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Understanding the uses and effects of interactive features in digital magazines

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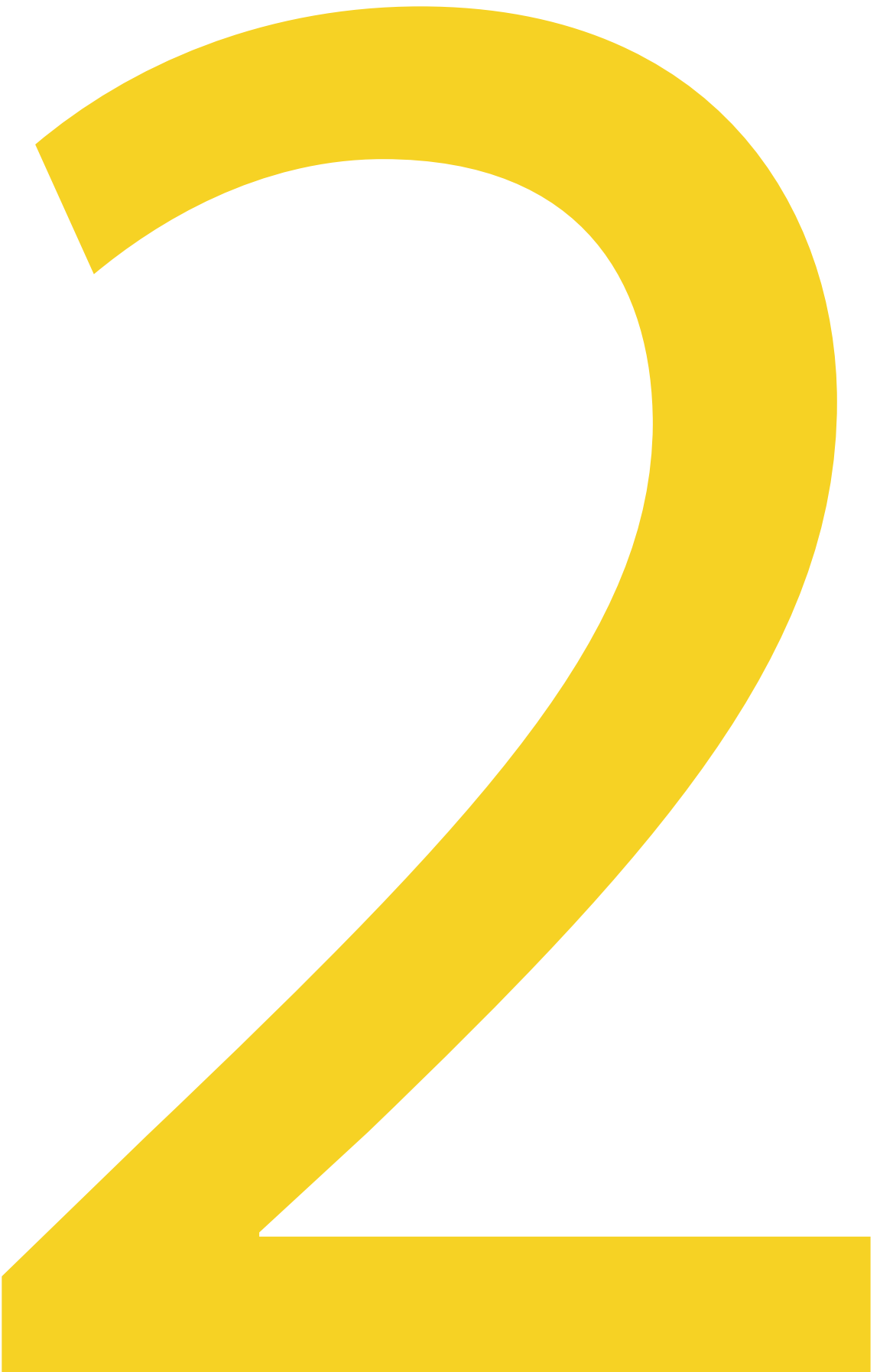
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ABSTRACT

This study investigates the effects of external and internal communication features on consumers' digital magazine attitude, and the processes (i.e., perceived interactivity and social presence) underlying these effects. Both feature types enable communication between two or more people. Though, in the case of external communication features, the interactions take place *outside* the digital magazine (e.g., on Facebook), whereas in the case of internal communication features, the communication takes place *inside* the digital environment of the magazine. In a two-wave experiment with a 2 (external communication features: present/absent) x 2 (internal communication features: present/absent) between-subjects design, 192 participants were exposed to a digital tablet magazine in which the presence of interactive features was manipulated. The results show that digital magazines with either external or internal communication features are perceived as more interactive, which has a positive influence on consumers' digital magazine attitude. The findings also reveal that – in contrast to external – internal communication features have the ability to enhance feelings of social presence, another process through which digital magazine attitude is positively affected. So, internal communication features improve consumers' digital magazine attitude through two pathways (i.e., perceived interactivity and social presence), and external communication features only via one (i.e., perceived interactivity).

Keywords: digital magazines, external communication features, internal communication features, human interactive features, social presence, perceived interactivity

INTRODUCTION

Today, numerous well-established print magazine titles are fighting for survival. They are facing severe financial difficulties, caused by declining circulation figures and falling advertising revenues (Sweney, 2014). Various magazine titles that were once successful have disappeared from the media landscape (e.g., Rosendahl, 2013). In order to survive, magazine companies must find new revenue sources, and the digital magazine market might be one of them (Mufson, 2013).

In this study, we define a “digital magazine” as an interactive tablet publication (or app) that can be downloaded from an app store. A magazine becomes interactive through the integration of features that either facilitate the interaction between user and device (i.e., medium interactive features), or allow the user to communicate with other individuals through a communication channel (i.e., human interactive features; Chung, 2007; 2008; Chung & Yoo, 2008). Unfortunately, today’s digital magazines lack popularity (Sedghi, 2013). One of the reasons is that relatively little is known about which interactive features can make a digital magazine more successful (Mufson, 2013). This study set out to shed light on this issue by being the first to empirically test the impact of the integration of human interactive features (i.e., external and internal communication features) on consumers’ attitudes toward digital magazines.

We specifically focus on human interactive features due to the popularity of various online magazine communities (for examples, see: www.gameinformer.com and www.ew.com), which shows that there is a desire among magazine readers to connect with each other. However, today’s digital magazines hardly respond to this desire, since human interactive features are only rarely integrated. It therefore seems plausible that if digital magazines make better use of these features, they will be more attractive to consumers. To investigate this assumption, we make a distinction between two types of human interactive features, namely external communication features and internal communication features. Both feature types facilitate forms of communication between two or more people; however, this takes place on different platforms. External communication features enable users to discuss the magazine content with others by redirecting them to external communication platforms (e.g., email services and social media). Because the communication takes place outside the magazine app, non-readers can also participate in the online discussions. In contrast, in the case of internal communication features, all the content-related discussions take place within the digital environment of the magazine app, and thus solely users of the app can participate in these discussions. So, external communication features enable users to communicate with others (i.e., both readers and non-readers of the magazine) outside the digital magazine, whereas internal communication features allow users to communicate solely with other readers inside the digital environment of the digital magazine.

The aim of this study is to examine whether the integration of either external or internal communication features has positive effects on consumers' attitude toward digital magazines, and if so, which processes (i.e., perceived interactivity and social presence) underlie these effects. In doing so, we will first examine the extent to which external versus internal communication features have differential (or similar) effects on perceived interactivity and social presence, and subsequently we will investigate how these processes affect consumers' digital magazine attitude. As this study is the first to empirically test the effects of consumer responses toward digital magazines with external and internal communication features, it not only contributes to the existing digital magazine literature and the further development of a typology for interactive features, but it also provides magazine publishers with some valuable insights into how to develop a successful digital magazine.

THEORETICAL BACKGROUND

In this study, we identify two potential underlying processes through which the presence of external and internal communication features could affect consumers' digital magazine attitude, that is, perceived interactivity and social presence. In previous research, perceived interactivity has often been used to explain the positive effects that adding interactive features to a digital content has on consumers' attitudinal responses (e.g., Oh & Sundar, 2015; Wu, 1999). However, in the case of internal communication features, we expect that the effects of these features on consumers' digital magazine attitude can also be explained by social presence. In the following, both paths – that through perceived interactivity and that through social presence – are described in detail.

The mediating role of perceived interactivity

The effects of external and internal communication features on perceived interactivity

The first potential underlying process that we examine is perceived interactivity. This process should not be confused with actual interactivity, because there is a subtle, but important, difference between the actual and the perceived interactivity of a digital magazine (Voorveld, Neijens, & Smit, 2011; Sundar, 2004; Wu, 2005). Actual interactivity is the potential for interaction, which can be measured by observing the number and type of interactive features that are available in a digital magazine (Voorveld et al., 2011; Wu, 2005). Perceived interactivity, on the other hand, is the extent to which users truly perceive the digital magazine as interactive, which can be measured by asking users about their magazine experience (Voorveld et al., 2011; Voorveld, Van Noort, & Duijn, 2013).

For human interactive features, empirical evidence shows that a higher number of these features corresponds with stronger interactivity perceptions (Voorveld, et al., 2011). Since

external and internal communication features are forms of human interactive features, we assume that the presence of these features in a digital magazine (i.e., integrating the features in the digital content) shall increase perceived interactivity levels. These assumptions are formulated in Hypotheses 1 and 2 (see Figure 1):

- H1:** Digital magazines with (vs. without) external communication features are perceived as more interactive.
- H2:** Digital magazines with (vs. without) internal communication features are perceived as more interactive.

A key difference between external and internal communication features is the platform on which the human interaction takes place. In the case of internal communication features, all the interaction occurs inside the digital magazine, whereas external communication features redirect the user to external communication platforms (e.g., Twitter or Facebook). Because a part of the interactivity delivered by the external communication features can be ascribed to these external platforms, it is imaginable that external communication features are perceived as less interactive compared to internal communication features. Consequently, this results in the following research question:

- RQ1:** To what extent do internal communication features and external communication features have different impacts on perceived interactivity?

The effect of perceived interactivity on digital magazine attitude

We expect that a higher degree of perceived interactivity is related to a more positive digital magazine attitude. Previous research has demonstrated that highly interactive digital media generate more positive affective responses (e.g., brand attitude and website attitude) compared to less interactive digital media (e.g., Xu & Sundar, 2012), which can be explained by the dual-process model of interactivity effects (Liu & Shrum, 2009). This model states that the integration of interactive features can positively affect consumers' attitudes, regardless of whether they actually use the features. If they do, they will experience the benefits of the interactive features; if they do not, the mere presence of the features functions as a positive peripheral cue. Further, Wu (2005) showed that these positive effects of actual interactivity on consumers' attitudes are mediated by perceived interactivity. Since we believe that digital magazines with external and internal communication features are perceived as highly interactive, we therefore expect that the integration of these features has a positive effect on users' digital magazine attitude mediated by perceived interactivity. These assumptions are formulated in Hypotheses 3 and 4 (see Figure 1):

- H3:** The presence of external communication features has a positive effect on digital magazine attitude through perceived interactivity.
- H4:** The presence of internal communication features has a positive effect on digital magazine attitude through perceived interactivity.

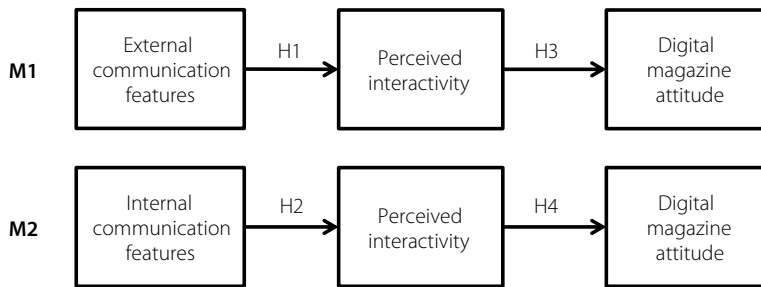


Figure 1. Hypotheses 1 – 4 visualized.
 Note. M1 = Model 1; M2 = Model 2.

The mediating role of social presence

The effects of external and internal communication features on social presence

The second potential underlying process we examine is social presence. In the context of digital media, social presence is the extent to which a user experiences the presence of others within a mediated environment (e.g., a digital magazine; Eastin, 2006; Gefen & Straub, 2003). Previous research has shown that feelings of social presence can be enhanced through features that facilitate interpersonal communication (e.g., comment buttons; Garramone, Harris, & Anderson, 1986; Kruike-meier, 2014) or that make the communication exchange more personal (e.g., profile pictures; Bente, Rüggenberg, Krämer, & Eschenburg, 2008; Park & Lee, 2013; Xu, 2014).

Human interactive features facilitate forms of interpersonal communication (Chung, 2007; Wu, 2005), which automatically reveals the presence of others in the mediated environment. However, with external communication features, all the human interaction takes place outside the digital magazine, whereas with internal communication features, all the interaction stays inside the magazine. As a consequence, external communication features do not have the ability to transmit social cues that reveal the presence of others within the digital magazine. Therefore, we assume that solely internal communication features have the ability to elicit feelings of social presence. This assumption is formulated in Hypothesis 5ab (see Figure 2):

H5ab: (a) Digital magazines with (vs. without) internal communication features evoke stronger feelings of social presence, (b) whereas external communication features do not.

The effect of social presence on community feelings and, subsequently, digital magazine attitude

Next, we expect that a higher degree of social presence is related to stronger community feelings among magazine users. A sense of community can be elicited by interacting with people who have common interests (Hull & Lewis, 2014). The audience of a magazine can be considered as having common interests, because magazines are always targeted at people who share specific characteristics (e.g., gender and age) and interests (e.g., fashion, travelling, cars; Consterdine, 2014). This implies that when magazine readers are able to communicate with each other (i.e., eliciting social presence), this can enhance community feelings among them. Therefore, we assume that the presence of internal communication features shall increase community feelings among magazine users through social presence (H6a).

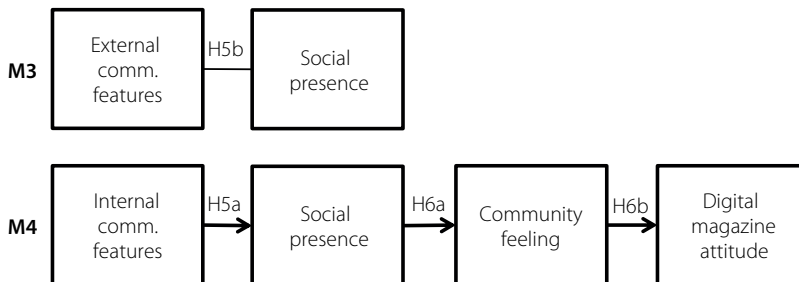


Figure 2. Hypotheses 5ab and H6ab visualized.

Note. M3 = Model 3; M4 = Model 4.

Subsequently, we surmise that magazine users who experience a stronger sense of community, will subsequently evaluate the digital magazine more positively, since people have a natural desire to belong to a social community (Srivastava & Beer, 2005). Communities are groups of people who share psychological ties (e.g., interests) and social interaction (Zhou, 2011). A digital magazine with internal communication features can be considered a form of online community, as it provides an interactive virtual environment where people - who share specific interests - can interact with each other (Chiu, Hsu, & Wang, 2006). Because magazines with internal communication features fulfill people's desire to belong to a community, by enhancing community feelings, we therefore expect that these magazines will be more positively evaluated (H6b). This results in the following hypothesis (see Figure 2):

H6ab: The presence of internal communication features evokes stronger feelings of social presence, which (a) enhances community feelings and, subsequently, (b) digital magazine attitude.

METHOD

Design and participants

To test our hypotheses (visualized in Figures 1 and 2), we conducted a two-wave experiment with a 2 (presence vs. absence of external communication features) x 2 (presence vs. absence of internal communication features) between-subjects design. The participants were exposed twice to a digital magazine (i.e., a student magazine): At Wave 1, to familiarize them with the magazine and the tablet device, and at Wave 2, when we measured our main variables. Participants who were at least 18 years old were recruited from a research pool of students at the University of Amsterdam. A student sample was chosen as we decided to use a student magazine for our stimulus materials (see paragraph 3.2.2). Moreover, young adults like to communicate online (Duggan, 2015), which made them therefore realistic potential users of our communication features. In total, 195 students participated in our study. However, three students dropped out at Wave 2 (1.5%), and were excluded from further analyses. The final sample therefore consisted of 192 participants (76.6% female; $M_{\text{age}} = 21.38$, $SD = 2.80$), who were randomly assigned to one of our four experimental conditions: the basic condition (i.e., without human interactive features; $n = 49$); the external communication features condition ($n = 49$); the internal communication features condition ($n = 47$); or the external and internal communication features condition ($n = 47$). More than half (57.8%) of the participants reported that they had full access to at least one tablet at home, which reflects the current household tablet penetration in the Netherlands (GFK, 2014).

Stimulus materials

Manipulation of the independent variables

For this study, we created four digital versions of a magazine by manipulating the presence of 1) external and 2) internal communication features (see Table 1). Each communication dimension consisted of three interactive features. Hereafter, we will describe which features belonged to which dimension, and what their functionality was.

The presence (or absence) of external communication features was manipulated by integrating (or omitting) the following three features: a Facebook button, a Mail button, and a Share button (see Table 1). The Facebook button enabled users to participate in online discussions about the magazine content. These discussions took place on the magazine's Facebook page, which was created for the purpose of the study. The Mail button allowed

the user to send a message to the editors using the default email client on the tablet. The Share button permitted the user to share magazine content with others (via mail, Twitter, or Facebook). The button included a live counter, which showed the number of times that a particular article had been shared.

The presence (or absence) of internal communication features was manipulated by integrating (or omitting) the following three features: a Comment button, a Like/Dislike button, and a Poll button (see Table 1). The Comment button allowed the user to discuss a magazine article with other readers. By clicking the button, a pop-up window appeared. Within this window the user could read the commentaries of other readers and participate in the discussion by leaving a comment. The button also displayed the number of comments that had been posted on a specific article. The Like/Dislike button made it possible to like or dislike someone's comment. The button included a counter, which showed the number of times a comment had been either liked or disliked. By clicking on the Poll button, an article-related question with several answer possibilities appeared in a small pop-up window in the bottom right-hand corner of the screen. After answering this live poll, the user could see how other readers had voted. Every time the user was exposed to an article with a poll that had not yet been answered, the poll window automatically popped up for three seconds as an alert.

Table 1. *The experimental conditions*

| <i>Condition</i> | External | Internal |
|------------------------------------|---|---|
| | <i>Facebook button, Share button, Mail button</i> | <i>Comment button, Like/Dislike button, Poll button</i> |
| 1. Basic condition | | |
| 2. External condition | X | |
| 3. Internal condition | | X |
| 4. External and internal condition | X | X |

Note. X = features are present in this condition.

The digital magazine

The above-mentioned features were integrated into a 40-page digital magazine called *StudentNOW*, which we created (see Figure 3). It was specifically aimed at students from Amsterdam (the target sample of this study), and consisted of a front page, a table of contents, full-page advertisements, entertainment articles, study-related articles, opinion articles, a movie review, and a colophon. The magazine content was identical across conditions, and for each wave a different magazine edition was created so that participants were not exposed to the same content twice.

To give the impression that *StudentNOW* was a real digital magazine, human interactivity was manipulated by creating fake comments, poll answers, article shares, likes, and dislikes. Further, participants were able to see how the discussions, started via either the Facebook button or the Comment button, evolved between Wave 1 and Wave 2. In the external communication conditions, participants could click on the Facebook button and scroll back to see the older Facebook discussions. In the internal communication condition, the magazine had an extra component that displayed the discussions of the three most commented upon articles of the previous magazine edition. This approach allowed the participants in both the external and the internal communication conditions to experience how the magazine-related discussions developed over time.



Figure 3. Two example pages of the *StudentNOW* magazine. The Poll button, Comment button (“Reacties”), Share button (“Delen”) and Mail button (“Mail de redactie”) are located in the upper bar of the magazine, whereas the Facebook button is placed in the magazine content.

Note. The Like/Dislike button is not visible here.

In addition, each digital magazine format had a navigation bar that enabled the user to quickly “jump” to a specific page, which appeared by tapping on the tablet screen. It also had a zoom function that allowed the user to enlarge or shrink specific parts of the magazine content, and a page orientation function so that the magazine could be read

in either landscape or portrait format. Finally, each Internet address in the magazine was a hyperlink, allowing the user to visit the specific website simply by clicking on it. These four features are commonly used in digital magazines, and were therefore included to create a realistic environment.

Procedure

The experiment was conducted in the lounge of the university research lab. Each participant took part in two 45-minute sessions, and each session involved a maximum of four people. At Wave 1, participants were assigned to one of our four experimental conditions. After the participants had provided their written informed consent, they were directed to the lounge, which had a comfortable chair in each corner. Screens and plants were strategically placed to give the participants some privacy.

At the beginning of the session, the participants were told to not speak during the session. Subsequently, the researcher gave each of the participants a tablet (Samsung Galaxy S3 10.1") and explained how the device worked. The participants were then asked to click on the *StudentNOW* app, and to fill in a short registration form and choose a username. After registration, a tutorial popped up that showed which interactive features were present in the digital magazine, and how they worked. The participants were instructed to read the tutorial carefully. The experimenter then left the room and the participants were able to freely use the magazine. After 25 minutes, the experimenter came back and asked the participants to turn off their tablets. The participants were then directed to separate cubicles, where they completed an online questionnaire that took approximately 15 minutes. After this, the participants left. An appointment for the next session was made by email.

The second session (i.e., Wave 2) was held approximately one week after the first session. During it, the procedures were identical to those employed the first session, except that the initial instructions were left out. In return for their participation, participants received a number of course credits or 15 euros. These procedures were approved by the ethical committee of the first author's affiliation.

Measures

Processing variables

Perceived interactivity was measured on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) with four items that completed the statement "The digital magazine *StudentNOW*..." The items were: "makes it possible to engage in a dialogue," "enables its readers to communicate with other people," "wants to stimulate social interaction," and "is interactive" (Liu, 2003; McMillan & Hwang, 2002). The items all loaded on one factor that proved to be reliable ($EV = 3.00$; $R^2 = .75$; $\alpha = .89$; $M = 5.12$, $SD = 1.14$).

To measure whether the participants perceived a feeling of social presence within the digital magazine, we created a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) with six items adapted from two social presence scales (Gefen & Straub, 2003; Lee, Jeong, Park, & Ryu, 2011). The items were: "Within the digital magazine there is a feeling of human contact," "The magazine has something personal," "The magazine has human warmth," "I felt the presence of other readers within the digital magazine," "I became interested in the opinion of other readers while I was reading," and "I had the feeling that the other magazine readers were nearby." The items all loaded on one factor that proved to be reliable ($EV = 3.90$; $R^2 = .65$; $\alpha = .89$; $M = 4.29$, $SD = 1.20$).

The participants' community feeling toward the reader community of *StudentNOW* was measured with four items on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The items were: "I feel connected to the reader community of *StudentNOW*," "*StudentNOW* is written for people like me," "I feel a strong connection with the reader community of *StudentNOW*," and "I can identify myself with the reader community of the magazine" (Lock, Filo, Kunkel, & Skinner, 2013; Scannell & Gifford, 2010). The items all loaded on one factor that proved to be reliable ($EV = 3.07$; $R^2 = .77$; $\alpha = .90$; $M = 4.83$, $SD = 1.36$).

Dependent variable: Digital magazine attitude

The participants' attitude toward the digital magazine was measured with six items on a 7-point semantic differential scale. The bipolar ends were "*not useful/useful*," "*not valuable/valuable*," "*not interesting/interesting*," "*terrible/nice*," "*not entertaining/entertaining*," and "*unpleasant/pleasant*" (Crites, Fabrigar, & Petty, 1994; Keer, Van den Putte, & Neijens, 2010). The items all loaded on one factor that proved to be reliable ($EV = 4.59$; $R^2 = .77$; $\alpha = .94$; $M = 5.51$, $SD = 0.86$).

Control variables

A number of control variables were measured to ensure that the effects of digital magazine format were not caused by other differences between our experimental groups. *Tablet ownership* was measured by asking participants whether they owned a tablet (0 = *no*, 1 = *yes*; $M = .36$; $SD = .48$). Next, we tested the *perceived usability* of the digital magazine with three items on a 7-point semantic differential scale. The bipolar ends were "*difficult/easy*," "*not clear/clear*," and "*not user friendly/user friendly*" ($EV = 2.37$; $R^2 = .79$; $\alpha = .85$; $M = 5.96$, $SD = 0.95$; Mugge & Schoormans, 2012). Finally, we measured the participants' age and gender.

RESULTS

Confound checks

The experimental conditions did not differ in terms of gender, $\chi^2(3) = 3.35, p = .341$, age, $F(3, 188) = 0.90, p = .442$, tablet ownership, $\chi^2(3) = 2.90, p = .407$, and perceived usability of the digital magazine, $F(3, 188) = 0.40, p = .753$. This implies that differences across the experimental conditions on the outcome variables could not be the result of variations in these background variables.

Mediation analyses

We used a two-step approach to test whether our hypothesized underlying processes (i.e., perceived interactivity and social presence) could mediate the effects on digital magazine attitude. First, we performed two-factor univariate ANOVAs to test whether perceived interactivity and social presence were actually activated by the presence of either external or internal communication features (H1, H2, and H5ab). Although we focused only on main effects in our hypotheses, we also checked for the presence of interaction effects to control for the possibility that our factors influenced each other's effects. However, no interaction effects were found (see Table 2), and so we focused only on main effects. Next, we tested complete mediations using Hayes' (2012) PROCESS macro for SPSS, which was set to use 10,000 bootstrap samples to estimate the 95% confidence intervals. (H3, H4, H6ab).

The mediating roles of perceived interactivity

The effects of internal and external communication features on perceived interactivity

We proposed that digital magazines with external (H1) and internal (H2) communication features would be perceived as more interactive than magazines without these features. To test these assumptions, a two-factor univariate ANOVA was conducted with the presence of external and internal communication features as the independent variables, and perceived interactivity as the dependent variable (see Table 2). As expected, the results demonstrated that digital magazines with (vs. without) external communication features were perceived as more interactive ($M_{\text{external}} = 5.41, SD = 0.99$ vs. $M_{\text{non-external}} = 4.83, SD = 1.20$), supporting Hypothesis 1. The same pattern was also found for internal communication features, showing that digital magazines that contained these features were perceived as more interactive ($M_{\text{internal}} = 5.57, SD = 0.85$), compared to magazines without these features ($M_{\text{non-internal}} = 4.69, SD = 1.21$). Hypothesis 2 was therefore confirmed.

To answer our first research question, we compared the strength of the effect sizes of both our factors on perceived interactivity by computing Cohen's d for each direct effect. Although Cohen's d was larger for internal communication features ($d = 0.84, CI = .54-1.13$)

than for external communication features ($d = 0.53$, $CI = .24-.82$), a z-test showed that this difference was not significant ($z = 1.55$, $p = .121$). Because the effect sizes did not differ in strength, we can conclude that external and internal communication features have an identical impact on perceived interactivity.

Table 2. Direct and interaction effects of presence of external and internal communication features on perceived interactivity and social presence

| | <i>F</i> | <i>df</i> | <i>p</i> | η^2 |
|--|----------|-----------|----------|----------|
| <i>Perceived interactivity^a</i> | | | | |
| External communication features (d) | 15.73 | (1,188) | < .001 | .08* |
| Internal communication features (d) | 36.99 | (1,188) | < .001 | .16* |
| Interaction effect | 2.75 | (1,188) | .099 | .01 |
| <i>Social presence^a</i> | | | | |
| External communication features (d) | 0.01 | (1,188) | .933 | .00 |
| Internal communication features (d) | 8.22 | (1,188) | .005 | .04* |
| Interaction effect | 0.73 | (1,188) | .394 | .00 |

Note. ^a = scale ranged from 1 (low/negative score) – 7 (high/positive score); d = dummy coded (features present: yes = 1; no = 0), $N = 192$; * = significant effect

External communication features: The mediated effects through perceived interactivity on digital magazine attitude

In Hypothesis 3, we assumed that perceived interactivity would mediate the relationship between presence of external communication features and digital magazine attitude. This assumption was tested with Model 4 in Hayes' (2012) PROCESS macro. The presence of external communication features functioned as the independent variable, perceived interactivity as the mediator, and digital magazine attitude as the dependent variable. Further, the presence of internal communication features was included as a covariate, to control for its effect on perceived interactivity (see Table 2).

As predicted in Hypothesis 3, PROCESS revealed a positive mediation effect of perceived interactivity on digital magazine attitude (indirect effect = 0.22, boot $SE = 0.06$, $BCI [.115; .367]$). In line with the results of the ANOVA, digital magazines with external communication features were perceived as more interactive than those without these features ($b = 0.58$, $SE = 0.15$, $p < .001$), which subsequently evoked a more positive attitude toward the digital magazine ($b = 0.38$, $SE = 0.06$, $p < .001$). Hypothesis 3 was therefore confirmed (see Figure 4).

Internal communication features: The mediated effect through perceived interactivity on digital magazine attitude

To test whether perceived interactivity could also mediate the relationship between presence of internal communication features and digital magazine attitude (H4), another mediation analysis was conducted using Model 4 in Hayes' (2012) PROCESS macro. The presence of internal communication features functioned as the independent variable, perceived interactivity as the mediator, and digital magazine attitude as the dependent variable. Further, the presence of external communication features was included as a covariate in order to control for its effect on perceived interactivity (see Table 2).

Confirming our assumption, PROCESS revealed a positive mediation effect of perceived interactivity on digital magazine attitude (indirect effect = 0.34, boot SE = 0.08, BCI [.206; .507]). In line with the results of the ANOVA, digital magazines with internal communication features were perceived as more interactive than those without these features ($b = 0.88$, $SE = 0.15$, $p < .001$), which subsequently generated a more positive attitude toward the digital magazine ($b = 0.38$, $SE = 0.06$, $p < .001$). Hypothesis 4 was therefore supported (see Figure 4).

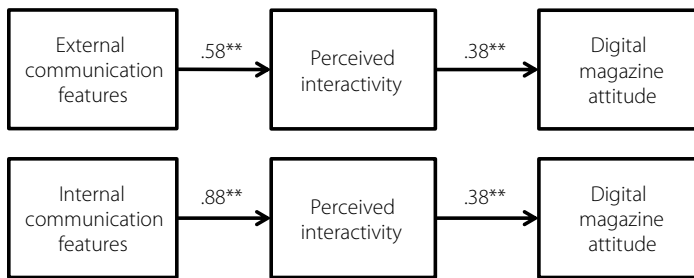


Figure 4. Tested mediations through perceived interactivity ($N = 192$).

Note. M1 = Model 1; M2 = Model 2

** = $p < .001$.

The mediating roles of social presence

The effects of internal and external communication features on social presence

We proposed that digital magazines with internal communication features enhance feelings of social presence (H5a), whereas digital magazines with external communication features do not have this potential (H5b). To test these assumptions, a two-factor univariate ANOVA was conducted with the presence of external and internal communication features as the independent variables, and social presence as the dependent variable (see Table 2). In line with our expectations, digital magazines with internal communication features evoked stronger feelings of social presence ($M_{\text{internal}} = 4.54$, $SD = 1.19$) compared to digital magazines without these features ($M_{\text{non-internal}} = 4.05$, $SD = 1.16$). Thus, Hypothesis 5a was confirmed. Further, in the case of external communication features, no significant difference

was found between the experimental groups on social presence ($M_{\text{external}} = 4.30, SD = 1.28$ vs. $M_{\text{non-external}} = 4.28, SD = 1.12$). Hence, social presence was not activated, which was in support of Hypothesis 5b. Due to the absence of a direct influence, social presence could not mediate the relationship between the presence of external communication features and digital magazine attitude.

Internal communication features: The mediated effect through social presence on digital magazine attitude

We predicted that digital magazines with (vs. without) internal communication features evoke stronger feelings of social presence, which enhances community feelings (H6a) and subsequently digital magazine attitude (H6b). These predictions were tested in a serial mediation model using Model 6 in Hayes' (2012) PROCESS macro. The presence of internal communication features functioned as the independent variable, social presence as the first mediator, community feeling as the second mediator, and digital magazine attitude as the dependent variable. The presence of external communication features was not included as a covariate, because the ANOVA did not reveal a direct effect of this factor on social presence (see Table 2).

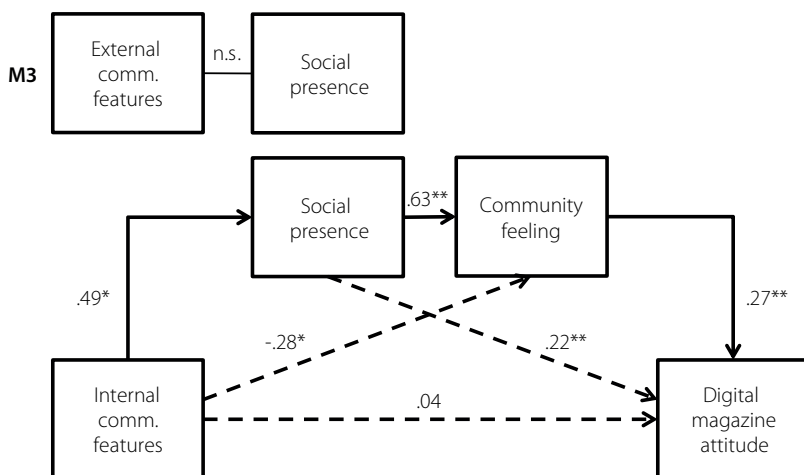


Figure 5. Tested serial mediation model ($N = 192$): Effect of presence of internal communication features on digital magazine attitude via social presence and community feeling. The solid lines represent the hypothesized effects.

Note. M3 = Model 3; M4 = Model 4.

* $p < .01$, ** $p < .001$.

In support of Hypotheses 6a and 6b, PROCESS showed a significant indirect effect of the presence of internal communication features on digital magazine attitude (indirect effect = 0.08, boot $SE = 0.03$, BCI [.027, .163]). This indirect effect was mediated by the effect of internal communication features on social presence ($b = 0.49$, $SE = 0.17$, $p = .005$), which subsequently increased community feeling ($b = 0.63$, $SE = 0.07$, $p < .001$), and ultimately resulted in a more positive digital magazine attitude ($b = 0.27$, $SE = 0.04$, $p < .001$). Thus, the results provide evidence for the existence of our proposed serial mediation model (see Figure 5). In addition, the path from social presence to digital magazine attitude also remained significant ($b = 0.22$, $SE = 0.05$, $p < .001$), which indicated that the mediation through community feeling was partial. Thus, social presence had a positive direct and indirect effect on digital magazine attitude through community feelings.

CONCLUSION AND DISCUSSION

The aim of this study was to examine the effects of external and internal communication features on consumers' digital magazine attitude, and the processes (i.e., perceived interactivity and social presence) that underlie these effects. The results show that a digital magazine with (vs. without) external communication features was perceived as more interactive, and that this had a positive effect on consumers' digital magazine attitude. For digital magazines with internal communication features, the same pattern through perceived interactivity was found. Hence, as predicted, perceived interactivity mediated the effects of both external and internal communication features on digital magazine attitude.

The results also show that the integration of internal communication features enhanced community feelings among magazine readers through increased feelings of social presence, and that consumers' digital magazine attitude became more positive as a result of these enhanced community feelings. In the case of external communication features, this path through social presence and community feelings was not activated. Thus, in line with our expectations, the integration of external communication features can improve digital magazine attitude only through perceived interactivity, whereas in the case of internal communication features, there are two pathways through which consumers' digital magazine attitude can be improved, namely through perceived interactivity and social presence.

Theoretical implications

This study contributes in several ways to the existing literature on digital magazines. Firstly, it extends previous typologies of interactive features (Chung, 2007; 2008; Deuze, 2003; Liu & Shrum, 2002). Various classifications have been developed to categorize the different forms of interactive features that can be integrated into a digital medium. Although no consensus has been reached on this subject, authors at least agree that one dimension of

the classification system needs to cover human interactive features. Previous studies have used various labels to describe this dimension, like *human interactivity* (Chung, 2007; 2008), *functional interactivity* (Deuze, 2003), *user-to-user interactivity* (Boczkowski & Mitchelstein, 2012), *interpersonal interactivity* (Massey & Levy, 1999), or *two-way communication* (Liu & Shrum, 2002). Our study makes an important contribution by revealing that it is necessary to subdivide this dimension of interactivity into two smaller categories, namely external and internal communication features. This distinction is based on the fact that some human interactive features facilitate human interaction outside the digital medium (i.e., external communication features), whereas others facilitate human interaction inside the digital medium (i.e., internal communication features). In the context of digital magazines, our results show that external and internal communication features have differential effects on how a consumer experiences a digital medium. More specifically, both feature types increase perceptions of perceived interactivity, while only internal communication features also have the ability to enhance feelings of social presence and community feelings. This emphasizes the importance of further subdividing the human interactivity dimension, and that a distinction needs to be made between external and internal communication features in further research on human interactive features in digital content.

Moreover, this study is the first to demonstrate that besides perceived interactivity, interactive features (i.e., internal communication features) can also activate another path through which consumers' digital magazine attitude can be explained, namely through social presence. More specifically, our findings show that magazine users who have the possibility to interact with other users inside the digital magazine (e.g., reading each other's comments), also become more aware of each other's presence. A higher degree of social presence, in turn, positively affects digital magazine attitude both directly and indirectly through community feelings. The latter effect was expected, because internal communication features allow for interaction with people who have common interests (e.g., readers of a magazine), which can enhance community feelings among users (Hull & Lewis, 2014). However, the effect of social presence on digital magazine attitude was not fully mediated by perceived community feelings, as the direct effect of social presence on digital magazine attitude remained significant (see Figure 5). This suggests that people simply liked the magazine more because they were able to experience the presence of others inside the magazine and could interact with them. This finding could be explained by the results of Song, Hollenbeck, and Zinkhan (2008), who demonstrated that the inclusion of social presence cues on a website could enhance consumers' perceptions of the quality of the site, and could also strengthen their favorability toward the site. Thus, the mere presence of social presence cues in a digital medium can, apparently, already make a digital platform more attractive.

Further, this study replicated the findings of Wu (2005), by demonstrating that perceived interactivity indeed mediates the positive effects of actual interactivity on consumers'

attitudinal responses toward a digital medium. However, as pointed out by Voorveld et al. (2011), there is a possibility that if certain interactive features are too commonly used, they may no longer be able to elicit perceptions of perceived interactivity. If that is the case, the effect through perceived interactivity on digital magazine attitude will eventually disappear. However, as far as we know, this potential wear-out effect has never been experimentally tested. More research is therefore needed to establish whether this effect actually exists.

In sum, this article makes three important contributions to the advance of the field. Firstly, the results of this paper emphasize the urgency of extending previous interactive features typologies by subdividing the human interactivity dimension into two categories: external and internal communication features. Secondly, the study's findings demonstrate that internal communication features elicit feelings of social presence among readers, which has a positive impact on consumers' attitude towards the digital magazine. And thirdly, our results substantiate the findings of Wu (2005), by revealing that perceived interactivity mediates the effects of actual interactivity on attitudinal outcomes for both external and internal communication features.

Context of the study and future research

Although the findings of this study make several important contributions to the understanding of the effects of external and internal communication features in digital magazines, these findings need to be seen in the context of this particular research. Firstly, our participants were not actual members of the reader community of the magazine to which they were exposed, as the magazine was fictitious. Consequently, the participants did not have pre-existing ties with the magazine or its reader community. To overcome this potential shortcoming, we tried to create a reader community that was as realistic as possible, by specifically targeting the magazine content at students from Amsterdam (i.e., the sample of this study), and by using a two-wave design so that users had more time to strengthen their ties with the magazine and to familiarize themselves with the interactive features. However, it is possible that the effects that we found through social presence would have been stronger had the experiment been conducted among members of an actual magazine reader community. More research is needed to further investigate the path through social presence by replicating this study among members of an existing reader community, using real magazine content.

Further, although the elicitation of a more positive digital magazine attitude does not automatically guarantee that the integration of external and internal communication features is the key to success for digital magazines, it is an important first step. Research has repeatedly demonstrated that attitude is an important predictor of consumer behavior (e.g., Ajzen, 1991), which suggests that the effects that we found will eventually translate into effects on behavior. However, additional research is required to establish whether the

integration of either external or internal communication features in a digital magazine can indeed make consumers more willing to purchase digital magazines.

Practical implications

The results of this study demonstrate that it is important to integrate both external and internal communication features into a digital magazine, because they have the potential to positively affect consumers' responses toward the magazine. However, if it is not possible to integrate both feature types into a digital magazine due to financial or practical constraints, then internal communication features should be preferred over external communication features. There are two reasons for this. Firstly, only internal communication features have the ability to positively affect consumers' digital magazine attitude through two pathways (i.e., perceived interactivity and social presence). Thus, if one of these pathways disappears, consumers' digital magazine attitude will still be positively affected through the other path. Secondly, internal communication features can also enhance feelings of community among the magazine readers, which strengthens their ties with the magazine. Hence, both feature types are of value to integrate into a digital magazine, but if a choice has to be made internal communication features are the most beneficial.

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