment-to-gold yield was better for Colombia Brote Verde (54.7 kg) compared to Garnica Tres Cruces Porte Alto (59.3 kg). The proportion of flat beans was high for Caturra Amarillo and Blue Mountain, with 86.2% and 83.2% respectively. Pacamara had the lowest fruit production but showed the highest proportion of beans suitable for European preparation; this cultivar also showed the best attributes in aroma, acidity, and body. For an American-style coffee preparation, the Bourbon Salvadoreño and Bourbon Tres Cruces varieties had the appropriate bean size. (López-García, et. al, 2016).

Harvesting method

Ocampo-López, O. et Al. (2017) in an article titled "Nuevo método estándar para la recolección selectiva de café" from the Universidad Autónoma de Manizales, Colombia, mention that Colombian coffee is one of the smoothest and highest quality in the world due to the cultivated varieties, environmental conditions, manual selective harvesting, and the processing and industrialization methods. The tool used in the traditional harvesting method consists of a plastic container attached to the harvester's waist. The Centro de Investigaciones del Café (CENICAFÉ) developed the Canguaro 2M, an innovative device to assist with harvesting, consisting of two sleeves joined to a backpack strapped to the harvester's waist and shoulders.

Ocampo-López, O. et al. (2017) continue to mention that their study includes a comparison with the traditional method and an analysis of harvesting indicators in terms of efficiency, effectiveness, quality, and losses. The results allow the conclusion that adopting the new standard method for selective coffee harvesting leads to better performance in effectiveness, quality, and loss indicators, compared to the traditional method (The traditional system is commonly used in Colombia; it consists of a plastic container with a capacity of 10 to 12 kilograms, attached to the harvester's waist with a strap), without significant changes in the process efficiency.

Working hypothesis; Literature review

Kreuml, M. et al. (2013) mention that for coffee manufacturers, it is essential to know the expiration date of the packages and the importance of taking it into account. Coffee sensory evaluation studies demonstrated that coffee quality is affected after 9 months of bean storage; after 18 months, its oxidation increases (examples of these characteristics include a burnt, woody, earthy, hay-like smell and a bitter taste).

Among the coffee attributes that motivate consumption, the main ones are known to be color and aroma. Studies reveal that both factors vary depending on their chemical transformation due to physical changes caused by the humidity and temperature conditions of the place where the coffee roasting process takes place. It is important to emphasize these aspects because there is a possibility of differences in the sensory quality of the final product. In the present research, the information provided is useful because the coffee in question is artisanal, its preparation method is manual, and it is vital to be aware of these data since flavor and aroma may vary. (Kreuml, M. et al., 2013).

Aroma is a special quality for humans; it is one of the main attributes evaluated in the culinary area by customers and can be decisive at the time of purchase. Coffee is one of the most aromatic products and is mainly consumed for the pleasure provided by its organic components (which are studied in this research). (Andorfer, V. et al., 2014).

The aforementioned authors addressed a natural field experiment in the actual purchase of fair trade coffee in three supermarkets in Germany. The collected data indicate that sales reflect real ethical purchasing behavior and avoid the problems of social desirability. However, they also note that consumers' decisions to buy a product are mainly influenced by external behavioral constraints such as consumers' budgets and product price. It is also worth noting that this similarly applies to coffee products. (Andorfer, V. et al., 2014).

According to Kang et al. (2011) in their study on changes in coffee consumption behavior in Korea, their results confirmed that the congruence of self-image with a coffee shop directly influences a positive attitude toward the store, and they recommend that marketers improve the appearance by referencing the store's brand to match the image of their target customers.

McCarthy, K. et al. (2017) in their research aim to understand consumers' perception of liquid milk. Their primary objectives were to determine the extrinsic attributes that drive product purchases, and secondly, to determine the personal values behind purchases to better understand why particular attributes matter. Surveys were conducted with 702 dairy consumers. The results showed that fat content was the most important attribute for beverages, followed by package size and label claims. This research also considered that a future innovation for these beverages should include the development of lactose-free milk that also appeals to consumers with a specific taste.

Bogue et al. (2009) mentioned that new product development plays an important role in the rapidly evolving food supply chain where companies aim to use new and innovative ingredients to meet the growing needs of consumers for healthier foods. Beta-glucan, a new soluble fiber, is of great interest to global food companies for its ability to increase food and beverage functionality by increasing soluble fiber content. Intrinsic and extrinsic attributes that maximize consumer acceptance of Beta-glucan were determined. Three hundred consumers rated 22 hypothetical products using a nine-point Likert scale. Key attributes that determined consumer preferences for these enriched products were identified and four viable consumer segments were found. It was concluded that customer knowledge should be managed during the new product development stage, and that this can help companies overcome customer acceptance issues associated with innovative functional ingredients and encourage them to respond to the new market, thus creating opportunities throughout the food supply chain. (Bogue J. et al. 2009).

Corso, P. et al. (2015) in their study aimed to identify the most important packaging attributes for the purchase of a product not yet available in the Brazilian market: antioxidant-rich instant coffee, a blend of roasted and green coffee. Five types of packages of the same brand of antioxidant-rich instant coffee marketed in different countries were evaluated through a focus group.

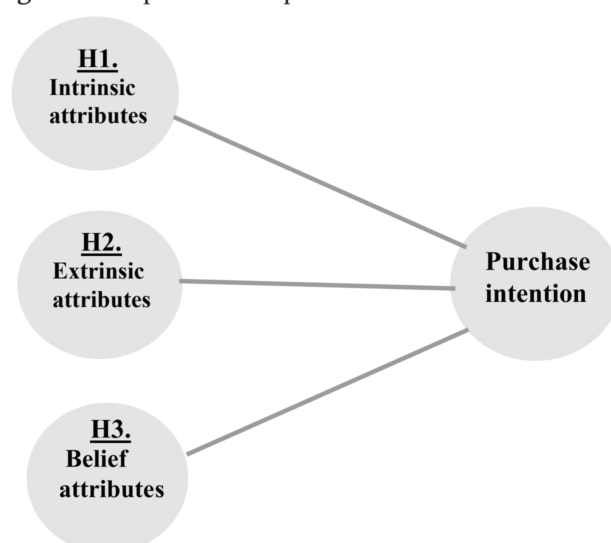
Attributes such as the shape of the jar, lid color, label, information, and brand were selected for the quantitative study. Purchase intention based on the package images was assessed using a conjoint analysis. In general, higher purchase intention was verified for more modern packaging such as hexagonal-shaped glass jars, and also browner labels indicating roasted coffee. (Corso, P. et al. 2015).

Consumers preferred the image of green and roasted coffee next to a cup of coffee and valuable information about product differentiation (origin, type, amount, and functions of antioxidants) presented in explanatory tables on the back of the package. (Corso, P. et al. 2015).

Proposed conceptual model

Based on the literature reviewed and analyzed above, the following hypotheses can be established, leading to the proposed conceptual model in Figure 1.

Figure 1. Proposed conceptual model



Source: Own elaboration based on literature review (2018).

Based on the previously reviewed and analyzed literature, the following hypotheses can be formulated (see Figure 1):

H1 *- The intrinsic attributes: color, flavor, aroma, and texture of non-industrialized whole bean coffee,* *positively and significantly influence the purchase intention of residents of Hermosillo, Sonora, with a C+ socioeconomic level.*

H2 *- The extrinsic attributes: brand, price, and packaging of non-industrialized whole bean coffee, positively and significantly influence the purchase intention of residents of Hermosillo, Sonora, with a C+ socioeconomic level.*

H3 *- The belief attributes: health and trust, of non-industrialized whole bean coffee, positively and significantly influence the purchase intention of residents of Hermosillo, Sonora, with a C+ socioeconomic level.*

Research methodology

A qualitative and quantitative type of research was carried out, that is, a mixed research approach. The research followed an exploratory cross-sectional approach, which according to Sampieri (2006), consists of studies conducted when the objective is to examine a little-studied topic or research problem, about which there are many doubts or it has not been previously addressed. Exploratory studies serve to familiarize ourselves with relatively unknown phenomena, obtain information about the possibility of carrying out more complete research within a specific context, investigate new problems, identify promising concepts or variables, establish priorities for future research, or suggest statements and propositions.

Qualitative methodology

To collect qualitative data within the research, two methods were used: in-depth interviews and focus group sessions. For the implementation of both instruments, 7 guiding questions were written focusing on the core theme: reasons for coffee consumption. The criteria for selecting participants were age range and regular coffee consumption. Likewise, 3 focus groups were conducted using the same guiding questions.

The in-depth interviews revealed that most participants cited flavor as the main motivation for coffee consumption, and energy from the beverage was also mentioned, as well as the habit of drinking coffee. In a hypothetical question about whether they would be willing to taste non-industrialized roasted coffee beans, their response was affirmative, as they believe it is perceived as healthier and were curious to try it. Regarding the aroma and color of the beverage, it was concluded that these aspects are vital and determine product consumption. Respondents conceived a hypothetical package in a rustic style, made of recycled material, aligned with an environmentally friendly and healthy concept. It should be noted that the interviews were conducted with four men and four women, following the criteria mentioned above.

As a result of the focus groups, with a total of 15 participants divided into three sessions ranging from 15 to 25 minutes, the following findings were described:

Table 1. Results on relevant variables

Focus group 1

Technique	Focus group
Participants	5
Place	Hermosillo, Sonora
Variables found	Intrinsic: Flavor, aroma, color
	Extrinsic: Fabric-style packaging, simple packaging design
	Belief attributes: Energy
	Consumption influence: Type of coffee, location, weather, social setting

Source: Own elaboration based on fieldwork (2018).

Table 2. Results on relevant variables

Focus group 2

Technique	Focus group
Participants	5
Place	Hermosillo, Sonora
Variables found	Intrinsic: Aroma and flavor are more important than color
	Extrinsic: Brand is the main influencing factor, packaging in paper or fabric, representative label
	Belief attitudes:
	Consumption influence: By consumption references

Source: Own elaboration based on fieldwork (2018).

After analyzing the results of the 4 interviews and the 3 focus group sessions, it was concluded that the main factors for coffee consumption are flavor, aroma, and color. Energy is also considered, along with the brand. Price is a determining factor in the consumption decision. Most participants stated that they would consume artisanal coffee out of

Table 3. Results on relevant variables

Focus group 3

Technique	Focus group
Participants	5
Place	Hermosillo, Sonora
Variables found	Intrinsic: Color is the main aspect to consider, followed by aroma and flavor
	Extrinsic: Price as a relevant attribute for coffee consumption, packaging made of clary or glass
	Belief attributes: Energy
	Consumption influence: Purchase accessibility, weather, product origin

Source: Own elaboration based on fieldwork (2018).

curiosity to try something new and to support the producers.

Quantitative methodology

Sample design: Simple random sampling without replacement

The sample is essentially a subgroup of the population and is used for statistical purposes. Its use is necessary because, in many cases, the study universe is too large. The sample modality in this research is by cluster: according to Malhotra (2004), this is used when it is not possible to obtain a list of all elements of the population; the size of the universe is known, but a listing is not available. Its use is appropriate if the population is very large and dispersed. Clusters are characterized by being homogeneous among each other but internally presenting a high degree of heterogeneity among their components. In this research, the type of sample to be used is finite since the exact data of the population to be measured is known.

In this research, the following finite population formula by Fisher and Navarro (1996) was used to determine the sample size, which resulted in 382, as shown below:

$$n = \frac{NZ^2\, p\,(1-p)}{(N-1)\,E^2 + Z^2\, p\,(1-p)}$$

Where:

n = Sample size

N = Population size

Z = Confidence level

p = Proportion of successes

(1- p) = Estimated proportion of failures

e = Estimation error between the actual proportion and the sample proportion

Data:

N = 69,721 inhabitants

Z = 1.96 with a 95% confidence level

p = probability in favor of 50% (0.5)

(1 – p) = probability against of 50% (0.5)

e = estimation error of 5% (0.05)

n = people to be surveyed

$$n = \frac{(69721)(1.96)^2\,(0.5)\,(0.5)}{(69721-1)\,(0.05)^2 + (1.96)^2\,(0.5)(0.5)} = \frac{66,960.0484}{175.2604}$$

n = 382 surveys to be conducted

Analysis and interpretation of results obtained from the quantitative methodology

The methodology used for the statistical analysis of the data was the Structural Equation Models (SEM) based on components/variance, applying the statistical software package SmartPLS 2.0 (Ringle, Wende, and Will, 2005).

To verify the individual reliability of the indicators as part of a reflective construct, the criterion of Hair et al. (1999) was considered, where the factor loading (λ) must be equal to or greater than 0.550. The factor loadings show that the shared variance between the construct and its respective indicators is greater than the error variance. Considering the acceptance criterion (λ ≥ 0.550).

In a first statistical round, the following indicators were removed: VE-1: *"The coffee packaging determines its quality" (λ = 0.423; λ2 = 0.179); VE-6: "The brand is the least important factor when buying coffee" (λ = -0.416; λ2 = 0.173)*; VC-2: *The consumption of artisanal coffee improves people's quality of life" (λ = 0.495; λ2 = 0.245)*; VC-4: *"I would consume artisanal coffee because it doesn't harm the environment " (λ = -0.331; λ2 = 0.110)*; VI-2: *"The color of the coffee must motivate me to acquire it" (λ = 0.021; λ2 = 0.0004)*; VI-4: *"I buy coffee when I like its texture" (λ = -0.516; λ2 = 0.266)*; VI-6: *"I buy coffee when I find its smell pleasant" (λ = 0.194; λ2*

= *0.038)*; In a second statistical run, the indicators were retained based on the previous acceptance criterion *(λ ≥ 0.550)*.

Table 4. Construct reliability

Casual Model of Quality Attributes on Purchase Intention of Sonoran residents regarding non-industrialized whole bean coffee.

Construct Indicators	Cronbach's alpha (α)	Composite reliability (ρ_c)	Average Variance Extracted
Belief attributes (AC-1; AC-2; AC-3)	0.484	0.713	0.636
Extrinsic attributes (VE-1; VE-3; VE-5; VE-6; VE-7)	0.625	0.655	0.71
Intrinsic attributes (VI-1; VI-3; VI-5; VI-7)	0.761	0.797	0.579
Purchase intention (VC-4; VE-2; VE-4; VE-8; VI-2; VI-4; VI-6; VI-8;)	0.822	0.824	0.652

Source: Own elaboration based on statistical data analysis (2018).

To calculate the internal consistency of the indicators that determine the reflective constructs, construct reliability was analyzed through the Cronbach's Alpha (α) measure and the Construct Composite Reliability Coefficient (ρc).

Table 5. PLS analysis results – Structural model

Casual Model of Quality Attributed on Purchase Intention of Sonoran residents regarding non-industrialized whole bean coffee.

Hypothesis	Hypothesis sign	Standardized path coefficients (β)	t- value (Bootstrap)
H1: Belief attributes→Purchase intention	+	0.049	4.420
H2: Extrinsic attributes→Purchase intention	+	0.050	13.095
H3: Intrinsic attributes→Purchase intention	+	0,.058	0.809

Source: Own elaboration based on statistical data analysis (2018).

In the table above, it can be observed that the t-value (Bootstrap), which must be greater than 1 to be significant, is so for the Belief Attributes and contrasts with the Extrinsic Attributes.

Final considerations:

The conclusions regarding the objectives considered in the research, which helped guide this project, are as follows:

Specific objective one:

To evaluate the intrinsic attributes that predominate in the purchase intention of Sonoran consumers regarding non-industrialized whole bean coffee within a C+ socioeconomic level (upper-middle class). Once the in-depth interviews and focus groups were conducted, the intrinsic attributes considered significant were flavor, color, and aroma.

Specific objective two:

To determine the extrinsic attributes that predominate in the purchase intention of Sonoran consumers regarding non-industrialized whole bean coffee within a C+ socioeconomic level. According to the information gathered through qualitative research, the attributes considered significant were price, brand, and packaging.

Specific objective three:

To identify the belief attributes that predominate in the purchase intention of Sonoran consumers regarding non-industrialized whole bean coffee within a C+ socioeconomic level. The results indicated that the safety-related attributes were significant. Since price was the primary concern among interviewees, a differentiation strategy will be implemented, considering that prices for this type of manually processed product are usually high. The brand will be positioned with a stylized design, distinguishing it from all others.

To conclude the model presented in this research, the contrast between the hypotheses: H1: Belief attributes -> Purchase intention, and H3: Intrinsic attributes -> Purchase intention, leads to the inference, after analysis, that indicators such as safety and trust, along with brand, price, and packaging, are significant based on the indicators referenced by previously cited authors.

Entrepreneurs marketing non-industrialized whole bean coffee should consider obtaining the socially responsible company designation, which, according to Berman (1997), refers to companies that help people understand that they are intimately connected to the well-being of others, and to the social and political world around them. This creates a meaningful difference in daily life, supported by individual choices and values, enriching lives across various cultures and ethnicities. In this way, current and potential consumers of this type of coffee would fully identify with the company and its product.

Limitations and future lines of research:

This study does not aim to generalize the results beyond the previously studied context. It is characterized by providing an overview of a set of identified variables intended solely for scientific dissemination and potential commercial use, such as in advertising campaigns and other aspects of various fields and sciences that may benefit from it.

There are multiple factors, variables, and attitudes that dominate the purchase process of any product, and this study proposes variables based on an exhaustive literature review and previously established models. Likewise, the findings are not intended to be generalized, and the research opens the door for future exploration of new characteristics and variables that future researchers may propose as knowledge and exploration of the topic deepen.

Each research methodology has characteristics that make it more appropriate for obtaining certain information and, at the same time, introduces limitations in its application. These results are conditioned accordingly, and had different methods been used, the conclusions presented might have been different.

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