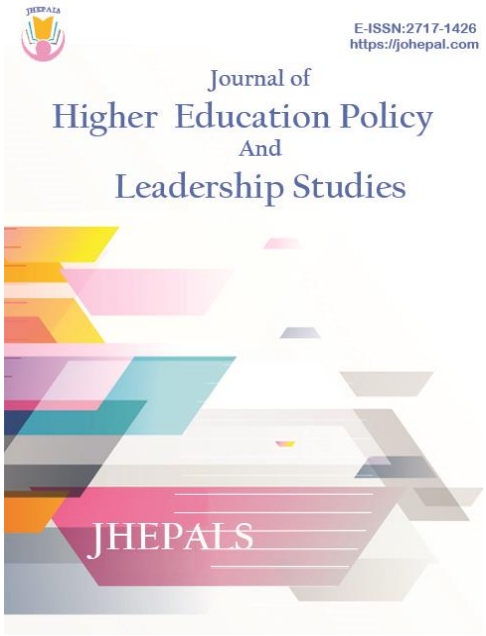
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Factors Affecting Researchers' Incentive Preferences: A Cross Sectional Study of Private Universities in Mexico



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Abstract

Incentives to scientific products have become an important tool to increase research productivity in universities around the world, usually through financial incentives policies aimed to foster publications or citations. In this paper, we study the preferences of researchers regarding research incentives in Mexican private universities. Through statistical methods, including z-tests for differences in proportions and correlation tests, we analyzed the results of a survey applied to researchers of business and engineering areas. Results suggest that demographic aspects like age, rather than salary range and years of experience, influence researcher's incentive preferences, and that non-financial incentives are significant to young researchers. We also find that timing for receiving incentives is a significant factor that might drive researchers' decisions. This study contributes to identifying the right incentives for researchers, considering that in Mexico these incentive programs are entirely financed by universities. The relevance of this research is that it allows policymakers to design comprehensive research policies including not only university research goals, but also researchers' preferences to ensure their commitment and motivation.

Keywords: Financial Incentives; Non-Financial Incentives; Delay-Reward; Reward Schemes; Research Policy

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Introduction

In the context of Mexican private universities, the use of financial incentives plays a crucial role in increasing research productivity. Whether to meet institutional research metrics, or to reach research standards established by quality accreditation bodies, universities invest important amounts of money to keep their researchers motivated through incentives programs. In Mexico, the number of annual articles per million people published in scientific and technical journals have increased 254% from 2000 to 2018 (World Bank, 2022); United Nations (2022) – processed by Our World in Data (2023). This significant increase could be a result of several strategies, one of which could be the implementation of research incentives policies. However, a question arises, how should incentive programs be aligned with institutional objectives while considering the individual preferences of researchers?

In this paper we study research incentives from the perspective of researchers. Our objective is twofold: first, identifying if demographic aspects such as age, salary range and years of experience, influence researchers' preferences towards incentives, and second, identifying researchers' perspective of receiving a financial incentive with delay. These findings will allow policymakers of private universities to include researchers' perspectives and most valued attributes of incentives, in the design of their research incentive policies. This is particularly relevant since in Mexico these incentive programs are entirely financed by universities.

Considering aspects like the decision-making process of researchers is especially important. As firstly noted by Kahneman and Tversky (1979) in their Prospect Theory, participants evaluate differently gains and losses, so it is important to understand how people behave when making decisions under risk. However, since decisions generally include a time frame, this is an aspect that should also be analyzed. As stated by Frederick et al. (2002), the time-discounting occurs when people value more immediate rewards than future ones. The opposite has been studied too, this is, rewards when provided with delay (Skylark et al., 2020).

The emphasis in designing a comprehensive research policy arises from literature, where the use of incentives and reward systems have partially explained the increase in productivity (Kyvik & Aksnes, 2015). It has been noted that the quality of the policies in higher education institutions, as well as the correct incorporation in the institutional culture, impacts favorably their research productivity (Ghozi et al., 2023). However, incentive programs face the risk of losing effectiveness over time and being designed considering only the institution's interests, leaving behind the preferences of the individuals to be motivated. Field and Greenwood (2015) highlights the fact that the voice of the academics is frequently ignored when designing programs of paying for outperformance, and that academics from different disciplines tend to have different opinions regarding this payment scheme. In fact, researchers' perception of the incentives as supportive or controlling, has an impact on their motivation (Andersen & Pallesen, 2008; Kim & Bak, 2020).

As stated by Sánchez-Cruz (2022), it is fundamental that higher education institutions in Mexico implement research policies to contribute to the country's development. Given the characteristics of research in developing countries, studying researchers' perceptions from the Mexican perspective is relevant. Attributes like language, access to funds, area of knowledge, publication culture, and availability of research resources, represent additional

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aspects that should be considered when identifying the factors of research output (Gonzalez-Brambila & Veloso, 2007). In general, Latin American countries face the risk of low scientific and technological development due to the reduced importance given to knowledge production (Sánchez-Cruz, 2021). This led us to realize the importance of understanding researchers' preferences in a specific context when designing a research policy.

This paper highlights researchers' incentive preferences in the Mexican context and is organized in the following sections. After the introduction, a brief literature review on incentives is presented. The next section provides details of the study design, followed by the analysis of the three stated hypotheses. Then, in the results and discussion section, findings are interpreted and contrasted with literature. Finally, some implications and conclusions for future research are presented.

Literature review

The implementation of incentives as a motivating tool has been a widely studied topic. Literature as the Maslow's hierarchy of needs (Maslow, 1943) and Herzberg's motivation-hygiene theory (Herzberg et al., 1959) have provided us a better understanding about people's needs and motivations. Institutions are now aware that it is not enough to achieve their organizational objectives, but they must also ensure they meet the needs and motivations of their employees. In fact, Hao (2023) defined incentives as path to reach both organizational and personal goals.

Diverse classifications of incentives are found in literature. Jeffrey et al. (2013) define tangible incentives the ones that despite having a market value, are not cash, like prepaid cards and merchandise. Li and Ou-Yang (2010) classified them as implicit and explicit incentives, like internal motivations and wage increases, respectively. And several authors classify incentives as financial and non-financial (Lubarsky et al., 2019; Wiese & Coetzee, 2014; Yousaf et al., 2014).

Incentives have been studied in different contexts. In the educational context, for example, Levitt et al. (2016) conducted some experiments in elementary and high school students in the US, to determine the short-term effects of incentives on student performance. They identified two factors in the effectiveness of the use of incentives: age of the participant and moment of handing out the incentive. While younger students prefer non-financial incentives, older students prefer financial incentives; and in general, incentives delivered with delay tend to lose their motivating effect (Levitt et al., 2016). Skylark et al. (2020) studied the role of expectations and age, in the trade-off of delays and monetary rewards, and Njenga (2023) identified that the use of financial incentives could influence the interest of teachers to participate in professional development programs. In the medical context, financial incentives have been used to promote healthy behaviors, like exercising while discouraging the unhealthy ones, like smoking (McGill et al., 2019; Vlaev et al., 2019), and as a way of boosting vaccination rates (Campos-Mercade et al., 2021). In the social context, as a way of promoting the prosocial behavior among population such as charity (Ariely et al., 2009), and contributions to public goods in presence of norm enforcement mechanisms (Fuster & Meier, 2010).

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Researchers' Incentives Preferences

Specifically talking about incentives programs design, this topic has been widely studied. Emanuel et al. (2016) and Lubarsky et al. (2019) analyzed from a behavioral economics perspective some factors that should be considered when designing successful incentive programs for physicians. They concluded that the amount of the incentive, the timing to deliver it, the level of difficulty of the task to be incentivized, and the number of performance metrics are some of the factors that reduce the negative effects of incentives, like noncooperative behaviors. Authors like Mitchell et al. (2013), studied not only the incentives design features when promoting exercise adherence among adults, but also the period that incentives should be kept to achieve this goal. Other authors studied the impact of tax incentives in reducing obesity (Wallace, 2016), the ageing factor in reward preferences for health care (Von Bonsdorff, 2011), the most valued features of incentives (Mitchell et al., 2015), and the demographic variables to consider when designing an incentive policy (Hao, 2023).

The existing literature related to incentives, demonstrates that industry and characteristics of the participants, influence their motivating factors (Yousaf et al., 2014). A study among academic economists in the US, showed that the time spent in research activities have a stronger relation with gender and rank of faculty members, than with the incentives provided by the institution to increase research productivity (Harter et al., 2011). Li and Ou-Yang (2010) studied in the context of the US if obtaining the tenure affects researchers' productivity and impact (i.e., their total number of papers and citations). They concluded that, since productivity and impact remain consistent after tenure, the implicit incentives would still strongly motivate them. Authors like Lacorte Ayroza et al. (2019) studied the effects of incentives in researchers that belong to a research productivity program in a university in Brazil. They concluded that, despite incentives having a positive effect in researchers' productivity, there is a limitation on the financial incentives provided, possibly because the rewarded activities correspond to those that researchers would naturally do.

The use of either financial or non-financial incentives is also an issue. Through a survey applied in the Republic of Macedonia among employees of 40 years and over that work in the telecommunication sector, the authors identified that financial incentives are more related to job satisfaction than non-financial incentives; however, it was also identified that the existence of both types of incentives are fundamental in employees' motivation (Stefanovska-Petkovska & Bojadziev, 2017). In fact, the total reward system, was studied in the telecom sector as a better alternative than using only financial rewards (Riaz et al., 2018). In the educational context this topic was examined too. Hassan et al. (2022) studied the impact of financial and non-financial interventions in less developed countries, concluding that financial incentives have a stronger impact on improving learning outcomes.

An increase in motivation and personal effort have been identified as advantages in the use of financial incentives (Lacorte Ayroza et al., 2019); however, authors highlight their negative side. Necker (2016) applied behavioral economics concepts to understand why rewards can lead scientists to dishonest behaviors. Environments with a high pressure to publish and competitive schemes could favor cheating, since scientists could opt for activities that maximize their utility (Necker, 2016) and that represent a quickest way to reach the objectives (Fernández et al., 2021). The decrease in internal motivation has also

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been studied as a negative side of incentives among sale representatives, especially when they are motivated by expected rewards (Wiese & Coetzee, 2014).

Considering the advantages and disadvantages of incentives, some authors have proposed the use of efficiency wages and Pay-for-Performance (P4P) schemes as reward alternatives. As defined by Way (2014), efficiency wages are the wages above the market paid to employees to increase their productivity. Fernández et al. (2021) argument that efficiency wages could improve the organizational productivity by committing the employees, while reducing the negative side of the incentives. This commitment could be a consequence of the endowment effect, this is, since employees already have a higher wage, it would be more painful for them to lose something they already possess. Other authors highlight the P4P schemes as a way of ensuring both efficiency and quality, using financial incentives (Kyeremanteng et al., 2019). In the health systems for example, despite the recognized advantages of this scheme, it also faces several disadvantages like ignoring patients that require specific attention, and providing a wrong interpretation of the purpose of the incentive both by doctors and patients (Kyeremanteng et al., 2019). Authors like Zaresani and Scott (2021) studied if the increasing implementation of the P4P in healthcare, has been equally successful, concluding that there is not strong evidence.

The use of incentives is studied in a variety of academic contexts. For instance, in Saudi Arabia (AlShareef et al., 2023) and Denmark (Andersen & Pallesen, 2008) were studied the effects of financial incentives on research production, and in Pakistan, the pay-for-performance schemes for teachers in public and private universities (Sarwar et al., 2014). There is also literature regarding the culture conflicts and pressure to publish in universities that are moving from a teaching-oriented mission to a research-oriented mission in United States and Mexico, finding that in both countries, researchers value non-financial aspects such as reduced teaching-load (Gregorutti, 2010). However, since literature is still inconclusive about the best incentive scheme to favor research in universities, this paper aims to contribute to the existing literature by focusing on researchers' incentives preferences, a frequently understudied side in the design of research policies. Analyzing the demographic aspects of researchers' incentive preferences, as well as studying the effect of time preference on decision-making, allow us to have a broader vision of researchers' preferences. A special weight is given to the value that financial and non-financial incentives represents to researchers; an opportunity detected in the previous literature.

This analysis is therefore relevant to policymakers and administrators in the academic context, as well as in areas with highly specialized employees. Along with the institutional objectives, including the perception of the individual to be motivated in the design of an incentive policy, represents a huge opportunity for universities that seek to achieve their research productivity goals while keeping their researchers motivated. To the best of our knowledge, this paper is one of the first studies related to research productivity incentives and researchers' perceptions in private universities in Latin America.

Study Design

A cross-sectional survey (Babbie, 1973; Setia, 2016) of 54 questions was designed to understand the motivations, biases and most valued attributes of incentives by researchers of private universities in Mexico. It included a variety of question types, such as multiple

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choice, open-ended, rankings, dichotomous, and scenario analysis. This kind of survey is useful in a wide range of social science applications, and it holds a great potential for researchers and managers as it helps to predict many economic behaviors. In our study design we also included some aspects assessed by Baumann (2022), such as age, gender, research experience, research time, and research motivation, used to cluster lecturers of non-traditional higher education institutions by their research profile.

The survey sections are as follows: 1) demographic and academic background, 2) researcher profile, 3) biases, and 4) research incentives. We also created a database of researchers, considering their area of knowledge and the university where they work. In this paper we will only focus on the relationship between survey sections 1, 2 and 4, being section 3 an issue of a different study.

Survey sections

The first section, demographic context variables, comprises a series of questions with the objective of classifying the participants. Aspects like age, gender, civil status, in combination with data like years from obtaining the doctoral degree, country where the degree was awarded and the percentage distribution of teaching, research and service activities, are the basis for a complete classification of researchers.

The second section, researcher profile, seeks to understand not only the goals and challenges as researchers, but also to identify their most valued characteristics to carry out its functions. Aspects like years of experience as researcher as well as belonging to the National System of Researchers (SNI) are considered. Being part of the SNI allow researchers of universities to have benefits and represents a national recognition, since this program depends on the National Council for Humanities, Science and Technology (CONAHCYT).

The fourth section focuses on research incentives. The goal in this section is to identify the financial and non-financial incentives most valued by researchers, the proposed financial incentives for publications depending on the quartile ranking of the journal, and aspects related to delay-rewards.

For a generalized understanding of the incentives, participants were provided with examples in the corresponding questions. Financial incentives encompass rewards for indexed and non-indexed publications, for participation in conferences, to cover fees to publish in journals, etcetera. While non-financial incentives include reduced teaching load, private office (some universities use shared spaces for professors), schedule flexibility, dissemination of achievements, sabbaticals, additional free days, etc.

During the survey, participants were asked to answer some questions about potential target journals for their publications. In this case, the quartile ranking of the journal is an important factor to consider. The quartile ranking of the journal corresponds to the classification made by SCImago Journal Rank (SJR) and Journal Citation Reports (JCR), where journals are classified into four quartiles (Q1, Q2, Q3, and Q4) according to their impact factor. Journals classified as Q1 represent the most prestigious journals in certain subject area.

Survey platform

The survey was designed using Question Pro software. This platform was selected due to the wide variety of question types, the completeness of its reports as well as the

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possibility to respond in different devices, like computer or mobile phone. A main feature was the possibility of sending the survey to lists of emails and to send periodic reminders.

Population

Ten of the largest private Mexican universities were selected. These universities are: Instituto Tecnológico de Estudios Superiores de Occidente (ITESO), Centro de Enseñanza Técnica y Superior (CETYS Universidad), Instituto Tecnológico Autónomo de México (ITAM), Instituto Tecnológico y de Estudios Superiores de Monterrey (Tec de Monterrey), Universidad Anáhuac, Universidad de las Américas Puebla (UDLAP), Universidad de Monterrey (UDEM), Universidad Iberoamericana (IBERO), Universidad Panamericana (UP), and Universidad Popular Autónoma del Estado de Puebla (UPAEP).

Six of the 10 selected universities are among the Top 100 in the Latin American & The Caribbean University Rankings 2024. Their position in this ranking, as well as some university statistics of the year 2021, are presented in Table 1. These statistics allow us to have a whole perspective of the institution including all their academic departments, even the ones out of the scope of this research. It is worth highlighting that the Professors' column includes not only researchers but also teaching professors, which represents most professors. The data provided also includes full time, part time and adjunct faculty. The columns of articles in Web of Science (WoS) and in Scopus represent the annual production in 2021.

Table 1.
QS LatAm & The Caribbean University Rankings 2024 and university statistics 2021

University	LatAm & The Caribbean Rank (2024)	Professors (2021)	Students (2021)	Articles in Web of Science (WoS) (2021)	Articles in Scopus (2021)
Tec de Monterrey	4	12,314	96,690	1,026	1,330
IBERO	42	1,942	22,225	226	193
ITAM	44	602	4,962	92	114
UDLAP	58	830	9,740	136	161
UP	68	2,235	14,730	121	190
Universidad Anáhuac	74	5,146	27,215	121	174
UDEM	105	1,086	13,507	91	141
ITESO	139	1,799	10,545	27	33
UPAEP	201-250	1,244	13,959	71	82
CETYS Universidad	301-350	791	5,493	14	19

Source: QS Quacquarelli Symonds (2024); UNAM (2023)

Profile

In order to define our research subjects, we considered the following criteria: the participants 1) must hold a doctoral degree, 2) must belong to either engineering or business academic departments, 3) must spend part of their time doing research activities and 4) must be full-time employee in one of the selected private universities. It was decided to focus only on researchers of engineering and business areas since the ten selected universities have a strong focus on both areas, and participants represent 45% of the SNI members by 2022, the year in which the sample was formed.

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Researchers' Incentives Preferences

With information of the official directory of SNI, a database of 350 researchers of the 10 selected universities was integrated, including researcher's full name, affiliation, and email address. The survey was electronically sent to the participants by early November 2022. It remained open for three months, until 86 valid responses were reached. Table 2 shows the demographic context of these participants.

Table 2.
Summary of demographic context variables

	Frequency (n=86)	%
Gender		
Male	64	74%
Female	22	26%
Range age		
30-39	25	29%
Young	**25**	**29%**
40-49	31	36%
50-59	17	20%
>60	13	15%
Senior	**61**	**71%**
Academic area		
Engineering	38	44%
Business	48	56%

Source: Self elaboration based on survey results

Hypotheses

In this study three research hypotheses were examined:

- H1: Younger researchers prefer the non-financial aspects of incentives more than senior researchers.

In the context of a Mexican private university, research incentive programs are financed with university resources. Identifying the preference for financial or non-financial incentives among researchers give the opportunity to policymakers to design a more tailored policy that increases motivation among researchers and potentially reduce the financial resources needed to implement it.

- H2: There is a positive correlation between the amount of financial incentives proposed by researchers and the willingness to delay the gratification.

A key factor to consider in the design of a research incentive policy is to determine the best moment to deliver an incentive while maintaining researcher's motivation. Studying the preference for an immediate but reduced incentive against a delayed but higher incentive could have a significant impact in the policy design and financial planning of the institutions.

- H3: The salary range of the participants and the years of experience as researchers, are positively correlated to the financial incentives for publications proposed by participants.

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The demographic composition of the researchers that belong to an institution could influence their expectation to receive an incentive that they consider to be fair. The wrong determination of a financial incentive could generate a demotivating effect.

Analysis

- H1: Younger researchers prioritize the non-financial aspects of incentives more than senior researchers.

To analyze this hypothesis, participants were divided into two groups according to their age range: young and senior researchers. Young researchers correspond to participants that are younger than 40 years old, while senior researchers are 40 or more years old. Existing literature related to motivation and incentives, have classified employees with this age criteria (Stefanovska-Petkovska & Bojadziev, 2017).

Through a multiple-choice scenario question, participants were asked what they would prefer to receive as incentive when a research paper is accepted. There were four possible answers: financial incentive depending on the quartile ranking of the journal, financial incentive regardless of the quartile ranking of the journal, a combination of financial and non-financial incentives, and only non-financial incentive.

This question provided us a full perspective of researchers' preferences. While senior researchers have a strong preference for financial incentives depending on the quartile ranking of the journal (48%), young researchers show an inclination for combination of financial and non-financial incentives and financial incentives depending on the quartile ranking of the journal (32%). Results are presented in Figure 1.

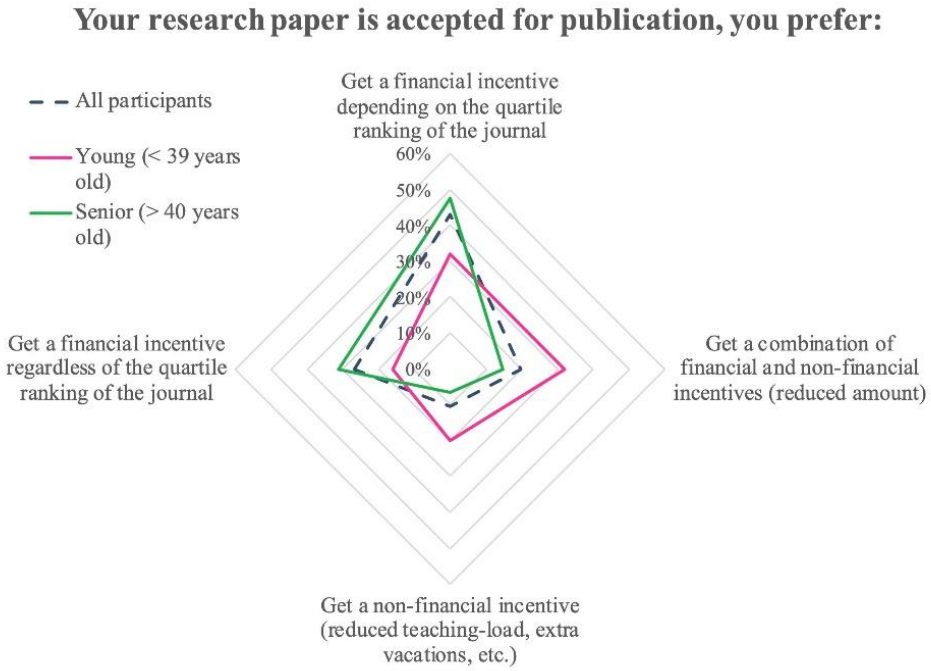


Figure 1. Preference for financial and non-financial incentives according to participants' age (Source: Self elaboration based on survey results)

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Researchers' Incentives Preferences

When analyzing the previous question not only by age, but also by academic area, interesting results came out. While senior researchers of both business and engineering have similar preferences regarding incentives, young researchers of business have a stronger preference for getting a combination of financial and non-financial incentives (54%). Young researchers of engineering for their part, despite preferring financial incentives depending on the quartile ranking of the journal (42%), have also moderate preference (25%) for both financial incentives regardless the quartile ranking of the journal and non-financial incentives. Results are presented in Figure 2.

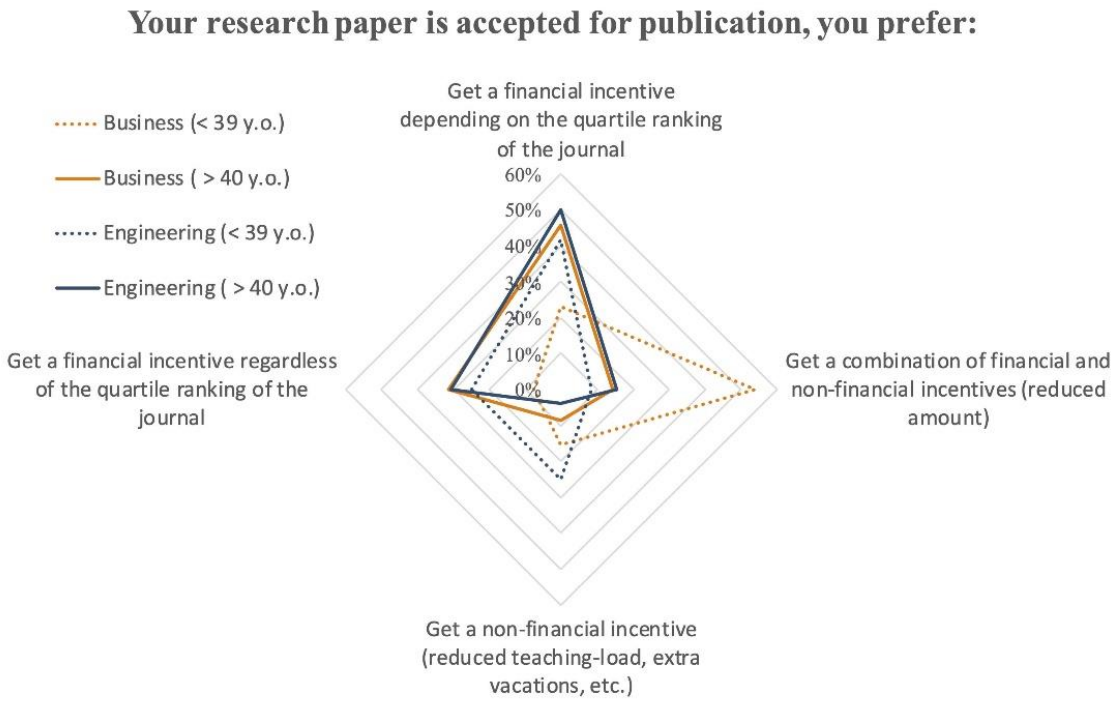


Figure 2. Preference for financial and non-financial incentives according to participants' age and academic area (Source: Self elaboration based on survey results)

A z-test for the difference in proportions between young and senior participants who prefer non-financial incentives over financial incentives was performed using Minitab (version 21.4). Table 3 shows the descriptive statistics of the groups, and Table 4 shows the results of the z-test for the difference in proportions. The results suggest that there exists a significant difference on the preference of non-financial incentives by young researchers compared with the preference of senior researchers (p-value < 0.007).

Table 3.
Descriptive statistics of young and senior participants that prefer non-financial incentives over financial incentives

Group	Observations	Number of participants that prefer non-financial incentives	Proportion
Young	25	13	0.52
Senior	61	13	0.21

Source: Self elaboration based on survey results

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Table 4.
Summary of z-test for proportions

Method	Z-value	p-value
Normal approximation	2.72	0.007*

Source: Self elaboration based on survey results
*Significant difference between number of young and senior participants that prefer non-financial incentives over financial incentives.

Finally, the analysis of this hypothesis was complemented with a ranking question regarding elements of incentives that institutions should consider in their policy design to favor life-work balance (being the number 1 the most important). The four possible answers were: have a financial impact in my personal economy, allow me to enjoy more personal time, provide me with flexible working conditions (time and space to execute), and promote my professional development. Table 5 presents a summary of the top 3 answers.

Table 5.
Ranking of elements that an institution should consider in their research incentives policy design that favor life-work balance

Rank	Young (< 39 years old)	Senior (> 40 years old)
1°	Have a financial impact in my personal economy	Have a financial impact in my personal economy
2°	Allow me to enjoy more personal time	Provide me with flexible working conditions (time and space to execute)
3°	Provide me with flexible working conditions (time and space to execute)	Allow me to enjoy more personal time

Source: Self elaboration based on survey results

There is a clear preference for incentives with a financial impact in researchers' economy. However, it is important to note the generalized preference for flexible working conditions (time and space to execute) for both groups of researchers, young and senior. This aspect could be related to the need of autonomy that researchers claim in terms of organizing their research activities.

The findings presented in this section suggest that both young and senior researchers value financial incentives; however, young researchers would prefer to receive a combination of financial and non-financial incentives in the same extent. This ageing factor in rewards preferences is consistent with Stefanovska-Petkovska and Bojadziev (2017) and Wiese and Coetzee (2014), whose findings will be discussed in the Results and discussion section.

- H2: There is a positive correlation between the financial incentives proposed by researchers and the willingness to delay the gratification.

To evaluate this hypothesis, participants were asked to suggest a financial incentive amount that they consider institutions should give researchers when publishing in journals of different quartile rankings (Top 10, Q1, Q2, Q3, and Q4). The proposed incentives were contrasted with other three questions that asked them scenarios of time preference. The scenario questions asked participants to consider their previous reported amounts, and to

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select one of the following options: receiving the 100% of the incentive in 1 year after publication, 75% in 9 months, 50% in 6 months, 25% in 3 months, and 20% in 15 days.

To calculate the real incentive to be received, we multiplied the reported amounts of incentives by the percentage of incentive according to the selected waiting time. Figure 3 presents the average of real incentives for each quartile and waiting time. No Top 10 column is reported in the 9-month period, since none of the participants selected that waiting period for that kind of publication.

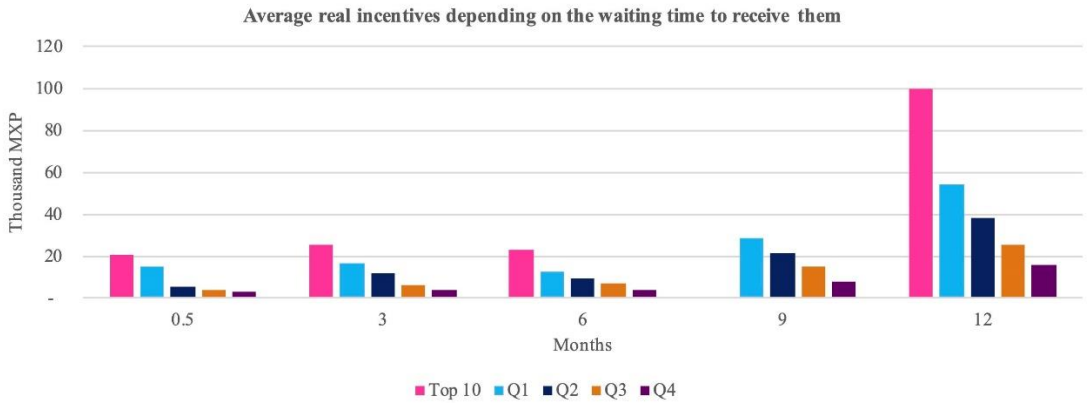


Figure 3. Average of real incentives depending on the waiting time to receive them, clustered by quartile ranking of the journal
Source: Self elaboration based on survey results

It is worth highlighting that 77% of the participants prefer the option of waiting 12 months to get the 100% of the incentive, regardless their proposed amount of incentive and the quartile ranking of the journal.

To examine the relation between the amount of real incentive to receive, and the time that participants are willing to wait, a Spearman correlation analysis was employed using Jamovi (version 2.3.28). For this analysis, the data of one participant was eliminated (equivalent to 5 responses) due to inconsistencies in his answers. The results of the analysis with the remaining participants (85 respondents, 425 answers), are showed in Table 6. The obtained p-value is < 0.001, which implies that there exists a significant positive correlation between the real amount to receive and the waiting time.

Table 6.
Spearman's Rho and p-value for the relation between real amount of financial incentives and waiting time

Spearman's Rho	p-value
0.506	< 0.001***

Source: Self elaboration based on survey results

These findings suggest two aspects. First, when there is a trade-off between the financial reward and the delay, researchers are willing to wait the longer period to get the 100% of the incentive. Second, there is a positive correlation between the amount of the incentive and the waiting time to receive it, this is, the higher the incentive, the higher the willingness to wait longer.

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- H3: The salary range of the participants and the years of experience as researchers, are positively correlated to the financial incentives for publications proposed by participants.

To assess this hypothesis, the salary range of the 86 participants was contrasted with the proposed unique financial incentive for publications, this is, an amount of incentive when the quartile ranking of the journal does not matter. Since these variables are ordinal categorical and continuous, respectively, a Spearman correlation analysis was performed using Jamovi (version 2.3.28). The results of the correlation are presented in Table 7 showing that there is not a significant correlation between the variables, since the obtained p-value is 0.581.

Table 7.
Spearman's Rho and p-value for the relation between salary range and proposed unique amount of financial incentive

Spearman's Rho	p-value
-0.06	0.581

Source: Self elaboration based on survey results

To evaluate the correlation between two continuous variables, a Pearson correlation factor was calculated between the years of experience of the 86 researchers and the proposed unique financial incentive for publications. Results are presented in Table 8, where it can be noted that there is not a significant correlation between the variables, since the obtained p-value is 0.664.

Table 8.
Pearson's R, p-value and Confidence Interval (CI) for the relation between year of experience as researcher and proposed unique amount of financial incentive

Pearson's R	p-value
-0.047	0.664

Source: Self elaboration based on survey results

These findings suggest that there is not a significant correlation between salary range and years of experience with the proposed unique financial incentive. Finally, participants were asked to suggest amounts of incentives for publications according to the quartile ranking of the journal, this is, for publications in Top 10 journals, Q1, Q2, Q3, and Q4. For each participant, these amounts were contrasted with their first reported amount, the unique financial incentive, to assess if there exists certain anchoring bias. The anchoring bias was first studied by Tversky & Kahneman (1974) to explain that people make estimates influenced by a reference point. Findings confirm the existence of this bias, since the unique proposed incentive is the same or very similar to the reported for Q3 publications (35%), followed by Q2 publications (27%), Q4 publications (17%), Q1 publications (14%), and Top 10 publications (7%).

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Results and Discussion

The analysis of the three hypotheses showed us that age is a factor that affects the preference of non-financial incentives over financial ones (H1). The expected amount of the incentive is influenced by the waiting time to get it (especially when the longer the waiting time, the higher percentage of incentive to receive) (H2) but is not correlated with the salary range and year of experience (H3). This research is useful for institutions that want to design a comprehensive incentive policy, given the findings that show that researchers value having alternatives over a limited policy.

Our findings in H1 are consistent with Stefanovska-Petkovska & Bojadziev (2017) that older employees have stronger preference for financial incentives than for non-financial incentives. This is consistent with a study of reward preferences among Finnish nurses, Von Bonsdorff (2011) found that age tend to modify reward preferences, and that both financial and non-financial rewards are recognized by nurses. This preference for both types of incentives has been also identified in our study among young researchers, since results show that they value on the same extent receiving only financial incentives and combination of financial and non-financial incentives. This change in motivating patterns as people age, has been also studied in contexts like sales (Wiese & Coetzee, 2014). Therefore, the design of a research policy should consider not only the ageing factor, but also include elements of both financial and non-financial incentives. This will allow institutions to define strategies to boost research production of both young and senior researchers while will benefit the institution financially by including both types of incentives.

Regarding H2, our analysis is consistent with the delay-reward heuristic stated by Skylark et al. (2020), who found that people tend to expect long time to receive larger rewards, and this behavior is more evident among senior participants. In our study, even though the amount of financial rewards were proposed by each participant, when they were asked through scenario analysis questions, when and how much of the reward they would prefer to receive, most of the participants opted for options with longer delays. However, our study findings differ from those of Levitt et al. (2016) who stated that among primary and secondary school students, the motivating effect of a reward diminishes when it is given with delay. Therefore, the motivating force of rewards could be related not only by the amount and delay of the reward, but also by context and age of the people who will receive the reward.

It is worth highlighting an important aspect that arose with our analysis, the high variability of the proposed financial rewards since the questions were designed as open-ended. These results show that there is not a common criterion to determine the ideal amount. This is consistent with Jeffrey et al. (2013), when analyzed the way incentive program managers define the proper amount of incentives, which are mainly defined by intuition and not by hard data. Hence, an important aspect to consider when designing a research policy is not only the delay of the reward, but also the amount itself. Our study provided two important insights that should be considered by policymakers. First, the unique incentive suggested by researchers is similar to the incentives proposed for publications in low quartiles (Q2, Q3, and Q4). Second, when researchers have the possibility to suggest incentives according to the quartile ranking of the journal, almost no one proposes the same amount between quartiles.

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Finally, our findings in H3 are consistent with Hao (2023), who concluded that demographic aspects such as years of experience in teaching should be considered when designing an incentive policy. Von Bonsdorff (2011) for his part, pointed out that demographic aspects should be considered when identifying employees' reward preferences, especially if employees could be discontented with their current revenue. Despite that our results show that salary range and years of experience are not correlated to the proposed amount of unique incentive, these variables could play a relevant role in other aspects such as the preference of certain type of incentive. A deeper analysis is then recommended to identify additional demographic aspects, such as gender or academic area, that could influence researchers' incentives preferences and could impact the incentive policy success.

Implications and Conclusions

Research productivity is a key metric for universities and accrediting bodies to assess research development and, therefore, has become an important factor that contributes to an institution's overall quality. To achieve this objective, universities often implement incentive programs as a way of motivating researchers.

However, the existing literature shows that incentives do not always help to increase motivation and effort, since a wrongly designed incentive program could lead to the opposite effects, like demotivation and dishonest behaviors. Therefore, the design of a comprehensive incentive policy that considers not only institutional goals but also employees' incentive preferences become crucial in the success of the reward scheme.

Findings show that demographic aspects like age, influence researchers' preference of non-financial over financial incentives. This result suggests that the existence of differentiated research policies according to age would not only increase researchers' motivation but would also represent financial savings for the institution. This is especially relevant since universities usually invest significant amounts of money in the implementation of these incentive programs. However, it is important to note that the preference of a certain type of incentive could be related not only to age, but also to the current personal and working conditions of the researcher. This is, the preference for a non-financial incentive such as reduced teaching load or schedule flexibility could be related to having insufficient time to do research. Therefore, incentives could be used as a way of promoting researcher's well-being.

Contrary to what was hypothesized that salary range and years of experience influence the desired amount of incentive for publications, the delay in receiving an incentive plays a relevant role in researchers' preferences. Despite the suggested amounts of incentives, most of the participants are willing to wait the maximum period to get the highest percentage of their proposed incentive. The timing to deliver an incentive is probably an element that has been disregarded in the design of research incentive policies but could have a significant impact to both researchers and institutions.

As mentioned in existing literature, cultural differences could also have an impact in reward preferences. Our study was carried out in a developing country, which contributes to the current discussion on incentive policies design by considering researchers' preferences in a private university context, where most of the research is financed with

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university resources. For future research, this analysis could be addressed from the perspective of researchers of public universities, where most of the research is governmental funded.

In summary, this research contributes to the existing literature in the following aspects. It highlights the relevance of including an understudied side in the design of research policies and the incentive preferences of researchers. The influence of demographic aspects in researchers' incentive preferences, as well as the inclination towards financial or non-financial incentives are analyzed in this research as fundamental elements to consider in the design of a research policy. The preference for delayed gratifications in researchers' decision-making process is a key finding of this research that policymakers should consider when defining when to deliver the incentives. Finally, carrying out this research in the context of Mexican private universities, adds to the existing literature of research incentives, which is mainly focused on developing countries.

Despite suggesting a different perspective of incentive design by including researchers' preferences, we acknowledge that this study has limitations. Conclusions may not be generalizable to researchers of different academic areas, other than business and engineering. Then, expanding this research to additional academic areas as well as to a wider sample of Mexican private universities, could lead us to more generalizable conclusions.

Finally, in future studies this research could be complemented by including not only researchers' preferences but also contrasting with the current incentive policy in their universities. That would allow us to have a wider panorama of the elements to be considered in designing a successful research incentive policy in Mexico. This research could also be further extended in different countries with similar cultural characteristics.

Declaration of Conflicting Interests

The authors declare that there are no competing interests.

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Human Participants

There were human participants, all of whom consented to take part in this study. All other ethical considerations are observed in alignment with the authors' institutional policies and the journal's guidelines.

Originality Note

The authors confirm that the manuscript is their original work, and if others' works are used, they are properly cited/quoted.

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