Journal of Business & Industrial Marketing

Article information:

For Authors

About Emerald www.emeraldinsight.com

The incidence of incentives for t-commerce acceptance: improving television as a distribution channel

Abstract

Purpose – This paper aims to explore the impact of incentives on the behavioral intention to use electronic commerce through interactive television to enhance a deeper understanding of how television platforms can improve the attractiveness of television to enterprises as a channel of communication and distribution.

Design/methodology/approach – This research uses a questionnaire to collect empirical data on preferences related to perceived usefulness, perceived ease of use, perceived enjoyment, attitude toward the use of t-commerce, behavioral intention to use t-commerce and incentives. The measurement scales of the variables were tested using exploratory factor analysis. The hypotheses were tested using the results of forgotten effects analysis applied to the incidences of incentives on the precedents of the behavioral intention to use t-commerce.

Findings – The findings suggest that there are no significant direct incidences between incentives and the behavioral intention to use t-commerce, but the direct incidence is only part of the total incidence and on many occasions is only a small part, as the result of causal relationships between causes and effects. The results indicate indirect incidences between incentives and the behavioral intention to use t-commerce through its precedents.

Practical implications – Marketing managers of television platforms may consider the use of incentives to encourage behavioral intention to use t-commerce to achieve the development of interactive television as a distribution channel.

Originality/value – Research on t-commerce acceptance, especially research that uses extrinsic variables, is scarce. This paper addresses that gap by exploring the use of incentives to attract users.

Keywords Behavioral Intention, Incentives, Interactive Television, T-commerce, Technology Acceptance Model, Theory of Forgotten Effects

Article Classification Research paper

1. Introduction

The development of home audiovisual equipment and the interactive possibilities of digital television platforms have allowed access to a multitude of interactive services that enhance the television experience. Interactive television is the meeting of television and new interactive technology, usually facilitated through a 'back channel' and/or an advanced terminal (Goldstein, 2001). Interactive television is also a way to empower viewers to use television in new ways, particularly following the emergence of Smart TVs, the most important upcoming trend in the audiovisual sector (IDATE, 2012).

In recent year, personal computers have been the primary devices that deliver Internet connectivity for informational and commercial purposes. Together with the proliferation of smart phones, interactive television stands to revolutionize how we connect to the Internet (Goldstein, 2001). Smart TVs provide access to interactive online services, including Internet navigation, video on demand, Internet Protocol (IP) video conferencing, access to social networks and electronic commerce through interactive digital television, also known as t-commerce, and combines them with the convenience and familiarity of television. Ninety-nine point six percent of Spanish households have television (INE, 2011), and more than two-thirds have an Internet broadband connection (INE, 2012). T-commerce is an additional channel of communication and distribution for enterprises, allowing manufacturers and retailers to reach their consumers. This new channel provides access to an extensive catalog of products and related information for use in the purchase-decision process.

Additionally, television platforms can either develop sales or provide access to other retailers. The main advantages for companies are as follows: speed, cost savings, simplified tasks, development of new markets, innovative image, flexibility and adaptability to the market. Television platforms provide a great opportunity for companies that wish to link advertising and virtual stores. The attractiveness of this channel will be preceded by t-commerce acceptance. If more consumers use t-commerce, marketing investment in this channel—and therefore additional incomes for television platforms—could increase. Accordingly, television operators should know both the precedents of t-commerce acceptance and how to influence such acceptance through marketing policies. It is important for marketing decision makers to know the precedents of the behavioral intention to use and how to transform these precedents into operative factors.

Many authors have used the technology acceptance model (TAM) to study the acceptance of different technological innovations: Internet and mobile Internet, software, laptops, mobile applications and electronic commerce (Teo *et al.*, 1999; Childers *et al.,* 2001; Fenech and O'Cass, 2001; Salisbury *et al.*, 2001; O'Cass and Fenech, 2003, Pavlou 2003; Park *et al.*, 2004; Herrero *et al.*, 2005; Yousafzai *et al.*, 2010; Celik and Yilmaz, 2011; Chen, 2012) and t-commerce (Yu *et al.*, 2005).

The literature on the adoption of technology centers on the study of the intrinsic factors that influence the behavioral intention to use, but companies need external variables that they can manipulate to influence their users. In this sense, TAM is less operative (Zeithaml, 1988) and requires complementary variables because the original TAM variables may not adequately explain how companies can influence behavioral intentions. This paper both introduces incentives as external variables and evaluates their total effect—direct and indirect—on the behavioral intention to use t-commerce. We consider that the knowledge of the real impact of incentives improves the strategies for influencing t-commerce acceptance. Therefore, this work focuses on the effects of incentives on the use of t-commerce. More specifically, this research seeks to determine the incidence of incentives, both direct and indirect, related to behavioral intentions to use t-commerce. This research collected empirical data about the perceived usefulness, the perceived ease of use, the perceived enjoyment, the attitude towards the use of the t-commerce, the behavioral intention to use t-commerce and incentives preferences to determine the incidences of incentives on the precedents of the behavioral intention to use t-commerce using a forgotten effects analysis.

This work is structured in five sections. The first section presents a review of technology acceptance and proposes two research questions, four specified objectives and research hypotheses to address these objectives. The second section describes this work's methodology, emphasizing the forgotten effects analysis. The third section shows the results of the research. The fourth section proposes this work's research and managerial implications. Finally, the paper concludes by highlighting future research possibilities related to t-commerce.

2. Theoretical background and research hypotheses

The literature on consumer behavior usually uses, as precedents of purchase intention, intrinsic variables as Perceived Usefulness based on stated preferences. However, there is great scientific divergence related to how these preferences are structured.

Economic theory's traditional approach to the analysis of preferences believes that consumers' purchase decisions are based on a rational process of decision making and a well-defined system of preferences, neither of which depend either on a description of the different options related to goods or the method used to extract these preferences. It is assumed that the individual faces an election process in which each option alone creates in the individual a degree of utility, or subjective value, which makes the option either more or less preferred.

Furthermore, it is assumed that an individual has the ability to calculate the option that maximizes either utility or perceived value. This approach is called rational choice theory (Frank, 2005).

Rational choice theory has been criticized because it is insufficient for understanding how consumers make decisions. This review considers the existence of bounded rationality due to the inability to obtain, process and retain in memory all of the information that is either available or necessary in a decision-making process. In other words, we should explore the emotional aspects of information processing in the consumer purchase process. In this sense, the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975) proposes that consumer behavior is preceded by behavioral intention, determined by attitudes towards the behavior to be undertaken and social norms as constraints. Conversely, the TAM (Davis, 1989; Davis *et al.*, 1989; Venkatesh and Davis, 2000) has been used to explain and predict consumer behavior related to information technologies (IT). The TAM adapts the TRA in that it proposes replacing the attitude towards action and social norms by other measures more related to technology, i.e., Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

The study of consumer behavior is complex because the motivations that lead an individual to act are not directly observable. Furthermore, it is important for marketing decision makers in the audiovisual sector to determine both the effect of a set of variables on behavioral intention to use and the interactions among those variables. This information can help develop marketing policies to improve the acceptance of t-commerce. This paper attempts to reveal the impact of incentives on the intention to use electronic commerce through interactive television.

Direct impact is only part of the true effects that one variable can have on another. Decision processes seldom involve only two variables. Users and consumers usually make their decisions either by considering a multitude of offers or by evaluating different attributes of the product simultaneously. In this case, taking into account both the precedents of behavioral intention to use t-commerce based on TAM and different types of incentives to attract users, we want to know the following:

RQ1. What are the most important incentives that influence the behavioral intention to use t-commerce?
RQ2. What are the incentives that have more hidden effects on the behavioral intention to use t-commerce?

These questions are reflected in the overall objective of the research, which is to determine the impact (both direct and indirect) of different types of incentives on the behavioral intention to use t-commerce ($BI_{t-commerce}$). This requires consideration of the interactions among incentives, the impact on the precedents of the $BI_{t-commerce}$ that structure the TAM and the direct impact of incentives on $BI_{t-commerce}$. Figure 1 shows these relationships.

(Insert Figure 1 here)

To answer these questions and to achieve the research objective, there are four specific objectives:

O1. Determine the incidences among the TAM variables.
O2. Determine the incidences of different types of incentives between one another.
O3. Determine the direct incidences between different types of incentives and the TAM variables.
O4. Determine indirect incidences between different types of incentives and the TAM variables.

The first objective is to determine the impact among the TAM variables, which can be done by checking the structured relationships in the proposed model, as shown in Figure 1. Thus, we have eleven hypotheses that summarize the incidence relationships between precedents of behavioral Intention to use electronic commerce through interactive digital television.

PU is the degree to which a person believes that using a particular system will enhance his or her job performance. Literature finds positive interaction on the behavioral intention to use (Davis, 1989; Yi and Hwang, 2003; Sun and Zhang, 2006), for example, one's attitude toward using (Davis, 1989; Hsu and Lu, 2004; Yu *et al.* 2005; Lee *et al.*, 2005). We introduce these incidences through the hypotheses H1 and H2.

H1. PU of t-commerce has a positive influence on one's behavioral intention to use.
H2. The PU of t-commerce has a positive influence on an individual's attitude towards the use of t-commerce.

Perceived Ease of Use (PEOU) is the degree to which a person believes that using a particular system is free of effort. PEOU has been considered by TAM as an important precedent of technology acceptance both in TAM (Davis, 1989) and in empirical research on technology acceptance (Teo *et al.*, 1999; Childers *et al.*, 2001; Fenech and O'Cass, 2001; Salisbury *et al.*, 2001; O'Cass and Fenech, 2003, Pavlou 2003; Park *et al.*, 2004; Herrero *et al.*, 2005; Yousafzai *et al.*, 2010; Celik and Yilmaz, 2011; Chen, 2012). We introduce these incidences through the hypotheses H3 and H4.

H3. PEOU of t-commerce has a positive influence on the PU of that t-commerce.
H4. PEOU of t-commerce has positive influence on an individual's attitude toward its use.
TAM proposes the attitude toward using a particular technology as an antecedent of behavioral intention instead of as an attitude that introduces either the TRA or the TPB. Accordingly, we introduce the attitude toward use ($At_{t\text{-commece}}$) as an antecedent of the behavioral intention to use t-commerce ($BI_{t\text{-commerce}}$).

H5. An individual's attitude toward the use of t-commerce has a positive influence on his or her behavioral intention to use.

Empirical research introduces perceived enjoyment (PE) as a precedent of the acceptance of technology (Venkatesh, 2000; Moon and Kim, 2001, van der Heijden, 2003; Yu et al, 2005). We introduce the incidences of PE as follows:

H6. The PE of t-commerce has a positive influence on the PU of the t-commerce.
H7. The PE of t-commerce has a positive influence on the attitude toward its use.
H8. The PE of t-commerce has a positive influence on one's behavioral intention to use.

The incentives are external objects that provide a call to action for individuals whose behavior is impacted because of the effects of those incentives on either behavioral intention to use (Locke, 1968) or PU (Kotler, 2000). Usually marketing managers use incentives as part of a sales promotion policy to generate more intense and rapid responses. Next, incentives can be applied simultaneously in promotion policies and therefore we want to know whether there incentives interact. Accordingly, we hypothesized H9 as follows:

H9. There are incidences between the different types of incentives selected to stimulate the behavioral intention to use t-commerce.

We should determine the incidences between the different types of incentives, as proposed in the second goal.

We introduce incentives as a precedent of the behavioral intention to use t-commerce as other empirical research on the adoption of the technology (Muehlegger and Gallagher, 2011) through the hypothesis H10. The direct and indirect influence of incentives on the behavioral intention to use t-commerce can help marketing managers in their sales promotion policies to make their purchase channels more attractive.

H10. Different types of incentives, which are selected to stimulate the behavioral intention to use t-commerce, have direct effects on the behavioral intention to use t-commerce.

We should determine the direct effects among different types of incentives, selected to stimulate the behavioral intention to use t-commerce, as we proposed in the third goal.

Finally, we want to know the indirect incidences between each incentive and the behavioral intention to use t-commerce. Therefore, we hypothesized H11 as follows:

H11. Different types of incentives that are selected to stimulate the behavioral intention to use t-commerce have indirect incidences on the behavioral intention to use t-commerce.

We should determine the indirect incidences between different types of incentives that are selected to stimulate the behavioral intention to use t-commerce, as we proposed in the fourth goal.

3. Methodology
Procedure for the theory of forgotten effects
To determine the overall effect, taking into account the direct and indirect effects of the incentives on the variables of the TAM, the forgotten effects theory will be used. Next, we describe the methodology to obtain the forgotten effects.
$I = \{i_1, i_2,\ldots, i_n\}$ a set of causes and $T = \{t_1, t_2,\ldots, t_m\}$ a set of effects: the incidence of the I elements on the T elements $(i_i, t_j) = \mu_{ij}$, can be valued in range [0, 1], where a higher assigned value will mean a higher effect. Thus:
$$\mu_{ij} \in [0, 1]; \qquad i = 1, 2,\ldots, n; \qquad j = 1, 2,\ldots, m$$
We can compose a fuzzy matrix of incidences between causes and effects [$\tilde{M}$] as follows:

$[\widetilde{M}] =$		t_1	t_2	…	t_m
	i_1	μ_{11}	μ_{12}	…	μ_{1m}
	i_2	μ_{21}	μ_{22}	…	μ_{2m}
	…	…		…	…
	i_n	μ_{n1}	μ_{n2}		μ_{nm}

All μ_{ij}, $i = 1, 2, ..., n$; $j = 1, 2, ..., m$ represent the direct incidence or the first-degree effects of the incentives (i_i) on the TAM variables (t_j). However, as is known, the direct incidence is only part of the total incidence and often is only a small part of the total incidence, as the result of the causal relationships of causes and effects between themselves. These relations of incidence, causes on other causes and effects on other effects, also can be expressed by fuzzy relations such as the following:

$[\widetilde{I}] =$		i_1	i_2	…	i_n
	i_1	α_{11}	α_{12}	…	α_{1n}
	i_2	α_{21}	α_{22}	…	α_{2n}
	…	…	…	…	…
	i_n	α_{n1}	α_{n2}	…	α_{nn}

$[\widetilde{T}] =$		t_1	t_2	…	t_m
	t_1	β_{11}	β_{12}	…	β_{1m}
	t_2	β_{21}	β_{22}	…	β_{2m}
	…	…	…	…	…
	t_m	β_{m1}	β_{m2}	…	β_{mm}

where:

$$\forall\, (i_i, i_k) \in [\widetilde{I}]: \alpha_{ik} \in [0,1]; i = k: \alpha_{ii} = 1$$
$$\forall\, (t_j, t_l) \in [\widetilde{T}]: \beta_{jl} \in [0,1]; j = l: \beta_{jj} = 1$$

These expressions show that fuzzy relations $[\widetilde{I}]$ and $[\widetilde{T}]$ are square and reflexive. The first property is a consequence of both matrices relating the elements of each set with themselves ($[\widetilde{I}] \subset I \times I$; $[\widetilde{T}] \subset T \times T$), and the second is a consequence of the fact that the incidence of an element with itself is total ($\alpha_{ii} = 1$, $\beta_{jj} = 1$).

From these basic elements, we add all of the incidences (both direct and indirect), what Jean Fourastié called the "cumulative effects of first and second generation" (Kaufman and Gil-Aluja, 1988). It is useful to recall some properties of fuzzy incidence matrices.

Given three fuzzy relations, one rectangular $[\widetilde{M}]$ and two square, $[\widetilde{I}]$ and $[\widetilde{T}]$. Where the degree of $[\widetilde{M}]$ is $n \times m$, the degree of $[\widetilde{I}]$ is $n \times n$ and the degree of $[\widetilde{T}]$ is $m \times m$, and representing the maxmin convolution operator as "$\circ$", you note as follows:

1. $[\widetilde{M}] \circ [\widetilde{M}]$, is possible if $n = m$
2. $[\widetilde{M}] \circ [\widetilde{I}] \neq [\widetilde{I}] \circ [\widetilde{M}]$, $[\widetilde{M}] \circ [\widetilde{I}]$ is possible

   $[\widetilde{M}] \circ [\widetilde{T}] \neq [\widetilde{T}] \circ [\widetilde{M}]$, $[\widetilde{M}] \circ [\widetilde{T}]$ is not possible
3. $([\widetilde{I}] \circ [\widetilde{M}]) \circ [\widetilde{T}] = [\widetilde{I}] \circ [\widetilde{M}] \circ [\widetilde{T}]$

$[\widetilde{M}^*]$ is used to represent the convolution $[\widetilde{I}] \circ [\widetilde{M}] \circ [\widetilde{T}]$. The fuzzy relation $[\widetilde{M}^*]$ expresses the cumulative effects of the first and second generations.

We obtain the cumulative effects of the first and second generations, assuming estimated fuzzy relations $[\widetilde{M}]$, $[\widetilde{I}]$, $[\widetilde{T}]$. To obtain this, we use $\upsilon\, (i_1, t_1)$ to represent the valuation cell (i_1, t_1); $\upsilon\, (i_1, t_2)$ to the (i_1, i_2), etc. Therefore, we have the following:

$$\upsilon\, (i_1, t_1) = (\alpha_{11} \wedge \mu_{11}) \vee (\alpha_{12} \wedge \mu_{21}) \vee … \vee (\alpha_{1n} \wedge \mu_{n1})$$
$$\upsilon\, (i_1, t_2) = (\alpha_{11} \wedge \mu_{12}) \vee (\alpha_{12} \wedge \mu_{22}) \vee … \vee (\alpha_{1n} \wedge \mu_{n2})$$
$$...$$
$$\upsilon\, (i_i, t_j) = (\alpha_{i1} \wedge \mu_{1j}) \vee (\alpha_{i2} \wedge \mu_{2j}) \vee … \vee (\alpha_{in} \wedge \mu_{nj})$$
$$...$$
$$\upsilon\, (i_n, t_m) = (\alpha_{n1} \wedge \mu_{1m}) \vee (\alpha_{n2} \wedge \mu_{2m}) \vee … \vee (\alpha_{nn} \wedge \mu_{nm})$$

We obtain a fuzzy relation that can be considered as a global semi-convolution. To simplify, we replace $\upsilon\, (i_i, t_j)$

by υ_{ij} for all i and j values (i = 1, 2,..., n; j = 1, 2,..., m).

$$[\,\widetilde{I}\,] \circ [\,\widetilde{M}\,] = \quad \begin{array}{c|c|c|c|c|} & t_1 & t_2 & \ldots & t_m \\ \hline i_1 & \upsilon_{11} & \upsilon_{12} & \ldots & \upsilon_{1m} \\ \hline i_2 & \upsilon_{21} & \upsilon_{22} & \ldots & \upsilon_{2m} \\ \hline \ldots & \ldots & \ldots & \ldots & \ldots \\ \hline i_n & \upsilon_{n1} & \upsilon_{n2} & \ldots & \upsilon_{nm} \\ \hline \end{array}$$

In the same way, we make a new convolution, now with the resultant matrix ($[\,\widetilde{I}\,] \circ [\,\widetilde{M}\,]$) and the fuzzy relation $[\,\widetilde{T}\,]$ to get $[\,\widetilde{I}\,] \circ [\,\widetilde{M}\,] \circ [\,\widetilde{T}\,]$. If we represent using $\omega\,(i_1, t_1),\ldots, \omega\,(i_n, t_m)$ the valuations relative to the cells $(i_1, t_1), (i_1, t_2),\ldots, (i_n, t_m)$, we have as follows:

$$\omega\,(i_1, t_1) = (\upsilon_{11} \wedge \beta_{11}) \vee (\upsilon_{12} \wedge \beta_{21}) \vee \ldots \vee (\upsilon_{1n} \wedge \beta_{n1})$$
$$\omega\,(i_1, t_2) = (\upsilon_{11} \wedge \beta_{12}) \vee (\upsilon_{12} \wedge \beta_{22}) \vee \ldots \vee (\upsilon_{1n} \wedge \beta_{n2})$$
$$\ldots$$
$$\omega\,(i_i, t_j) = (\upsilon_{i1} \wedge \beta_{1j}) \vee (\upsilon_{i2} \wedge \beta_{2j}) \vee \ldots \vee (\upsilon_{in} \wedge \beta_{nj})$$
$$\ldots$$
$$\omega\,(i_n, t_m) = (\upsilon_{n1} \wedge \beta_{1m}) \vee (\upsilon_{n2} \wedge \beta_{2m}) \vee \ldots \vee (\upsilon_{nn} \wedge \beta_{nm})$$

These results provide a global convolution. To simplify, if replaced by $\omega\,(i_1, t_1)$, $\omega\,(i_1, t_2)$, ..., $\omega\,(i_n, t_m)$, respectively, by $\omega_{11}, \omega_{12}, ..., \omega_{nm}$, the resultant matrix is represented as follows:

$$[\,\widetilde{M}^*] = [\,\widetilde{I}\,] \circ [\,\widetilde{M}\,] \circ [\,\widetilde{T}\,] = \quad \begin{array}{c|c|c|c|c|} & t_1 & t_2 & \ldots & t_m \\ \hline i_1 & \omega_{11} & \omega_{12} & \ldots & \omega_{1m} \\ \hline i_2 & \omega_{21} & \omega_{22} & \ldots & \omega_{2m} \\ \hline \ldots & \ldots & \ldots & \ldots & \ldots \\ \hline i_n & \omega_{n1} & \omega_{n2} & \ldots & \omega_{nm} \\ \hline \end{array}$$

Matrix $[\,\widetilde{M}^*]$ shows the variables of TAM in columns $t_1, t_2,\ldots, t_m$, and incentives in rows $i_1, i_2,\ldots, i_n$. Each values of ω_{ij}, (i = 1, 2,…, n; j = 1, 2,…m) in the matrix, is the level or degree of incidence of each incentive on each variable of the TAM. The coefficients ω_{ij} with value 0 indicate that no incidences and values near to 1 mean a higher incidence of incentive on the variable of TAM that we are considering.

If you want to know which of the incentives more powerfully affect the behavioral intention to use t-commerce, you merely search for the higher value of ω_{ij} in the corresponding column. This incentive will be the most effective for obtaining the desired effect. In other words, incentives are a more appropriate aspect of sales promotion policy for improving the acceptance of t-commerce.

Questionnaire design and sample characteristics
First, we developed a questionnaire with measures derived from the literature about behavioral intention to use technology; more specifically, we apply the adapted scales of TAM to t-commerce (Yu *et al.,* 2005).
We used a self-administered questionnaire to collect data from Barcelona using a convenience sampling. This difficult extrapolate results, although other authors (Lin and Lu, 2000; Peterson, 2001) argue that the results provided by these samples are similar to the results obtained with probabilistic sampling methods. Thus, the results can be considered valid for the purposes of this research, always referring to the studied population. Three hundred fifty-three questionnaires were validated for analysis. We chose Likert scales of 7 points to measure the degree of disagreement or agreement with each of the items shown, where 1 means strongly disagree and 7 means strongly agree.
The sample consists of 58% women and 42% men, aged 19 to 62, adjusted to the target of the study because they are potential users of t-commerce. Their online shopping experience is high: 83,7% have bought online and 15% have purchased a product through the television. Twenty-nine point two percent are subscribers to a pay-TV platform.

Measures
We use SPSS 17 software (IBM Corporation) to check the reliability and validity of the measurement scales of the constructs of TAM. We make an exploratory factor analysis to determine the item performance with respect to the variables. That is, we have attempted to verify whether the items used in the measurement scales of each of the variables are appropriate. Factor loadings resulting from each of the items on the factor should be greater than 0.6 (Bagozzi and Yi,1988; Vila, *et al.*, 2000), and on average, higher than 0.7 (Hair, *et al.*, 1998). Twenty-

nine items in the questionnaire were used to represent the 5 variables of TAM. All of the items have met the criteria described above. Table 1 shows the setting and fit of the scales.

(Insert Table 1 here)

To analyze the reliability of the scales, we check that the Cronbach's alpha of all factors exceeds 0.7, verifying the internal consistency of the scales (Nunnally and Bernstein, 1994; Hair *et al.* 1998). Higher values of Cronbach's alpha represent high correlations among the items, which mean better internal consistency. The Cronbach's alpha can overestimate the true internal consistency (Osburn, 2000) and therefore it is advisable to use an additional statistic such as the composite reliability of the construct (Jöreskog, 1971). We calculate the composite reliability of the constructs with the factor loadings obtained from a confirmatory factorial analysis (CFA) developed using the software AMOS 21. The CFA show a reasonable fit (GFI = 0.832, CFI = 0.920, IFI = 0.921, RMSEA = 0.087).

(Insert Table 2 here)

All of the factor loadings are greater than 0.5 (Fornell and Larcker, 1981), and the average load of the indicators of a factor is greater than 0.7 (Hair *et al.*, 1998). Accordingly, we can affirm that all of the factors present convergent validity. In another sense, discriminant validity exists when the highest values of the squared correlation matrix between factors are in the main diagonal, which includes the AVE of each factor (Fornell and Larcker, 1981), as we can see in Table 2. The goodness of these results is verified and therefore we can ensure that we are working with valid and reliable scales to measure each of the variables of TAM.

4. Results
To know the total incidence of different types of incentives on the variables of TAM, and answer the research questions, we use the forgotten effects methodology described above.

$$\widetilde{M}\ ^* = [\ \widetilde{I}\ ]\ ^\circ [\ \widetilde{M}\ ]\ ^\circ [\ \widetilde{T}\ ]$$

The matrix $\widetilde{M}\ ^*$ will result to perform a convolution between the matrix of incentives and the matrix of the direct impact of incentives on the TAM variables, and then to perform a convolution between the resulting matrix ($[\ \widetilde{I}\ ]$ $^\circ [\ \widetilde{M}\ ]$) and the matrix of incidences between the TAM variables $[\ \widetilde{T}\ ]$. To do so, we must determine these matrixes.

First, we determine the incidences among the variables of the TAM. We obtain these incidences by performing a linear regression with the software SPSS 17, using as dependent variables each of the variables of TAM (PU, Perceived Entertainment, PEOU, attitude towards the use of t-commerce and behavioral intention toward t-commerce) and the other variables of the TAM as independent variables. Linear regressions were performed for each dependent variable following the established relationships in the model (Figure 1). We assign the value "0" when there are no incidences between variables considering the TAM. Table 3 shows the significant incidences represented by the β values (p < 0.01).

(Insert Table 3 here)

Second, we determine the incidences among different types of incentives. We use as dependent variables each of the incentives and all other incentives as independent variables. Table 4 shows these incidences.

(Insert Table 4 here)

Third, we determine the direct effects between each incentive and the variables of the TAM. We obtain these incidences by performing a linear regression in which the incentives are independent variables and each of the variables of TAM is the dependent variable.

We select the β coefficients as the level of incidence between the incentive and the variable of the TAM whenever the t-value is significant. If the coefficient is not significant, then we assign the value 0. Table 5 shows these incidences.

(Insert Table 5 here)

Fourth, we obtain the total incidence of incentives among the variables of TAM. To do so, we should process the convolution maxmin $\widetilde{M}^* = [\,\widetilde{I}\,] \circ [\,\widetilde{M}\,] \circ [\,\widetilde{T}\,]$. We design a spreadsheet in Microsoft Excel to create the operations and obtain the results shown in Table 6.

(Insert Table 6 here)

As set out in Table 6, the incentive I_5 (Perception of Personal Image Enhancement) is the greatest influence on the behavioral intention to use t-commerce; the second-greatest influence is I_1 (Discounts) and the third-greatest influence is I_2 (Gifts). We can then respond the first research question, RQ1: What are the most important incentives that influence the behavioral intention to use t-commerce?

After obtaining the total incidences, if we subtract the direct impact of the incentives on the TAM variables (that were obtained in the third step) the indirect incidences of each incentive on the TAM variables can be determined. Table 7 shows the differences.

(Insert Table 7 here)

In Table 7, we can see how the incentives I_1 (Discounts) and I_4 (Products linked to television programs) have greater forgotten effects such that their effects are more hidden. Thus, we respond the second research question, RQ2: What incentives have more hidden effects on the behavioral intention to use t-commerce?

(Insert Table 8 here)

The β coefficients obtained in the regression analysis show the incidence of independent variables on the dependent variable. The standardized β coefficients allow a comparison of the incidences among variables measured with different scales.

All of the structured relationships in TAM (H1-H8) are supported except for the incidence of H1 and H4. We cannot affirm that PU has a direct influence on $BI_{t\text{-commece}}$, but it may have indirect relationships through the $At_{t\text{-commece}}$, an important precedent of $BI_{t\text{-commece}}$. PEOU is not directly related to $At_{t\text{-commece}}$, according to other practical research (Rodríguez del Bosque and Herrero, 2008), although it may have indirect relationships through the PU. We can observe 15 interactions among 20 incentives overall. Accordingly, H9 is partially accepted. H10 is partially accepted because only I_3 and I_5 have direct incidences on $BI_{t\text{-commece}}$. Only I_5 has no significant indirect incidence on $BI_{t\text{-commece}}$, possibly because it has a large direct influence. Therefore, H11 is partially accepted.

5. Discussion and managerial implications

In contrast to prior empirical studies based on TAM (Davis, 1989), we use the theory of forgotten effects instead of structural equation modeling (SEM) to show the direct and indirect effects of several incentives on the behavioral intention to use t-commerce. Whereas SEM works with unobservable variables represented by various factors, in our research, the five incentives are directly observable variables and therefore we consider ourselves to be working with a more flexible methodology. The theory of forgotten effects (Kaufmann and Gil-Aluja, 1988; Gil-Lafuente, 2008) can determine the overall effect, taking into account the direct and indirect effect of each incentive on TAM variables and between themselves. To the framework of the TAM, we introduce incentives as external variables that influence internal variables (Davis, 1989). We consider it interesting to know how companies can influence the behavioral intention to use t-commerce through promotion strategies.

Although the data support most of the hypotheses concerning precedents of the behavioral intention to use t-commerce, we did not find support for the hypothesized direct effects of PU on the behavioral intention to use t-commerce, as do previous empirical studies (Salisbury *et al.*, 2001; Chen *et al.*, 2002; Park *et al.*, 2004; Shih, 2004; Shang *et al.*, 2005; Herrero, 2005). In the same way, our findings do not support incidences of PEOU on the attitude towards the use of t-commerce, as do previous studies (Gentry and Calantone; 2002; Yu, *et al.*, 2005). However, other authors (Childers *et al.*, 2001; Chen *et al.*, 2002; O'Cass and Fenech, 2003; van der Heijden *et al.*, 2003) who have studied electronic commerce argue that there is a relationship among these variables.

That said, the importance of the "perception of personal image enhancement" may be due to the influence of social norms on intention to use technology, which is both present in the TRA and incorporated into the TAM (Venkatesh and Davis, 2000; Venkatesh *et al.*, 2003).

The assumption that external variables influence the behavioral intention to use t-commerce, as suggested in prior studies of technology acceptance (Igbaria *et al.* 1995; Venkatesh *et al.*, 2003; Yousafzai *et al.*, 2007; Liu *et al.*, 2010), was supported. Our findings indicated that the incentives affect (both directly and indirectly) the

behavioral intention to use t-commerce. Specifically, the incentives Perception of personal image enhancement, Discounts and Gifts offer marketing managers a good tool for influencing potential users.

Therefore, if managers of television platforms want to develop television as an electronic commerce channel, they should consider both the direct and indirect influences of incentives on the internal determinants of behavioral intentions to use t-commerce. We think that a greater intention to use t-commerce makes television more attractive to producers and retailers and that they should consider these incentives in their marketing plans.

Disaggregating direct and indirect effects, we can offer managers a more detailed analysis of the effects of incentives. Specifically, we show that Perception of personal image enhancement have a direct effect on the behavioral intention to use t-commerce. Therefore, an emotional influence may be more important to producers and retailers that wish to improve their t-commerce attractiveness. This might suggest that advertisers should emphasize this feature in their communications.

In addition, the findings suggest that "Discounts" and "Products linked to television programs" (DVD collections of TV series, merchandise, etc.) have important forgotten effects hidden through intrinsic factors such as PEOU or PU. We can consider that t-commerce is comfortable and convenient for users to purchase products viewed on TV, thus increasing t-commerce's PEOU. The linked products can be an emotional stimulus to approach their favorite series or idols, thus increasing t-commerce's PU. This might suggest that television platforms should pay specific attention to ensuring that facilities link product placement with t-commerce.

The study also provided empirical evidence that the attitude towards the use of t-commerce is the most important determinant of the behavioral intention to use. Therefore, producers and retailers could focus on transforming the attitudes of potential users to increase the attractiveness of t-commerce as a purchase channel.

"Discounts" have very important indirect effects that interact with factors intrinsic to users during acceptance processing. Similarly, the possibility of accessing products related to television programs has incidence through PU and PEOU. T-commerce makes it comfortable and convenient for users to purchase products viewed on TV, thus increasing its PEOU. The linked products can be an emotional stimulus to approach a user's favorite series or idols, thus increasing t-commerce's PU.

6. Conclusions

This paper focuses on knowing the impact of incentives, both direct and indirect, on the behavioral intention to use electronic commerce through interactive television. The direct effect only is a part of the total incidence—and on many occasions it is a small part—because of causal relationships of causes and effects between themselves.

The use of forgotten effects theory with multivariable analysis techniques, such as regression analysis and confirmatory factor analysis, allow identification of the direct and indirect effects of the incentives on variables of TAM to answer the research questions. The results highlight the effect of the incentives on the behavioral intention to use t-commerce and allow us to test our hypotheses. Differentiation of the interactions among variables, as investigated in this study, is a very suitable method for evaluating the effects of external variables in the technology acceptance process. Future technology acceptance research might consider this approach as a valuable methodology to test the effects of various sales promotion polices.

Whereas the variables included in this analysis explained a portion of the behavioral intention to use t-commerce, television platforms obviously can use other variables to improve the attractiveness of this purchase channel—for example, variables such as comparative tools, music, navigation interfaces, payment systems or user comments (Arroyo-Cañada, 2013).

In view of these results, future research should consider completing the TAM by introducing the variable incentives. This work selected five types of incentives, which is considered representative of the rational and emotional motivations of users of t-commerce. The aim is to obtain empirical evidence of user behavior related to different types of incentives. Future research can select other incentives to generalize the results.

References

Ajzen, I. and Madden, T. J. (1986), "Prediction of goal-directed behavior: attitudes, intentions, and perceived behavioral control", *Journal of Experimental Social Psychology*, Vol. 22 No. 5, pp. 453-474.

Arroyo-Cañada, F.J. (2013), "The acceptance of electronic commerce via interactive digital television" (In Spanish), available at: http://diposit.ub.edu/dspace/handle/2445/48489 (accessed 21 December 2013).

Arroyo-Cañada, F.J. and Gil-Lafuente, J. (2011), "Influence Factors in Adopting the m-Commerce", in *MOBILITY 2011: The First International Conference on Mobile Services, Resources, and Users proceedings of the international conference in Barcelona, Spain, 23-29 October 2011*, IARIA, Barcelona, pp. 46-50.

Celik, H.E. and Yilmaz, V. (2011), Extending the Technology Acceptance Model for Adoption of E-Shopping by consumers in Turkey, *Journal of Electronic Commerce Research*, Vol. 12 No. 2, pp. 152-164.

Chen, Y.Y. (2012), Why do consumers go internet shopping again? Understanding the antecedents of repurchase intention, *Journal of Organizational Computing and Electronic Commerce*, Vol. 22 No. 1, pp. 38–63.

Childers, T.L., Carr, C.L., Peck, J. and Carson, S., "Hedonic and utilitarian motivations for online retail shopping behaviour". *Journal of Retailing*, Vol.77, pp. 511-535.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol.13 No. 3, pp. 319-339.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989), "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", *Management Science*, Vol. 35 No. 8, pp. 982-1003.

Fenech,T. and O'Cass, A. (2001), "Internet users' adoption of Web retailing: user and product dimensions", *Journal of Product & Brand Management*, Vol. 10 No. 6, pp. 361-381.

Fishbein, M. and Ajzen, I. (1975), *Beliefs, attitude, intention and behavior: An introduction to theory and research*. Reading. Addison-Wesley, available at: http://people.umass.edu/aizen/f&a1975.html (accessed 20 February 2013)

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research,* Vol. 8 No. 1, pp. 39-50.

Frank, R.H. (2005), *Microeconomics and Behavior*, McGraw-Hill, New York.

Gentry, L. and Cantalone, R. (2002), "A Comparison of Three Models to Explain Shop-Bot Use on the Web", *Psychology & Marketing*, Vol. 19 No. 11, pp. 945-955.

Goldstein, D. (2001), Coming soon: interactive television and T-commerce, *Managed Care Interface*, Vol. 14 No. 3, pp. 48-50.

Hair, J.F. Jr., Anderson, R.E., Tatham, R.L and Black, W.C. (1998). *Multivariate Data Analysis,* 5th Edition, Prentice Hall, Upper Saddle River (New Jersey).

Herrero, A. (2005), *The process of adopting new sales systems: application to electronic commerce between individuals and businesses (PhD. Thesis)* (In Spanish), Universidad de Cantabria, Santander.

Herrero, A., Rodríguez del Bosque, I. and García de los Salmones, M.M. (2005), "The propensity to innovate in the B2C e-commerce adoption: an analysis based on the Theory of Reasoned Action" (In Spanish), in *XVII Meeting of University Professors of Marketing, Madrid: September 2005*, ESIC, Madrid, pp. 723-738.

Hsu, C.L. and Lu, H.P. (2004), "Why do people play online games? An extended TAM with social influences and flow experience", *Information and Management*, Vol. 41 No. 7, pp. 853-868.

IDATE, (2012) "Digiworld Yearbook 2012", in ONTSI (2012), "Digital contents in Spain. Annual report 2011", available at: http://www.ontsi.red.es/ontsi/sites/default/files/informe_contenidos_digitales_edicion2012.pdf (accessed 20 february 2013).

Igbaria, M., Guimaraes, T. and Davis, B.D. (1995, Spring), "Testing the Determinants of Microcomputer Usage via a Structural Equation Model", *Journal of Management Information Systems*, Vol. 11 No. 4, pp. 87-114.

INE (2011), "Survey on Equipment and Use of Information and Communication Technologies in Households 2011", available at: http://www.ine.es (accessed 20 february 2013).

INE (2012), "Survey on Equipment and Use of Information and Communication Technologies (ICT) in Households 2012", available at: http://www.ine.es (accessed 20 february 2013).

Jöreskog, K.G. (1971), "Statistical Analysis of Sets of Congeneric Tests". *Psychometrika*, Vol. 36 No. 2, pp. 109-133.

Kaufmann, A. and Gil Aluja, J. (1986), *Introduction to the theory of fuzzy subsets for business management* (In Spanish), Milladoiro, Santiago de Compostela.

Kaufmann, A. and Gil-Aluja, J. (1988), *Models for research the forgotten effects*, (In Catalan), Milladoiro, Vigo.

Lee, M.K.O., Cheung, C.M.K. and Chen, Z. (2005) "Acceptance of Internet based learning medium: The role of extrinsic and intrinsic motivation", *Information & Management*, Vol. 42 No. 8, pp. 1095-1104.

Lin, J. and Lu, H. (2000), "Towards an Understanding of the Behavioural Intention to Use a Web Site", *International Journal of Information Management*, Vol. 20 No. 3, pp. 197-208.

Liu, I.F., Chen, M.C., Sun, Y.S., Wible, D. and Kuo, C.H. (2010), "Extending the TAM model to explore the factors that affect Intention to Use an Online Learning Community", *Computers & Education*, Vol. 54 No. 2, pp. 600-610.

Moon, J.W. and Kim, Y.G. (2001), "Extending the TAM for a World-Wide-Web context", *Information & Management*, Vol. 38 No 4, pp. 217-230.

Nunnally J. and Bernstein, I.H. (1994), *Psychometric Theory*, 3rd Edition, McGraw-Hill, New York.

O'Cass, A. and Fenech, T. (2003), "Web retailing adoption: exploring the nature of internet users web retailing behavior, *Journal of Retailing and Consumer Services*, Vol. 10 No. 2, pp. 81-94.

Osburn, H. G. (2000), "Coefficient alpha and related internal consistency reliability coefficients", *Psychological Methods*, Vol. 5 No. 3, pp. 343-355.

Park, J., Lee, D. and Ahn, J. (2004), "Risk-Focused E-Commerce Adoption Model: a cross-country study", *Journal of Global Information Management*, Vol. 7 No. 2, pp. 6-30.

Pavlou, P.A. (2003), "Consumer Intentions to Adopt Electronic Commerce - Incorporating Trust and Risk in the Technology Acceptance Model", *International Journal of Electronic Commerce*, Vol. 7 No. 3, pp. 101.

Peterson, R.A. (2001), "On the use of college students in social science research: insights a second-order meta-analysis" *Journal of Consumer Research,* Vol. 28 No. 3, pp. 450-461.

Rodríguez del Bosque, I.A. and Herrero, Á. (2008), "Background of the perceived usefulness in the adoption of electronic commerce between individuals and companies" (In Spanish), *Cuadernos de Economía y Dirección de la Empresa*, Vol. 11 No. 34, pp. 107-134.

Salisbury, W.D., Pearson, R.A., Pearson, A.W. and Miller, D.W. (2001), "Perceived Security and World Wide Web Purchase Intention", *Industrial Management & Data Systems*, Vol. 101 No. 4, pp. 165-176.

Sanz, S., Ruiz, C. and Aldás, J. (2008), "The influence of the dependence of the medium in B2C e-commerce. Proposal for an integrative model applied to future purchase intention in Internet" (In Spanish), *Cuadernos de Economía y Dirección de la Empresa*, No. 36, pp. 45-75.

Shang, R.A., Chen, Y.C. and Shen, L. (2005) "Extrinsic versus Intrinsic Motivations for Consumer to Shop On-line", *Information & Management*, Vol. 42 No. 3, pp. 401-413.

Shih, H.P. (2004), "An Empirical Study on Predicting User Acceptance of e-Shopping on the Web", *Information & Management*, Vol. 41 No. 3, pp. 351-368.

Sun, H. and Zhang, P. (2006), "Causal relationships between perceived enjoyment and perceived ease of use: An alternative approach", *Journal of the Association for Information Systems*, Vol. 7 No. 9, pp. 618-645.

Teo, T. S. H., Lim, V. K. G. and Lai, R. Y. C. (1999), "Intrinsic and Extrinsic Motivation in Internet Usage", *International Journal of Management Science*, Vol. 27 No. 1, pp. 25-37.

van der Heijden, H. (2003), "Factors influencing the usage of web sites: the case of a generic portal in The Netherlands", *Information & Management*, Vol. 40 No. 6, pp 541-549.

van der Heijden, H., Verhagen, T. and Creemers, M. (2003), "Understanding Online Purchase Intentions: Contributions from Technology and Trust Perspectives", *European Journal of Information Systems*, Vol. 12 No. 1, pp. 41-48.

Venkatesh, V. and Davis, F.D. (2000), "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies", *Management Science*, Vol. 46 No. 2, pp. 186-204.

Venkatesh, V., Morris, M.G., Davis, F.D., and Davis, G.B. (2003), "User Acceptance of Information Technology: Toward a Unified View", *MIS Quarterly*, Vol. 27 No. 3, pp. 425-478.

Vila, N.; Küster, I. and Aldás, J. (2000), *Development and validation of measurement scales in Marketing* (In Spanish), Quadern de treball, Facultat d´Economia, Universitat de Valencia, Valencia.

Yousafzai, S.Y., Foxall, G.R. and Pallister, J.G. (2007), "Technology acceptance: a meta-analysis of the TAM: Part 1", *Journal of Modelling in Management*, Vol. 2 No. 3, 251-280.

Yousafzai, S.Y. *et al.* (2010), Explaining Internet Banking Behavior: Theory of Reasoned Action, Theory of Planned Behavior, or Technology Acceptance Model?, *Journal of Applied Social Psychology*, Vol. 40 No. 5, pp. 1172 -1202.

Yi, M.Y. and Hwang, Y. (2003) "Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model", *International Journal of Human–Computer Studies*, Vol. 59 No. 4, pp. 431-449.

Yu, J., Ha, I., Choi, M. and Rho, J. (2005), "Extending the TAM for a *t-commerce*", *Information and Management*, Vol. 42 No. 7, pp. 965-976.

Zadeh, L.A. (1978), "Fuzzy sets as a basis for a theory of possibility", *Fuzzy Sets and Systems*, Vol. 1, pp. 3-28.

Zeithaml, V. (1988), "Consumer Perceptions of Price, Quality and Value: a Means-End Model and Synthesis of Evidence", *Journal of Marketing*, Vol. 52 No. 3, pp. 2-22.

Appendix
Appendix 1. Items used to measure the unobserved variables.
Perceived enjoyment
1. Using t-commerce, I will not be aware of time passing.
2. Using t-commerce, I will not remember that I have work to do.
3. It will be a pleasure either to purchase products that feature the actors or to collect information using t-commerce.
4. T-commerce will entertain me so that I will not have a sense of conducting a business transaction.
5. Using t-commerce will be a good experience for my family.
6. Using t-commerce will give me more pleasure than surfing the Web.
7. t-commerce will entertain me more than watching TV.
8. Using t-commerce increases my curiosity.
9. Generally, it will be nice to use t-commerce.

Perceived usefulness
10. If I adopt t-commerce, I can improve my ability to transact.
11. If I adopt t-commerce, I can improve my efficiency.

12. If I adopt t-commerce, I can improve my purchases of goods and services.
13. If I adopt t-commerce, I can easily obtain information about products.
14. Generally, t-commerce will be useful.

Perceived ease of use
15. Learning how to use t-commerce will be easy for me.
16. I will be skilled using t-commerce.
17. It will be easy to use t-commerce.
18. I will spend time learning how to use t-commerce.
19. It will be easy to find products I want using t-commerce.
20. Generally, it will be easy to use t-commerce.

*Attitude towards the use of t-commerce*
21. It will be fine for me to use t-commerce.
22. I will like to use t-commerce.
23. Using t-commerce will be interesting.
24. Using t-commerce will benefit me.
25. I will be interested in information about products related to television programs.
26. I will be positive about using t-commerce.

Behavioral intentions to use t-commerce
27. I will try to use t-commerce as soon as possible.
28. If I see t-commerce in the market, I will use it soon.
29. I will try to buy goods used by television actors using t-commerce.

Incentives
I1. I will use t-commerce if I receive a discount on the price of a product.
I2. I will use t-commerce if I receive a gift.
I3. I will use t-commerce if I cannot purchase a product elsewhere.
I4. I will use t-commerce if I can access products related to television programs.
I5. I will use t-commerce if it helps me improve my personal image.

PRECEDENTS OF THE BEHAVIORAL INTENTIONS TO USE T-COMMERCE
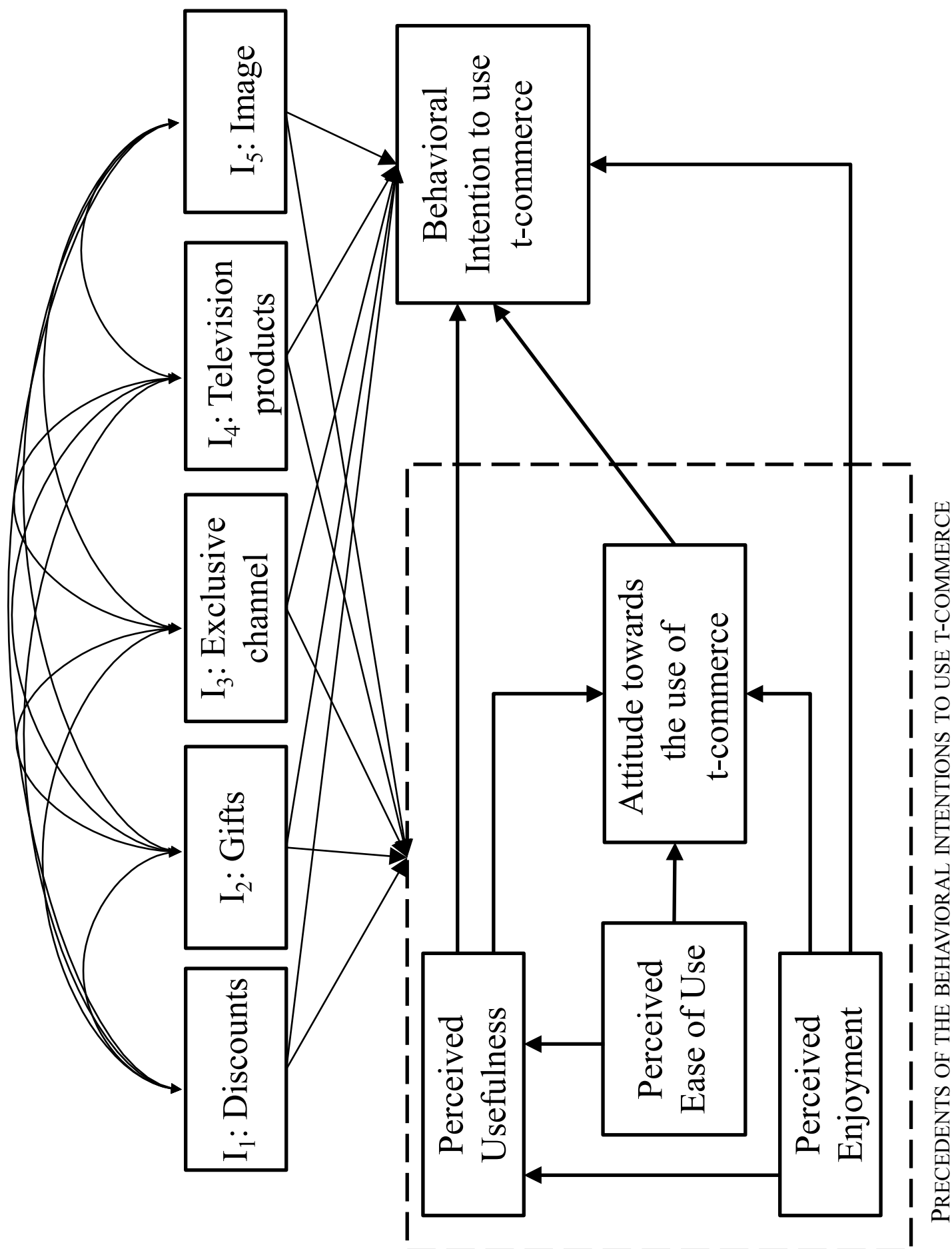
(Tables)

Incidence of incentives on the t-commerce acceptance: improving the television as distribution channel

Table 1. Setting and fit of the measurement scales

Scales	Items	AVE	Cronbach's Alpha	Composite reliability
Perceived Enjoyment (PE)	1-9	.690	.938	.940
Perceived Usefulness (PU)	10-14	.760	.921	.940
Perceived Ease of Use (PEOU)	15-20	.756	.889	.939
Attitude toward the t-commerce (At$_{t-commece}$)	21-26	.829	.928	.936
Behavioral intentions to use the t-commerce (BI$_{t-commece}$)	27-29	.845	.908	.942

Table 2. Square correlation matrix

	PE	PU	PEOU	A$_{t-com}$	BI$_{tcom}$
PE	**0.690**				
PU	0.523	**0.760**			
PEOU	0.069	0.338	**0.756**		
A$_{tcom}$	0.638	0.721	0.204	**0.829**	
BI$_{tcom}$	0.615	0.514	0.078	0.757	**0.845**

Table 3. Incidences between the TAM variables ($\tilde{M}_{TAM}$)

	PE	PU	PEOU	At$_{t-commece}$	BI$_{t-commece}$
PE	1	0,547	0	0,497	0,208
PU	0	1	0	0,445	0
PEOU	0	0,429	1	0	0
At$_{t-commece}$	0	0	0	1	0,694
BI$_{t-commece}$	0	0	0	0	1

Table 4. Incidences between incentives ($\tilde{M}_I$)

	I$_1$	**I$_2$**	**I$_3$**	**I$_4$**	**I$_5$**
I$_1$	1	0,676	0,227	0,245	0
I$_2$	0,727	1	0,175	0,235	0
I$_3$	0,129	0,086	1	0,413	0
I$_4$	0,164	0,146	0,509	1	0
I$_5$	-0,04	0,048	0	0,107	1

Table 5. Incidences of the incentives on the TAM variables ($\widetilde{M}_{I\,TAM}$)

	PE	PU	PEOU	At$_{t\text{-commece}}$	BI$_{t\text{-commece}}$
I$_1$	0	0	0,156	0	0
I$_2$	0,101	0,101	0	0,195	0,126
I$_3$	0	0,112	0	0	0
I$_4$	0	0,106	0,217	0	0
I$_5$	0,27	0,135	0	0,262	0,287

Table 6. Total incidences of incentives on the TAM variables ($\widetilde{M}*$)

	PE	PU	PEOU	At$_{t\text{-commece}}$	BI$_{t\text{-commece}}$
I$_1$	0,101	0,217	0,217	0,195	0,195
I$_2$	0,101	0,217	0,217	0,195	0,195
I$_3$	0,086	0,217	0,217	0,112	0,086
I$_4$	0,101	0,217	0,217	0,146	0,146
I$_5$	0,270	0,270	0,107	0,270	0,287

Table 7. Forgotten effects between the incentives and the TAM variables

	PE	PU	PEOU	At$_{t\text{-commece}}$	BI$_{t\text{-commece}}$
I$_1$	0,101	0,217	0,061	0,195	0,195
I$_2$	0,000	0,116	0,217	0,000	0,069
I$_3$	0,086	0,105	0,217	0,112	0,086
I$_4$	0,101	0,111	0,000	0,146	0,146
I$_5$	0,000	0,135	0,107	0,008	0,000

Table 8. Hypothesis contrast

	Hypotheses	β coefficients[1]		Contrast
H1	PU → BI$_{t\text{-commece}}$	n.s.		Rejected
H2	PU → At$_{t\text{-commece}}$	0,445		Accepted
H3	PEOU → PU	0,429		Accepted
H4	PEOU → At$_{t\text{-commece}}$	n.s.		Rejected
H5	At$_{t\text{-commece}}$ → BI$_{t\text{-commece}}$	0,694		Accepted
H6	PE → PU	0,547		Accepted
H7	PE → At$_{t\text{-commece}}$	0,497		Accepted
H8	PE → BI$_{t\text{-commece}}$	0,208		Accepted
H9	I → I	15/20 interactions		Partially Accepted
H10	I → BI$_{t\text{-commece}}$ (Direct)	I$_1$	n.s.	Partially Accepted
		I$_2$	0,126	
		I$_3$	n.s.	
		I$_4$	n.s.	
		I$_5$	0,287	
H11	I → BI$_{t\text{-commece}}$ (Indirect) Coefficients obtained with forgotten effect from β coefficients. They haven't significance level.	I$_1$	0,195	Partially Accepted
		I$_2$	0,069	
		I$_3$	0,086	
		I$_4$	0,146	
		I$_5$	-	

[1] Significant p < 0,000