

# Determinant factors of participation in the co-production of ideas to solve public problems

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What are the determinant factors of citizens' participation in the collective production of ideas to solve public problems? In order to answer this question, 510 citizens, enrolled in *Prêmio Ideia*, a platform of collective production of ideas, responded to a questionnaire pointing out determinant factors identified in literature about participation in online platforms that are decisive for their own interest in participating. The structural equation analysis highlights that the feedback given by a public institution to citizens and convenience are determinant factors for participation. This interest in participation, however, does not necessarily imply effective participation. It is concluded that the application of the ideas created through the platform and the feedback to the participants are determinants for social participation and the study suggests further research approaching the motivation of companies that propose such initiatives.

**Keywords:** motivation; social participation; public engagement; challenge of ideas; crowdsourcing.

## Os fatores determinantes da participação na produção coletiva de ideias para solução de problemas públicos

Quais os fatores determinantes da participação dos cidadãos na produção coletiva de ideias para solução de problemas públicos? Para responder essa questão, 510 cidadãos, inscritos na plataforma de produção coletiva de ideias Prêmio Ideia, responderam a um questionário apontando o quanto os construtos extraídos da literatura como determinantes da participação em plataformas online seriam decisivos para seu interesse em participar. A análise de equações estruturais aponta que o retorno dado pela instituição pública aos cidadãos e a comodidade determinam o interesse em participar, mas que esse interesse não implica, necessariamente, a participação efetiva. Conclui-se que a aplicação das ideias geradas e o *feedback* aos participantes são determinantes para a participação social e sugerem-se pesquisas que abordem também as motivações das instituições proponentes em propor tais iniciativas.

**Palavras-chave:** motivação; participação social; engajamento público; desafio de ideias; *crowdsourcing*.

## Los factores determinantes de la participación en la producción colectiva de ideas para solución de problemas públicos

¿Cuáles son los factores determinantes de la participación de los ciudadanos en la producción colectiva de ideas para la solución de problemas públicos? Para responder a la pregunta, 510 ciudadanos, inscritos en la plataforma de producción colectiva de ideas Premio Ideia, respondiendo a un cuestionario apuntando cuánto son constructos extraídos de la literatura como determinantes de la participación en plataformas en línea, serían decisivas para su interés en participar. El análisis de ecuaciones estructurales apunta que el retorno de una institución pública a los ciudadanos y una comodidad son factores que determinan el interés en participar, pero que ese interés no implica necesariamente en la participación efectiva. Se concluye que la aplicación de las ideas generadas y el *feedback* a los participantes son determinantes para la participación social y se sugieren investigaciones que aborden también las motivaciones de las empresas proponentes en proponer tales iniciativas.

**Palabras clave:** motivación; participación ciudadana; participación social; desafío de ideas; *crowdsourcing*.

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## 1. INTRODUCTION

Nowadays, the collective production of ideas is used by public institutions. They launch online challenges for large and diverse groups in order to find better solutions for innovation in public administration (Linders, 2012; Parvanta et al., 2013; Seltzer and Mahmoudi, 2013). However, the authors who study the collective production of ideas discuss the importance of finding out what leads citizens to share their knowledge on platforms created to acquire citizen's ideas. These platforms are named challenges of ideas.

Some authors studied the motivation to participate in the challenges of ideas in private companies (Casaló et al., 2010; Zhao and Zhu, 2012; Kosonen et al., 2014). There have been similar studies applied to public administration, however, there are limitations related to the effective participation of citizens in innovation of the public sector (Abu-Shanab, 2015; Thapa et al., 2015; Wijnhoven et al., 2015).

Therefore, this article addresses the reasons that lead citizens to participate in innovation in the public sector and if citizen's interest reflects effective participation through a conceptual model. This model shows the extrinsic and intrinsic motivations as well as convenience as possible factors that impact the interest in participating and also tests the relationship between these constructs and the effective participation of citizens in challenging ideas aimed at innovation in the public sector. In order to test the model, 510 questionnaires were answered by citizens registered on the Prize Idea platform. The challenge of ideas in which respondents were enrolled is the Challenge of Sustainability, proposed by the Ministry of Education of Brazil. Data access and number of collaborations of the participants was also collected. From the structural equation modeling (SEM) it was concluded that the interaction and the appreciation of ideas by the public institution were the factors that most impact the interest of the participants. Among those who participated effectively of the challenge of ideas, the convenience was also a determinant factor that contributed for the interest in participating. The results show that to improve open innovation in the public sector it is important to invest in the feedback given to citizens and the appreciation of their ideas.

Thus, this article responds to the limitations found by Wijnhoven and collaborators (2015), Thapa and collaborators (2015) and Abu-Shanab (2015). These authors confirm that the interest in participating partially explains the real participation of citizens. The results show that the interaction and the valuation of ideas by the public sector agents is more important than the creation of new virtual environments of Social Participation.

The study presents firstly the concepts that ground the use of the tools of collective production of ideas in the public sector. Section two introduces these ideas, followed by section three that presents the determinants of participation and the hypotheses to be tested. The next section shows the methodology adopted and section five presents the results. Finally, section 6 brings the discussions and the conclusion.

## 2. SOCIAL PARTICIPATION AND COLLECTIVE PRODUCTION OF IDEAS

The exclusive role of the state has been questioned in recent years with the creation of new institutional arrangements aimed at consolidating democratic values, transparency and the possibilities of

social control in the State's performance (Paula and Keinert, 2016). From the changes triggered by globalization and the advance of information technologies that began in the 1980s, new demands arose from the civil society demanding citizenship rights, democracy and the distinction between what is state and what is Public. These demands have triggered a change in the configuration of the concept of public, which goes from something understood as inherent to the state to something that is shared by civil society and must be transformed by it (Keinert, 2000). It is in this context that new institutions have emerged to meet the demand for social participation, which validates the concept of public. Thus, social participation is the form of intervention in public life that occurs with a concrete social motivation and is exercised directly, through the institutionalization of relations between the state and society (Medeiros and Borges, 2007).

This institutionalization of the interaction between government and citizens has been stimulated in the last years by the creation of new participatory instances that allow to capture the social demands and to discuss with the society the directions of the country, for example: councils, Participative Budget, public hearings, forums and conferences (Paula and Keinert, 2016). It is in this context that institutions that stimulate social participation as a complement to participatory democracy, allows intervention by citizens in the course of a public activity and the expression of social interests (Medeiros and Borges, 2007). Taking advantage of the development of technologies, new forms of social participation have also emerged, such as the portals of transparency, in which data are released to increase social accountability (Bertot et al., 2012); the use of social networks to mobilize citizens in social movements (Cajaiba-Santana, 2013); the registration of signatures for or against governmental actions (Castañeda de Araujo, 2014); and platforms for the collective production of ideas for the public sector (Martins et al., 2015).

A classic example of using the collective production of ideas in the public sector is the challenge.gov platform created by U.S President Obama government to challenge citizens to engage to solve public problems, which are traditionally the responsibility of various governmental agencies (Linders, 2012). In Brazil, the idea-sending platform (Prêmio Ideia) can be highlighted by its use by public institutions to capture local knowledge to solve problems (Souza et al., 2014; Santos, 2015; Martins and Souza Bermejo, 2016). On this platform, the institution that promotes the challenge of ideas launches an issue of public interest online and asks for citizen participation to find a solution. In exchange for participation, it offers a (usually cash) prize, for the idea that is considered the best by the other participants and by the proposing institution. Santos (2015) details the case of the Idea Prize platform used by the Military Police of Minas Gerais and presented the ideas that were sent by citizens and that became visible and were applied by the institution, such as the use of unmanned aerial vehicles (drones) for monitoring and implementing security networks (Santos, 2015). Thus, the public institution opens itself up to receive ideas from the community and social participation involves active participation of the citizens in public decisions and actions, in the life of the community and in the issues of interest of their communities (Medeiros and Borges, 2007).

### **3. DETERMINANTS FACTORS OF PARTICIPATION IN THE CO-PRODUCTION OF IDEAS FOR SOLUTIONS TO PUBLIC PROBLEMS**

The stimulus for social participation involves several characteristic factors of the public institution; however, people's motivation and action determine this participatory behavior (Medeiros and

Borges, 2007). Motivation is what determines the behavior of an individual. The functional value perceived by an individual as a result of an expected behavior is a motivator factor (Coglianese, 2006; Glanz et al., 2008). The resources that individual's own can also be a motivating factor (Wu and Chen, 2005).

In the literature, the motivation for participation on online platforms is associated to the technology acceptance model (TAM) and uses and gratifications theory (UGT). The TAM was developed in 1989 with the purpose of explaining the determining causes of the acceptance of technologies in general and is used to explain the behavior of users in relation to the use of technologies in several areas (Pires and Costa Filho, 2008). In the public sector, TAM was used to explain the determinants of the success of online applications for service delivery or public data availability (Casaló et al., 2010; Lin et al., 2011; Ozkan and Kanat, 2011; Shyu and Huang, 2011). In the TAM, two constructs related to the acceptance of citizens in participating in collaborative ventures stand out: ease of use of the platform and utility or perceived advantage (Pires and Costa Filho, 2008).

The construct utility refers to the probability that the user of a particular technology believes that the advantages that he will obtain by doing a certain activity through that technology is superior in comparison with the traditional practice, that is, with doing the activity without the use of technology (Pires and Costa Filho, 2008). The ease-of-use construct refers to the extent of expectations regarding usability. Both TAM constructs were condensed in the 'convenience' construct proposed in this research.

Besides the TAM, the UGT is associated to the determinants of participation through the internet. It seeks to identify the reasons why people turn their attention to media products and what kind of retribution they expect in return (Macedo, 2009). This theory was used in research on the motivation to participate in social media in general (Barcelos and Esteves, 2011); about the social network (Oliveira and Ferreira), about the coproduction of innovation in the private sector (Kosonen et al., 2014), and about the third sector (Macedo, 2009).

According to this theory, the authors condition participation to gratuities derived from an external factor, generated by the perception of its importance to other individuals, to the opportunity to obtain a gain, or to be professionally recognized; or natural gratifications related to their essence and the need to feel part of the environment in which they live, to feel pleasure and to learn something new. The authors denominate intrinsic and extrinsic motivation, respectively to these two types of gratuities.

Motivation is what affects the nature of an individual's behavior, causing them to behave in a certain way. Intrinsic motivation drives behaviors that meet basic human needs, such as the desire for learning and increased empowerment as a consequence of greater knowledge about a public problem (Campbell and Murray, 2004); the desire to influence public policies and generate social benefits (Wijnhoven et al., 2015); and the pleasure of developing a certain activity (Brabham, 2010).

Extrinsic motivation leads the individual to act in order to achieve an outcome resulting from external sources, that is, when rewards are offered (Campbell and Murray, 2004; Kosonen et al., 2014). Extrinsic motivation is related to the search for personal benefits (Brabham, 2010; Pinkwart et al., 2013; Wijnhoven et al., 2015); such as strengthening status and reputation (Pol and Ville, 2009; Brabham,

2010), or the expectation of individuals to obtain recognition from the applicant organization or from other participants (Linders, 2012).

We, therefore, propose:

*H1a: The recognition by the public institution adding financial benefits to participants will increase the interest of the individual in participating.*

*H1b: The recognition by the public institution will increase the interest of the individual in participating.*

*H2: The improvement of their reputation with other members of the community will increase the interest of the individual in participating.*

*H3: The benefits of learning will increase the interests of the individual in participating.*

*H4: The pleasure of the individual in participating will increase their interest to participate.*

*H5: The social benefits will increase the interest of the individual in participating.*

*H6: Convenience positively impacts the individual's interest in participating.*

### **3.1 INTEREST IN PARTICIPATING AND ACTUAL PARTICIPATION**

The individual's interest in participating is directly correlated to their behavior: if an individual participates in an online community, it tends to increase their level of involvement with other community members, increasing their desire to participate (Casaló et al., 2010). However, this shows the importance of the participant's desire to share their knowledge and experiences. Authors who have studied the interest in participating warn that there may be a difference between the expressed interest of the individual to participate and their actual participation (Wijnhoven et al., 2015).

In order to verify how motivation and convenience relate to the interest in participating and the real participation of individuals, two constructs were proposed: 'interest in participating' measures, according to individuals' responses, how much they are willing to share their knowledge and collaborate by sending ideas to solve public problems; and the 'Real Participation' construct measures the number of interactions of each questionnaire respondent on the Idea Prize platform, specifically the challenges posed by the Military Police of the State of Minas Gerais (PMMG). From this, we propose hypothesis 7:

*H7: The interest in participating reflects their real participation in the innovation of the public sector.*

These hypotheses, drawn from the literature, relate the constructs 'Intrinsic Motivation', 'Extrinsic Motivation' and 'Convenience' to 'Interest in Participating', and then relate the latter construct to 'Effective Participation'. Also, based on the literature, each construct is measured by means of questions, whose collected answers represent the determinant indicators of the construct. Box 1 shows the acronyms that represent the indicators of each construct together with the respective item of the questionnaire.

**BOX 1 CONSTRUCTS AND INDICATORS**

Interest in Participating			
Construct	Indicator	Item in the questionnaire	
INTEREST IN PARTICIPATING (IP)	IP1	I am interested in putting forward ideas on topics of which I am aware.	
	IP2	I am interested in engaging in the solution of public challenges.	
	IP3	I feel challenged to answer the questions that are posed in the challenges.	
Intrinsic motivation			
Construct	Indicator	Item in the questionnaire	
INTRINSIC MOTIVATION (IM)	Learning (IML)	IML1	I increase my knowledge about a public problem and, consequently, my participatory capacity.
		IML2	I improve my ideas with the help of other participants.
	Social (IMS)	IMS1	I assist in the process of formulating, planning and implementing public policies.
		IMS2	I increase my commitment to the community I belong to.
	Pleasure (IMP)	IMP1	I enjoyed participating in a competition.
		IMP2	I enjoy helping other people.
		IMP3	I find something to do when I'm bored.
	Extrinsic motivation		
	Construct	Indicator	Item in the questionnaire
EXTRINSIC MOTIVATION (EM)	Reputation (EMR)	EMR1	I get recognition from other participants for being an active, politically aware citizen.
		EMR2	I attend to requests from colleagues who encouraged me to participate in the challenges.
	Finances (EMF)	EMF1	I demonstrate my ability and have professional opportunities.
		EMF 2	I compete for prizes.
	Institution (EMI)	EMI1	I interact and receive feedback from Public Agents about the applicability of my ideas.
		EMI2	I establish a relationship of trust and recognition with the proposing institution.

*Continue*

Convenience		
Construct	Indicator	Item in the questionnaire
CONVENIENCE (CV)	CV1	I am familiar with the technology used on the platform.
	CV2	I find it more advantageous to use technological means to interact with other people, including the Government.
	CV3	I am stimulated by the clarity of the rules of the challenge and the issue proposed for resolution.

Source: Elaborated by the authors.

#### 4. METHODOLOGY

The procedures used to carry out this research can be divided into five stages.

##### *A. LITERATURE REVIEW AND IDENTIFICATION OF CONSTRUCTS THAT REPRESENT THE DETERMINANTS OF CITIZENS' PARTICIPATION IN THE COLLECTIVE PRODUCTION OF IDEAS*

A literature review was carried out on the motivation to participate in the collective production of ideas and the theories that stood out in trying to explain this motivation were: Uses and gratifications theory (UGT) and the technology acceptance model (TAM).

The TAM stood out among the researches that propose models about the intention to use online social participation platforms, however, the authors show the TAM limitations as its simplicity and the fact that only the acceptance of the technology does not guarantee participation (Silva et al., 2011; Ozkan and Kanat, 2011; Shyu and Huang, 2011). Due to its limitations, it was decided to consider the TAM variables only as part of the variables tested and to use UGT as well. This theory has been used in research on motivation for participation in social media in general and has already been applied to public sector and private sector research, as presented above. Its variables relate the intention to participate in the motivations intrinsic to the individual and those external to them.

##### *B. CREATION AND VALIDATION OF THE QUESTIONNAIRE*

The questionnaire was elaborated based on the constructs and variables taken from the TAM and the UGT. The definition of the constructs and the questionnaire followed the directions of Devellis (2011) and Hair and collaborators (2007). We identified and delimited the constructs and indicators, according to what we wanted to measure and formulated short questions, without terms of denial and based on the cited researches.

A 5 points Likert-scale was chosen, based on the study carried out by Vieira and Dalmoro (2008). The authors tested scales of different amplitudes in a similar research to that carried out in this study and concluded that the 5-point scale is more effective, reliable and accurate to demonstrate the opinion of the interviewee than smaller scales and more efficient from the point of view of time response

than larger scales. Thus, the respondents assigned a value of 1 to 5 for each item of the questionnaire, presented in box 1, the scale being 1 — totally disagree— to 5 — totally agree.

The validation of the questionnaire occurred between September and October 2014, in three phases: (1) application of the questionnaire in person to four people with the profile of the population to be studied, aiming to refine the questions and make them clearer to the respondents. (2) The questionnaire was sent to a sample of 20 people for a pre-test of the data and refinement of the questions. (3) The questionnaire was sent to a sample of 30 people to pre-test the reformulated statements.

In step 2, the proposed variables were tested for their standard deviation to verify whether they were relevant or not to the research question. Questions that had many neutral responses (Likert 3) or very low or very high standard deviation were rephrased as this could be an indication of not understanding the question or that the question was obvious and not relevant to the research. Some questions were rewritten to ensure greater clarity and effectiveness. The step 3 test was applied, the questionnaire was approved and the data collected in the validation were discarded. The final questionnaire used in the research was composed of the questions presented in box 1 as indicators of measurement of the constructs

### ***C. CHOICE OF THE SAMPLE***

The target population chosen was 3452 users who registered on the Idea Prize ideas production application in October and November 2014, specifically to respond or access the challenges of ideas proposed by the Military Police of Minas Gerais. The objective was to generate ideas on how to reduce crimes against equity; how to increase the interaction between police and civil society; such as reducing the incidence of traffic accidents, among other public problems.

The platform 'Prêmio Ideia' was created in 2013 by students of the Federal University of Lavras and was used by some public institutions to propose the so-called 'challenges of ideas' aiming to seek solutions to public problems through the discussion of civil society. A challenge of ideas occurs in the following way: a public institution defines the public problem to be discussed and summarizes this problem in an objective question, for example, "How can the crimes against public assets be reduced?" The institution defines the target audience for the challenge and disseminates it to the public through social networks, offering a prize to the participant who contributes the most ideas and whose ideas obtain greater approval from the other participants.

The platform was chosen for the availability of data on the accesses and types of contribution of each respondent user on the platform. In addition, in the literature, there are reports that the ideas sent by members of the respondent population of this research resulted in innovations in the actions and projects of this public institution, being a success case of the use of platforms for sending ideas (Santos, 2015). We obtained a return of 510 questionnaires, through which the profile of the participant sample was analyzed, according to table 1.



**TABLE 1** CHARACTERISTICS OF THE SAMPLE OF THE RESPONDENTS OF THE QUESTIONNAIRE

	Freq.	%	Age	Freq.	%	Education	Freq.	%
<b>Female</b>	233	45.7%	<18	37	7.3%	<b>Postgraduate Completed</b>	178	34.9%
<b>Male</b>	277	54.3%	18 - 25	177	34.6%	<b>Postgraduate in progress</b>	54	10.6%
			26 – 30	83	16.3%	<b>Higher Education Completed</b>	52	10.2%
			31 – 40	109	21.4%	<b>Higher Education Incomplete</b>	185	36.3%
			41 – 50	69	13.5%	<b>High school</b>	39	7.6%
			> 50	35	6.9%	<b>Elementary School</b>	2	0.4%

Source: Research data (2017).

Table 1 shows that most of the respondent sample of the questionnaire is between 18 and 26 years of age and a high level of education, which is compatible with the characteristic of the target population of the ideas challenges in which the sample was collected. This is because the Military Police of Minas Gerais directed its challenges of ideas to the public of universities, which demanded a more intense dissemination among users with high education levels, aiming to receive more consistent ideas and with greater applicability potential.

**D. DATA COLLECTION**

The SurveyMonkey platform was used to create and send the questionnaire by personalized e-mail, sent in the period from 11 to 22 December 2014. After sending it to the 3452 users, 400 questionnaires were collected, an initially desirable number. On 29 December 2014, the questionnaire was sent back to those who did not respond to the survey and another resubmission on 5 January 2015. With this procedure, the questionnaire accepted responses between 11 December, 2014 and 6 January 2015, resulting in the collection of 510 complete questionnaires, with a response rate of 14.78%.

In addition to the data collected through the questionnaire, the variable “Real participation” was obtained through the database of the ‘Prêmio Ideia’ platform and measures the number of interactions that each respondent of the questionnaire carried out on the platform. Considering that the user needs to register on the platform to see the challenges and ideas posted, the sample chosen includes those who actually participated and the users who only viewed the platform and did not interact. The variable “Real participation” assigns a level of participation to each respondent: 1 — those who

only registered, 2 — those who registered and viewed the platform during the production of ideas; 3 — those who evaluated the ideas of the other participants through the functionality ‘enjoy’ or ‘do not like’ an idea. 4 — those who commented on other participants’ ideas; and 5 — those who sent ideas to solve the problems proposed.

### ***E. CHOICE OF METHOD AND TOOLS FOR DATA ANALYSIS***

The data collected through the questionnaire were exported from the SurveyMonkey platform, organized in an Excel spreadsheet, whose calculation functions were used to analyze the profile of the participants. The tests to verify the validity of variables to represent the constructs were performed in SPSS software. The technique used to verify the correlation between the constructs was the structural equation modeling by the method of the Partial Least Squares (PLS) chosen after some pre-analysis procedures of the data.

Initially, it was found that the sample did not have missing data, which allowed the analysis to continue. Normality and distribution of the sample were analyzed through asymmetry, kurtosis and Kolmogorov-Smirnov (K-S) tests. The kurtosis and asymmetry presented values different from zero and signaled the non-symmetry and non-normality of the data collected, confirmed by the Kolmogorov-Smirnov (K-S) test, which returned, for all variables, a significance lower than 0.05. These results were analyzed according to the protocol for modeling structural equations and the non-normality of the data and the intention to explore the correlation between constructs led to the choice of the PLS approach to test the correlation between the constructs (Hair et al., 2007).

## **5. RESULTS**

The first tests were applied to verify if the chosen indicators, the questionnaire questions, were valid to represent each construct. For example, if the propositions IMP1 — “I enjoyed participating in a competition”; IMP2 — “I enjoy helping other people” and IMP3 — “I find something to do when I’m bored” present strong correlation ( $> 0.7$ ) that determine that the three variables represent the same construct. This verification is done by testing the convergent and discriminant validities of each identifier in relation to its construct and by the reliability test of the construct and the variables.

The convergent validity test showed that the correlation between the indicators of each construct was considered relevant, with statistically significant values, except for IMP2 and IP3 indicators, which presented a correlation lower than 0.7. Therefore, the following indicators were excluded: (1) IMP2 — “I enjoy helping other people” because it does not represent the Intrinsic Motivation (MI)/Pleasure construct; and (2) IP3 — “I feel challenged to answer the questions that are posed in the challenges.” because they do not represent the Interest in Participation (IP) construct.

After these exclusions, the convergent validity of the indicators was confirmed because, according to table 2, all standardized loads are higher than 0.7. The discriminant validity of the variables was also confirmed, since the correlation of each indicator (line) relative to their respective construct (column) is larger than all correlations with the other constructs, as shown in table 2. This means, for example, that all the variables that represent the Intrinsic Motivation by the social have a greater correlation with each other than with the variables of other constructs.

**TABLE 2** CORRELATION BETWEEN INDICATORS AND CONSTRUCTS

Construct CR e AVE	Indicators	CV	IP	EMF	EMI	EMR	IML	IMP	IMS
Convenience — CV CR = 0,886 AVE = 0,721	CV1	<b>0.831</b>	0.414	0.381	0.381	0.421	0.332	0.344	0.262
	CV2	<b>0.880</b>	0.437	0.359	0.416	0.409	0.378	0.368	0.318
	CV3	<b>0.834</b>	0.484	0.416	0.500	0.519	0.452	0.479	0.387
Interest in participating — IP CR = 0,882 AVE = 0,718	IP1	0.435	<b>0.922</b>	0.451	0.769	0.376	0.538	0.422	0.522
	IP2	0.451	<b>0.923</b>	0.391	0.746	0.370	0.567	0.451	0.565
Extrinsic motivation — financial — EMP CR= 0,880 AVE= 0,786	EMF1	0.433	0.463	<b>0.917</b>	0.466	0.660	0.445	0.488	0.386
	EMF2	0.370	0.357	<b>0.855</b>	0.362	0.509	0.194	0.398	0.255
Extrinsic motivation — institucional — EMI CR = 0,867 AVE = 0,688	EMI1	0.432	0.696	0.439	<b>0.920</b>	0.427	0.592	0.520	0.575
	EMI2	0.434	0.768	0.438	<b>0.935</b>	0.397	0.569	0.474	0.580
Extrinsic motivation — reputation — EMR CR = 0,880 AVE = 0,783	EMR1	0.446	0.383	0.675	0.520	<b>0.883</b>	0.351	0.537	0.314
	EMR2	0.500	0.396	0.513	0.470	<b>0.891</b>	0.355	0.533	0.291
Intrinsic motivation — learning IML CR = 0,920 AVE = 0,852	IML1	0.432	0.506	0.329	0.569	0.376	<b>0.910</b>	0.485	0.672
	IML2	0.420	0.596	0.365	0.626	0.360	<b>0.936</b>	0.487	0.655
Intrinsic motivation — pleasure — IMP CR = 0,833 AVE = 0,715	IMP1	0.424	0.336	0.489	0.420	0.567	0.347	<b>0.817</b>	0.320
	IMP3	0.387	0.461	0.328	0.540	0.475	0.522	<b>0.838</b>	0.562
Intrinsic motivation — Social — IMS CR = 0,901 AVE = 0,821	IMS1	0.387	0.519	0.352	0.570	0.336	0.708	0.467	<b>0.908</b>
	IMS2	0.307	0.510	0.318	0.570	0.281	0.589	0.512	<b>0.904</b>

Source: Research data.

Note: The variables IMP2 and IP3 were excluded because they presented standardized loads lower than 0.7

As for the constructs, the convergent validity was also confirmed, since, for all of them, the average value extracted (AVE), represented by the bold values in table 3 is greater than 0.5. The discriminant validity of the construct was confirmed by the fact that the loads of each construct squared (table 3) are smaller than the value of the AVE (bold). And the reliability of the construct was proven by Cronbach's Alpha Coefficient and Reliability Coefficient > 0.7.

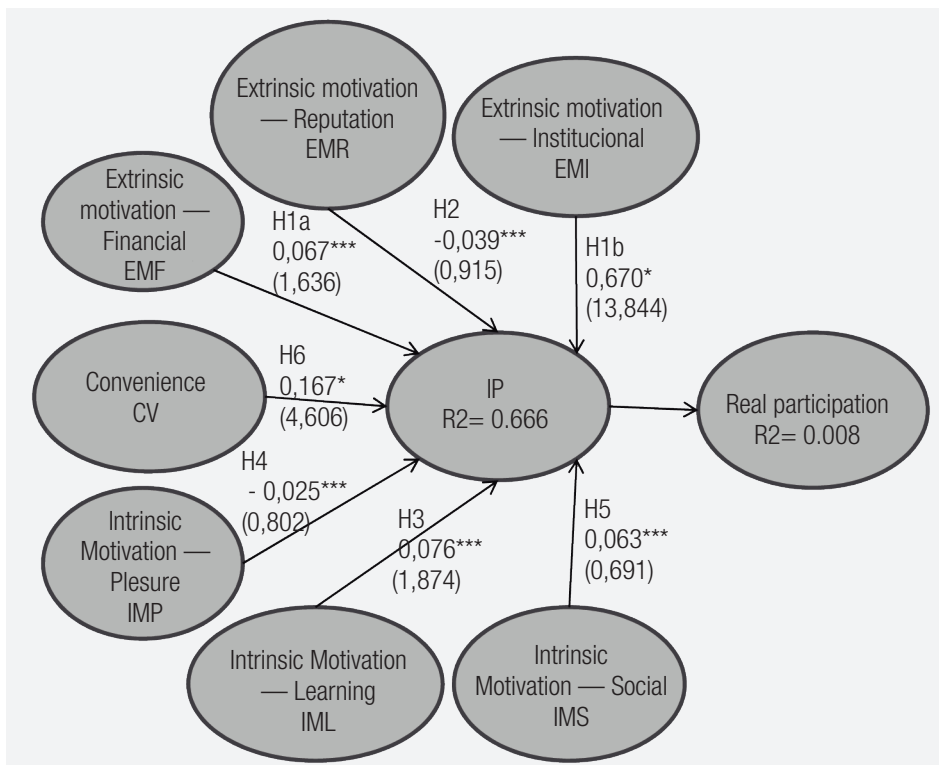
**TABLE 3** DISCRIMINANT VALIDITY OF CONSTRUCTS

	CV	IP	EMI	EMF	EMR	IMS	IML	IMP
CV	<b>0.721</b>							
IP	0.276	<b>0.718</b>						
EMI	0.217	0.627	<b>0.860</b>					
EMF	0.208	0.220	0.224	<b>0.786</b>				
EMR	0.284	0.193	0.197	0.446	<b>0.787</b>			
IMS	0.149	0.325	0.390	0.137	0.118	<b>0.821</b>		
IML	0.211	0.360	0.389	0.142	0.157	0.514	<b>0.852</b>	
IMP	0.253	0.215	0.255	0.255	0.415	0.245	0.248	<b>0.590</b>

Source: Research data.

Then, after the IMP2 and IP3 variables were removed, the model presented internal consistency, variable reliability, convergent validity and discriminant validity, according to the values and protocol described by Hair et al. (2013). Figure 1 shows the results of the correction tests between the constructs, through the application of the PLS algorithm.

**FIGURE 1** TEST OF THE VARIABLES



Source: Research data.

Note: \* p-Value < 0.0001 — significance level = 1%; \*\* p-Value < 0.001 — Level of 5%; \*\*\* Not significant.

The PLS estimates the correlation between the constructs and the value R2 represents how much an exogenous construct can be explained by the constructs related to it. According to the R2 analysis, extrinsic, intrinsic motivation and convenience models explain 66% of the variation of interest in participating. And, through the analysis of the loads, it is possible to affirm that rewards that demonstrate the recognition by the institution that promotes the challenge load = 0.670) present the respondents' interest in participating in the collective production of ideas. 'convenience' also interferes with 'interest in participating', but less significantly than 'extrinsic motivation institution' (0.167).

A construct is considered significant to explain another construct because of the analysis of significance, as measured by the p -Value. The p-Vvalue <0.0001, represents that one construct explains the other construct that is connected to it with an error rate of 1%; and p-Vvalue <0.001 means an error rate of 5%. In both cases, the constructs are considered significant, which allows to confirm the hypotheses related to them.

Thus, the hypotheses H1b, H6 and H7 are confirmed and the hypotheses H2, H3, H4 and H5 are rejected because they present p value > 0,1, which means they are not able to reject the null hypothesis (Hair et al., 2007; Hair et al., 2013).

Regarding the validation of the structural model, presented in figure 1, it is understood that the extrinsic motivation institution (0.670) and the convenience (0.167) explain 66% of the interest in participating of the respondents. The test result of the hypotheses is presented in box 2.

**BOX 2 HYPOTHESES TEST**

Hypotheses	Description	Confirmed
H1a	<i>The recognition by the public institution adding financial benefits to participants will increase the interest of the individual in participating.</i>	No
H1b	<i>The recognition by the public institution will increase the interest of the individual in participating.</i>	Yes
H2	<i>The improvement of their reputation with other members of the community will increase the interest of the individual in participating.</i>	No
H3	<i>The benefits of learning will increase the interests of the individual in participating.</i>	No
H4	<i>The pleasure of the individual in participating will increase their interest to participate</i>	No
H5	<i>The social benefits will increase the interest of the individual in participating.</i>	No
H6	<i>Convenience positively impacts the individual's interest in participating.</i>	Yes
H7	<i>The interest in participating reflects their real participation in the innovation of the public sector.</i>	Yes

Source: Research data (2015).

Finally, according to the test chi-squared, the structural model presents predictive relevance for the two endogenous constructs. It has large predictive relevance, in relation to the construct interest in participating ( $SSE/SSO > 0.35$ ) and small predictive relevance for the construct participation effective ( $SSE/SSO > 0.02$ ). And although H7 was confirmed, it was found that interest in participating explains only 0.8% of the effective participation. This means that interest in participation has an influence on participation, but that there may still be other, more determining factors for participation.

## 6. DISCUSSION AND CONCLUSION

The proposed model allows us to say that 66% of the group's interest in participating in the collective production of ideas for the public sector derives from two constructs: extrinsic motivation institution and convenience. The most expressive is the extrinsic motivation institution (0.658) and, more specifically, what leads to the interest in participating is the possibility of the participants interacting with public agents and receiving from them return on the applicability of their ideas (0.893) and the possibility of establishing a relationship of trust and extrinsic motivation institution (0.903).

The confirmation of Hypothesis 1b is in line with the research carried out using the TAM to explain participation in initiatives to open government in Jordan (Al-Hujran et al., 2015), in Cartagena (Cegarra-Navarro et al., 2014), in Turkey (Ozkan and Kanat, 2011), in Spain (Belanche et al., 2012), and in Gambia (Lin et al., 2011). These researches have shown that the perception of the usefulness of their contributions impacts citizens' engagement in e-government applications.

Convenience (0.167), as well as in other researches that used the TAM, was considered an important factor when it comes to the users' intention to participate through online platforms to offer ideas (Lin et al., 2011; Belanche et al., 2012). This result is understandable since the platform is a comfortable environment for sending ideas, and the objectives of the platform, as well as how it works, are clearly presented, which facilitate and promote access (Wijnhoven and collaborators, 2015).

As this research obtained its sample from the participants of the study conducted by Martins and Bermejo (2014), who analyzed the content of the ideas presented in the challenges of ideas carried out by the PMMG, the results are complementary to those of the authors. Martins and Bermejo (2014) showed that most of the ideas submitted by the respondents were about increasing communication channels between public agents and citizens, in order to work together to solve public problems. In addition, this research complements the study of Wijnhoven et al (2015), demonstrating that citizens want more than an environment for participation, they also want feedback on their ideas and that their ideas are recognized by public institutions

The research of Martins and Bermejo (2014) helps in understanding the rejection of H5 (respondents could be motivated by the social benefits to be generated through participation). The authors showed that citizens believe that social benefits are not the result of these platforms, but rather conquered in partnership with public institutions.

Although it has been found that the 'interest in participating' impacts on 'real participation', the coefficient that demonstrates how much interest in participating affects participation is very low, which is a limitation of this research. In order to circumvent this limitation, it is suggested to expand the studies on determinants of real social participation. This limitation may be a reflection of the predominance of the use of the TAM and the UGT that were created to study the factors that lead to

the use of technology in general and, although used in the public context, were not created specifically for this context. The literature on social participation considers broader factors as determinants of participation, such as the history and characteristics of the public institution and its decision-making process. Therefore, it is necessary to analyze the cases of social participation in depth, considering that the motivations that in any way influence the decision-making process of the organizations, taken alone, are not enough to reach a conclusion. This is because it is necessary to deeply understand the characteristics of the public institution, as well as its specificities that differentiate it from organizations of the private sector (Medeiros and Borges, 2007). Another limitation was the non-inclusion of variables that explicitly measured the negative aspects preventing participation.

In addition to the theoretical implication, this article intends to collaborate to raise awareness among public managers of the importance of sharing public projects and problems with citizens and to interact with them, valuing their ideas and taking advantage of the knowledge and experiences found in the wisdom of the crowd.

Based on the main result of this research – the need for public institutions to value ideas and offer feedback – it is suggested, as a complement of this research, to analyze in depth the factors that motivate the public managers to accept the ideas of the civil society in order to promote innovation. This future research can relate the theoretical and sociological studies in social participation to the motivations to participate using collaborative tools.

The theme motivation for social participation can still be explored by different perspectives, using new theories and new social contexts in order to (by strengthening the research framework in the area, promoting new initiatives) generate a continuous process of opening institutions for social participation, aiming to collaborate for a more participative public management.

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