When less is more: Empirical studies of the relation between consumer behavior and information provision on commercial landing pages

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Abstract

This paper describes an empirical examination of how users' willingness to disclose personal data is influenced by the amount of information provided on landing pages - standalone web pages created explicitly for marketing or advertising campaigns.

A series of large-scale web experiments (n= 535 and n= 27,900) were conducted employing a between-subjects design and A/B testing: Two variants of landing pages, long and short, were created based on relevant behavioral theories. Both variants included an identical form to collect users' information, but different amount of provided content. User traffic was generated using Google AdWords and randomized between the pages. Relevant usage metrics, such as response rate (called "conversion rate"), location and visit time were recorded.

Analyses of results show that the shorter landing pages had significantly higher conversion rates across all locations and times. Findings demonstrate a negative correlation between the content amount and consumer behavior, suggesting that users who had *less* information were more inclined to provide their data.

This study contributes to the body of knowledge on information provision and its effectiveness and carries practical and theoretical implications to practitioners and scholars in Information Systems, Informing Science, Communications and related fields.

Keywords: Information provision, consumer behavior, landing pages, Information Systems, content strategy, Human-computer interaction, engagement, a/b testing, e-commerce, marketing

Introduction and background

Provision of information is a central construct in the IS discipline (Delone & McLean, 2003; Mishra, Stein, & Burton-Jones, 2017). It is considered an important determinant of consumer behavior when using technology (Smith, 2016; Venkatesh, Thong, & Xu, 2012). The complexity of informing users is of great interest in IS research, given that it is the lynchpin through which systems have their effects (Burton-Jones & Gallivan, 2007; Cohen, 1999; Mishra et al., 2017). This

interest is also motivated by the growing proliferation and use of information and communications technologies (ICT) (Horrigan, 2017). For example, 93% of adults In the U.S. report consuming information online, either via a mobile device or a computer (Smith, 2017). In the context of marketing and e-commerce, 79% of American adults reported ever making commercial transactions over computer-mediated networks (such as online purchases), spending nearly $350 billion annually ("Carat Ad Spend Report," 2016; Smith et al., 2016).

A pertinent debate among scholars and practitioners relate to the amount of information: does more information elicit engagement and compliance, or the other way around? This paper empirically addresses this long-standing question by observing if the amount of provided information influences users' willingness to disclose personal data on a commercial landing page -- a standalone web page created specifically for a marketing or advertising campaign (Becker et al., 2009; Unbounce, 2016).

In this study, Information provision is operationalized by digital content amount. Digital content is defined as the textual or visual information made available by a website or other electronic medium (Gates, 1996; Huizingh, 2000; Rowley, 2008). In marketing and online commerce, digital content and digital information are often synonymous terms (Rowley, 2008).

This study centers on the context of landing pages - single web pages that appear in response to clicking on an online advertisement and aim to persuade visitors to take action by completing a transaction (Becker et al., 2009; Unbounce, 2016). The action performed by the user is called "conversion" or "compliance". Since landing pages are typically users' first impression of a web page, decisions are greatly based on the content being presented (Ash, Page, & Ginty, 2012; Becker et al., 2009; Lindgaard, Fernandes, Dudek, & Brown, 2006; Reinecke et al., 2013).

The decision-making processes that make users comply online -- disclose personal information or make a purchase -- have been extensively researched in various domains. However, with regards to content there is still a conceptual confusion resulting from competing models and theoretical underpinnings: On the one hand, research shows that more content eliminates uncertainty and reduces risk, therefore increasing trust (Cialdini, 2009; Fogg et al., 2002; Gefen, 2000; Lee & Turban, 2001; Li & Chatterjee, 2010; Luhmann, 2000). On the other hand, less content was suggested to elevate complexity and decrease effort, therefore increasing ease of use (Geissler, Zinkhan, & Watson, 2006; Kahneman, 1973; Norton, Frost, & Ariely, 2007; Song & Schwarz, 2010; Vishwanath, 2004). As a result, the impact of the content amount is still an unsolved question.

This study uses the transdiscipline of Informing Science (Cohen, 2009) to address this research question. First, an extensive literature review was conducted to explore how best to inform clients using information technology and identify factors of effective information provision. Following, A between-group design and A/B testing were utilized in a series of large-scale online experiments (n= 535 and n= 27,083). An AB design is a two-part or phase design composed of a baseline ("A" phase) with no changes, and treatment or intervention ("B") phase. Two variants of landing pages, long and short, were created. Both variants had an identical form to collect users' information (e-mail address), but different amount of provided content. User traffic to the pages was generated through online advertising, randomized between the variants and monitored to observe the difference in behavioral outcomes (conversions). If there is a change, then the treatment may be said to have had an effect (Kennedy, 2005).

The findings offer insights that carry practical and theoretical implications. At a practical level, results can inform practitioners on the role of content in online commerce, and empirical support design considerations and content strategy. At the theoretical level, the research advances the body of knowledge on the between information provision and IS effectiveness.

The rest of the paper is structured as follows: Next, a literature review is presented to identify relevant research streams and formulate a research question. The following sections introduce the research design, describe the data collection and analyses and discuss the research implications.

Literature review

The Informing Science philosophy

The field of Informing Science explores how to best to inform users using information technology (Cohen, 1999, 2009). Informing science is a transdiscipline that supports the study of informing processes across a diverse set of academic disciplines. The transdisciplinary Informing Science framework and epistemology aims to reduce disciplinary bias, in particular regarding the complex phenomenon of providing consumers with information in a form, format, and schedule that maximizes its effectiveness (Cohen, 1999).

There are various dimensions of "information effectiveness", such as cognitive or psychological responses (Gill, 2015). However, a stable theme is that behavioral actions are still considered of central importance, and that IS use can be ultimately operationalized as behavior or activity (Burton-Jones & Gallivan, 2007; Mishra et al., 2017). Previous research suggests that actual observable behavior outcome is a reliable measure, as other aspects, like perception and intention, are directly related to it (Figueiredo, Almeida, Benevenuto, & Gummadi, 2014). In the current case, the observable behavioral outcome is disclosure of personal information, operationalized in the form of users providing their e-mail (conversion). This behavior is described as consumer's willingness to rely on the seller and take action in circumstances where such action makes the consumer vulnerable to the seller (Luhmann, 2017). It is often conceptualized as "compliance", defined as "behavior change devoid of pressure" (Cialdini & Goldstein, 2002).

In the development of a robust framework, Informing Science drew from several well-known theories, such as Shannon and Weaver's Model of Communication process (1948), T. D. Wilson's model of information seeking behavior (1981) and Tversky & Kahneman's framing theory (1985). The Informing Science Framework emphasizes the context of the client, the informer, and the transformation of a message between the two. The framework has three components: the informing environment, the delivery system, and the task-completion system (Cohen, 1999, 2009; Gill, 2015).

The process required to achieve effective informing is dependent of various aspects: The quality and rigor of the message on the part of the sender; Potential value, relevance and usefulness with respect to the task being performed; And resonance, specifically addressing a message's impact on a client's mental models.(Cohen, 2009; Gill, 2008).

Finally, effective informing can be defined and impacted by, the levels of uncertainty and risk reduction as well as complexity and effort (Gill & Cohen, 2008; Shannon, 1948; Wilson, 1981, 1997, 2000). Based on these observations, the following sections review the opposing streams of research on the relation between information provision and IS effectiveness.

In favor of more information – Reducing uncertainty and risk

Literature that supports greater provision of information (amount of content) emphasizes that online commercial interactions involve a level of uncertainty and risk (Lee & Turban, 2001; Lim, Sia, Lee, & Benbasat, 2006; Luhmann, 2017). To mitigate it, web pages should display more content to generate trust, communicate value and signal quality (Andreas B. Eisingerich & Simon J. Bell, 2008; Gefen, 2000; Luhmann, 2017; Rainie, Janna, & erson, 2017).

Trust in an entity that impacts people's willingness to take action (Gefen, 2000; Luhmann, 2000, 2017). Trust in a website is based on its design and content (Mavlanova, Koufaris, Benbunan-Fich, & Lang, 2015). In a commercial context, trusting beliefs occur when a consumer believes that the online store is benevolent, competent, honest, or predictable (Eisingerich & Kretschmer, 2008; Jennings, 2000). Trust-building strategies include customer endorsements by similar (local, nonforeign) peers and privacy and security policy (Lim et al., 2006). Although consumers may not mind the collection and use of their data, they would like to know how the data would be used (France Bélanger & Robert E. Crossler, 2011; Hargittai, Fullerton, Menchen-Trevino, & Thomas, 2010; Jarvenpaa, Tractinsky, & Saarinen, 2006). Online reviews and ratings were also found to be significant: Most of the consumers consult online ratings and reviews when buying something for the first time (Gafni & Golan, 2016; Smith et al., 2016).

Perceived value was also recognized as a factor of content. Research suggests that content is highly valued by online users and should convey information about the company, its products, and the level of service the consumer can expect to receive (Huizingh, 2000). The more useful information the website has, the more valuable it is for (Braun, Lee, Urban, & Hauser, 2009; Coker, 2013; Jennings, 2000; Wells, Valacich, & Hess, 2011). Signals that form a perception of value are achieved by informative content which includes the availability of customer reviews, shopping advice, articles, product information, and website policies (Li & Chatterjee, 2010). Brynjolfsson & Smith (2000) found that good landing pages should explain the product or service offer and emphasize its value.

Persuasion and influence. Content is also highlighted as a method for persuasion and influence. An established traditional theory is the Means-End Theory that suggests that to influence and persuade, the message should aim to lead the consumer to a desired end-state (Gutman, 1982). The six universal principles of social influence support to supplying information on authority, reciprocity, scarcity, social validation, likability and commitment and consistency (Cialdini, 2009; Cialdini & Goldstein, 2002, 2004). Research on credibility has also highlighted the need for elaboration, for example using online content to highpoint expertise or specify services (Fogg, 1998; Fogg et al., 2001, 2002; Laja, 2014; Tseng & Fogg, 1999).

Quality. Signaling theory has been applied to digital content as a potential signal of product quality (Wells et al., 2011). Providing rich information represents an important signal, which in turn has a direct relationship with customers' purchase intention. Content signals may include product information, expert product reviews, press releases, frequently asked questions (FAQ), and news (Akdeniz, Calantone, & Voorhees, 2013; Gao, Zhang, Wang, & Ba, 2012). Rich content on a website is one of the most vital signals influencing perceptions of the overall quality of the website. At the same time, not providing an appropriate valuable content signal of the seller's reluctance to invest time, effort and resources in providing information (Gregg & Walczak, 2008). The lack of detailed content may prompt buyers to believe that a seller has something to hide (Mavlanova et al., 2015).

"Perceived value", "Trust", "Persuasion and influence", and "Quality" are often used in support of long form, elaboration or greater content volume. For example, (Gefen, 2000) and (Andreas B. Eisingerich & Simon J. Bell, 2008) provided empirical evidence that greater volume of information elicit familiarity and trust; (Fogg et al., 2002) empirically demonstrated that elaboration and content volume are important factors when aiming to persuade and influence consumers online; Mavlanova et al. (2015) provided evidence that greater content volume signal quality and impact perceived value: And Huizingh (2000) empirically demonstrated that on average, larger Web sites seem to be 'richer' and more advanced.

Supporting arguments for more content are summarized in Table 1.

Table 1. Supporting arguments for more content

Determinants	Content features	Supporting research
Perceived value	Presence of relevant information provided on the website. Convey intrinsic product attributes Written product features, pictures, and virtual product experiences.	(Gefen, 2000; Luhmann, 2017; Rainie et al., 2017; Wells et al., 2011).
Trust	Trust in an entity affect people's willingness to take action. Content should include customer reviews, shopping advice, product information and the availability of website policies (e.g., privacy policy).	(France Bélanger & Robert E. Crossler, 2011; Hargittai et al., 2010; Jarvenpaa et al., 2006, 2006; Lee & Turban, 2001; Lim et al., 2006; Mavlanova et al., 2015)
Persuasion and influence	The message should aim to lead the consumer to the desired end-state. Content should supply information on authority, reciprocity, scarcity, social validation (also called social proof), likability, and commitment and consistency.	(Cialdini, 2009; Cialdini & Goldstein, 2002, 2004; Fogg, 2009)
Quality	Rich information signal quality, credibility, reputation and size.	(Gregg & Walczak, 2008; Mavlanova et al., 2015)

In favor of less information - Reducing complexity and effort

In contrary, some researchers argue against information provision, suggesting that effort is the real cost for users and providing less information (less content) prevents complexity and enables ease-of-use (Molich & Nielsen, 1990; Nielsen, 2005; Nielsen & Molich, 1990). Greater information provision signals effort while less information is easier to process (Norman, 2013). According to a study by Gofman (2007), 76% of consumers stated that the most important factor in a website's design is that it "makes it easy to find what I want".

Prior research suggests that when faced with complex and uncertain situations, individuals tend to use simple heuristics and cues in a bounded rational decision-making process and make relatively 'uninformed' judgments on the basis of a minimum of information (Brynjolfsson & Smith, 2000). Research shows that elaboration (greater information provision) may result in "Friction," defined as a psychological resistance to a given element on the page (Lindgaard et al., 2006; Vishwanath, 2004). The volume of content and the control of users' attention are inseparable. It takes users less than a second on average to evaluate a website's appeal after viewing it for the first time (Kolko, 2015). When the user's attention is diverted to access necessary information, there is an associated cost in time or effort, which is called the "Information access cost." It can come at a price: if processing the information is too demanding, the working memory disengages and moves on (Miller, 1956, 1956). Since much of the information available to users is increasingly abundant and immediately available, attention has become a limiting factor in the consumption of information (Davenport & Beck, 2001). Research suggested that problems can arise when indi-

viduals with limited cognitive abilities encounter massive amounts of potentially relevant information (Y.-C. Chen, Shang, & Kao, 2009; Eppler & Mengis, 2004). This phenomenon is called "Information overload" and is associated with a host of undesirable outcomes including poor decision making and perception (Y.-C. Chen et al., 2009; Lucian, 2014; Soto-Acosta, Jose Molina-Castillo, Lopez-Nicolas, & Colomo-Palacios, 2014).

As a result, information interactions are becoming highly asymmetrical, with less than a third of the information provided online being noticed and read (Nielsen, 2015).(Szabo & Huberman, 2008).

Finally, less content is scientifically shown to be easier to process but also leads to greater appreciation (Tuch, Presslaber, StöCklin, Opwis, & Bargas-Avila, 2012). Research showed that more information leads, on average, to less liking and dissimilarity, while ambiguity breeds curiosity and interest (Norton et al., 2007). Information provision is suggested to alienate users by closing their "Knowledge Gap" (also called "Information Gap"), defined as the difference between what users know and what they would like to know (Losee, 2012; Menon & Soman, 2002) . Curiosity is generated when a person becomes aware that a knowledge gap exists – they would be motivated to search for more information to close the gap (Menon & Soman, 2002).

Supporting arguments for less content are summarized in Table 2.

Table 2. Supporting arguments for less content

Determinant	Information factors	Supporting research
Perceived effort and ease of use	Simple content is easier to process. If processing the information is too demanding, the working memory disengages and moves on.	(Gofman, 2007; Gofman, Moskowitz, & Mets, 2009; Nielsen, 2005; Nielsen & Molich, 1990; Norman, 2013; Norton et al., 2007; Tuch et al., 2012)
Attention	When the user's attention is diverted to access. Necessary information, there is an associated cost in time or effort.	(Lindgaard et al., 2006; Vishwanath, 2004)
Curiosity	Curiosity is generated when a person becomes aware that a knowledge gap exists (less information).	(Losee Jr, 1989; Losee, 2012; Menon & Soman, 2002)
Information overload	Limited attention, poor decision making, and negative perception	(Y.-C. Chen et al., 2009; Davenport & Beck, 2001; Eppler & Mengis, 2004; Lucian, 2014; Nielsen, 2015; Soto-Acosta et al., 2014; Szabo & Huberman, 2008)

The Research Question

The literature review has underlined a few gaps in current research:

(1) Lack of agreement and opposing theories on the advantages or disadvantages of elaboration on commercial web pages.

(2) No clear inference on how the volume of content influences consumer behavior.

(3) Most studies explore content features, yet not enough emphasis is on the volume of content.

(4) Research is limited, with few empirical studies on the effectiveness of landing pages. While there are many professional articles on the topic, there is a dearth of academic research that illuminates the role of content in landing pages, its influence on users' compliance or how it can be used for conversion optimization.

The general hypothesis is that information provision impacts consumer behavior, and that changes to the amount of content impact system effectiveness.

To address these questions, a between-subjects experimental design was adopted based on Informing Science's definition of a basic informing system, in which a single informer interacts directly with a clearly specified set of clients (Cohen, 2009; Gill, 2015).

Research methodology

Design

The hypothesis was tested in a series of large-scale web experiments. All the experiments took place in commercial settings and focused exclusively on landing pages that appeared in response to clicking on online advertisements. The purpose of the landing pages is to persuade a visitor to act by completing a transaction. In this case, submission of an e-mail address (an action called "conversion").

A between-group experimental design was employed (Kennedy, 2005). All experiments were based on single-factorial A/B tests, also called "split testing." In an A/B test, two variations of the same page ("A" and "B") are created and differ only in the element that is being tested (for this study purpose, the volume of content). Visitors were randomly assigned to the pages. External loading times, web addresses and other external factors were equalized. Doing so, enabled content to be isolated as an independent variable and thereby to observe its direct influence on a behavioral action as the outcome of interest. This method allowed establishing a causal relationship between changes and their influence on user-observable behavior with high probability.

Page variants

Two versions of landing pages were created: one with detailed information (control) and another version that seemed to be the same, only most of the information was removed (treatment), as presented in Figure 1. Both pages promoted a digital service – ClaimFame (www.claimfame.com), a marketplace that connected content creators with talent on a broad range of media projects. Page variants included an identical form at the top of the page prompting the users to sign-up for a newsletter by providing their e-mail address. The page versions differed only in volume of content provided: Variant A was based on theories of persuasion, trust, and signaling and included information on the service (perceived value), customer reviews (quality) and privacy policy (information on how the personal data provided will be used, aimed to generate trust). Version B, on the contrary, had only the sign-up form and did not include any information on the service that consumers were signing up for, or what will be done with their e-mail address. This variant emphasized the principles of simplicity, ease-of-use, and ambiguity.

version "B" contained only 42 words, 211 characters, and 12 lines, with a simple call-to-action form; version "A" was identical to version "B", but had additional information provided; and therefore was longer and contained 278 words, 1,501 characters and 49 lines.

The page variants were sent to an external consulting company and a panel of marketing experts to verify their internal and external validity. The experts corroborated the validity of the pages' design and confirmed that the variations in information provision adequately represent applied industry settings.

Figure 1 present the two landing page variants:

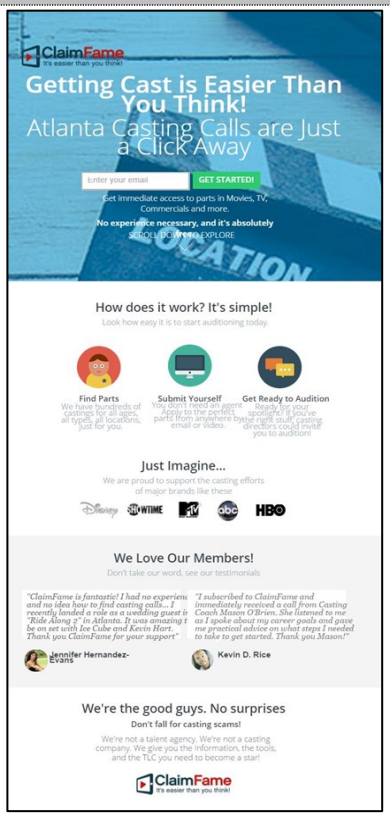
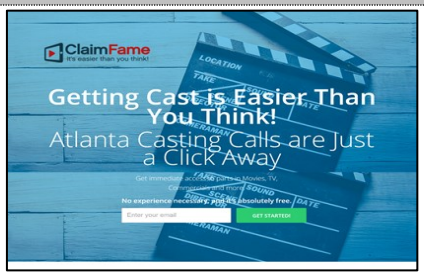
Variant A: more content	Variant B: less content
	

Figure 1: Page variations used for the experiments

Sample and participants

Users' traffic to the pages was generated using Google AdWords, a commercial advertising tool that provides placement of paid advertisements in Google's search results based on relevant keywords (as shown in Figure 2). Google AdWords are increasingly used to recruit people into research studies; The service was proven to be a reliable method to recruit real-web users and to accurately control for location by targeting control areas (Jones, Goldsmith, Williams, & Boulos, 2012).

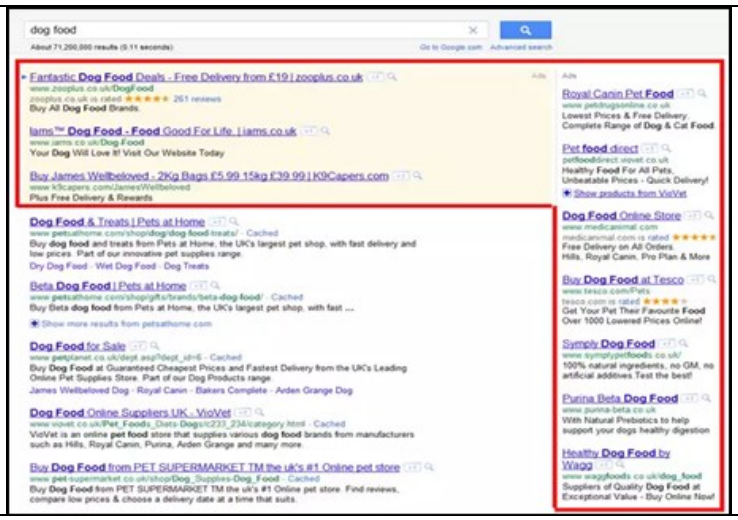


Figure 2. Example of Google Adwords used to recruit real web users.

Procedure and data collection

The pages were published online using Unbounce.com, a self-hosted service providing a suite of tools to create, publish and test landing pages. Unbounce.com was chosen based on its popularity (it is widely used and regarded as a market trailblazer) and its plethora of technical features and built-in web analytics, providing relatively simple means to create landing pages and quantitatively monitor their performance ("About Unbounce," 2015). Traffic was evenly split: 50% of the users were shown page variant "A", while the other 50% were directed to variant "B". Unbounce.com uses cookies to make sure users were always directed to the same page and that the split would be equal. If users landed on page "A", a cookie was placed on their computer so that even if they came back later, they would always see version "A". This was important to ensure that users would not notice the testing.

This type of experiment, called randomized controlled trial (RCT), is often used to ensure validity, reliability, and generalizability of web experiments: The randomization between different groups minimizes selection bias and the comparison of groups enables to observe any effects of the treatment when compared with the no treatment (control) group, while other variables are kept constant (Concato, Shah, & Horwitz, 2000).

Data was collected on all users that were directed to the pages, including click-through rates (total number of visits and number of unique visitors), users' IP address and locations, date and time of visits and tracking of conversions (users who provided their e-mail addresses).

The results were analyzed using IBM SPSS version 22.

Exploratory experiment

An initial experiment was first set up to examine the viability of the design. Only users from a specific geographical location within the United States were targeted (Atlanta, Georgia). The experiment was set to stop when more than 200 conversions were reached (Google's guidelines recommend at least 100 conversions per page before deciding which version is best). Overall, the number of unique visitors directed to the page variations was 535 (n=535).

Extended experiments

To better test the impact of information provision on consumer behavior, the exploratory experimentation was extended by conducting a broad nationwide, multi-market, split testing (*n*=27,083). Five new experiments were performed in the same manner with different populations. The experiment used the same landing page variations from the exploratory experiment: Version "A", with more information (long-form), and version "B", with less (short-form).

The sample size was expanded by directing greater volume of user traffic using Google AdWords. This time geo-targeting was utilized to only include users in four specific regional US markets: Atlanta, Miami, Los Angeles, and New York. The experiments also maintained a fifth, “national” group that consisted of users located all over the United States. This well-known research method is called “Blocking”, and is based on the arrangement of experimental units into groups consisting of units that are similar to one another (Addelman, 1969). Blocking reduces sources of variation between units and thus allows greater precision in the estimation of the source of variation under study (Concato et al., 2000).

In randomized block designs, there is one factor or variable that is of primary interest. However, there are also several other nuisance factors that may affect the measured result but are not of primary interest. In this case, hour and day (time) is an example of such a factor. Within blocks, it is possible to assess the effect of different levels of the factor of interest without having to worry about variations due to changes of the block factors, which are accounted for in the analysis.

The expanded experiments were conducted over a two-month period. Overall, data was collected from 27,083 unique visits to the page variants.

Results

The results of the exploratory experiment, as shown in Table 3, demonstrate a clear advantage in conversions on the short form pages.

Table 3- Summary of conversion results for exploratory experiment

Page Variant	Total unique visitors	Conversions	Users who didn’t convert	Conversion rate
"A" (Long)	273	106	167	38.83%
"B" (Short)	262	140	122	53.44%
Total	535			

As can be seen, the percentage of users who provided their e-mail was calculated as a percentage of the total amount of visitors to the page (conversion rate). Out of 535 visitors to both pages, on the long variant 38.83% of the users converted (provided their e-mail address). In comparison, in the short variant, the conversion was by 53.44% of the users. This is a significant 37.62% increase in conversion rate, rendering the short variant a clear winner. The results were statistically analyzed founding significant difference between the groups (t-value -3.6569, sig 0.00643, $p < 0.05$), and chi-square (11.4848, p-value is 0.000702, $p < 0.05$). These exploratory results motivate a more definite investigation.

In the extended experiments, data was collected from 27,083 unique visitors to the page variants. Their visits resulted in 9,593 conversions. See table 4 for results:

Table 4- Summary of conversion results for expanded experiments

Experiment / Campaign	Page variant	Total unique visitors	Conversions	Conversion Rate	t
National	"A" (Long)	5497	1405	26%	-6.651**
	"B" (Short)	5494	1718	31%	
Atlanta	"A" (Long)	3690	1231	33%	-14.560**
	"B" (Short)	3688	1838	50%	
Miami	"A" (Long)	1235	444	36%	2.470**
	"B" (Short)	1237	639	52%	
Los Angeles	"A" (Long)	1945	529	27%	-13.817**
	"B" (Short)	1948	937	48%	
New York	"A" (Long)	1176	324	28%	-8.946**
	"B" (Short)	1173	528	45%	
Total	"A" (Long)	13543	3932	29%	-22.166**
	"B" (Short)	13540	5660	42%	
	Both	27,083	9,593		

** $p < 0.01$

As seen from Table 4 and in Figure 3, while a similar number of users were directed to the "A" or "B" variants in each market, the short variants significantly outperformed the long ones across all markets. T-tests were performed also for the percent of conversions in the "A" version groups for all the campaigns (t= -20.759, df= 119, sig=.000) and for the percent of conversions in the "B" version groups for all campaigns (t= -20.131, df= 119, sig=.000).

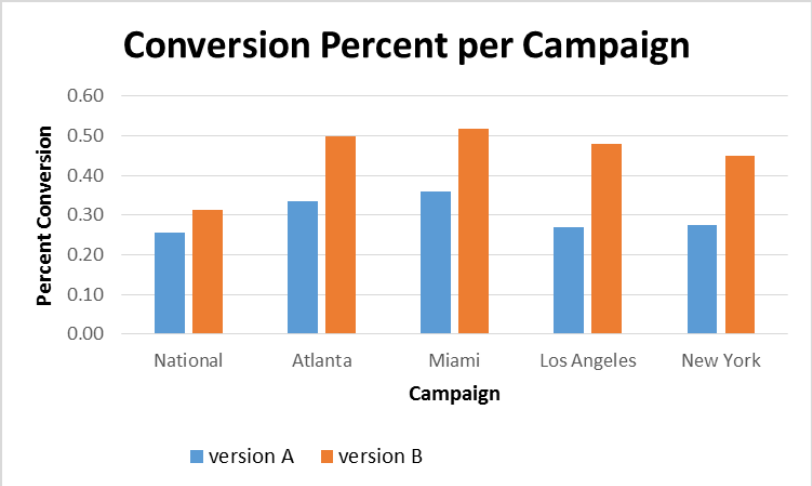


Figure 3. Comparison of "A" and "B" conversion percent for each campaign

Location and time

The results also suggest a possible influence of users' location on their conversion rate. As can be seen from Figure 3, there are differences between the various campaigns. In Miami, for example, people tend to convert more than other places, for both versions. In the National campaign, both conversion rates are minimal. In Los Angeles, the disparity between the conversion of the "A" and "B" versions is the greater of all other markets.

While not significant, the fact that the percentage of conversions differed between locations must be further examined.

The influence of the time users visited the page was also checked. According to the time-stamp of each visit, the day of the week of each visit was computed (Sunday-Saturday). The day of the week may be an interesting parameter to study if leisure time affects the user decision of conversion.

No differences were found between the day of the week and the average conversion of each page, for the sum of all experiments, as can be seen in Figure 4. T-test was performed between the average conversions for the "A" version for the different days in the week ($t=10.805$, $df=34$, $sig=.000$, $p<0.005$), and same for the "B" version ($t=10.341$, $df=34$, $sig=.000$, $p<0.005$). No statistically significant correlations were found. The average conversions for both pages are similar during all week, and the rate between the long page and the short one is similar in each day of the week. No statistical differences were found when checking each campaign.

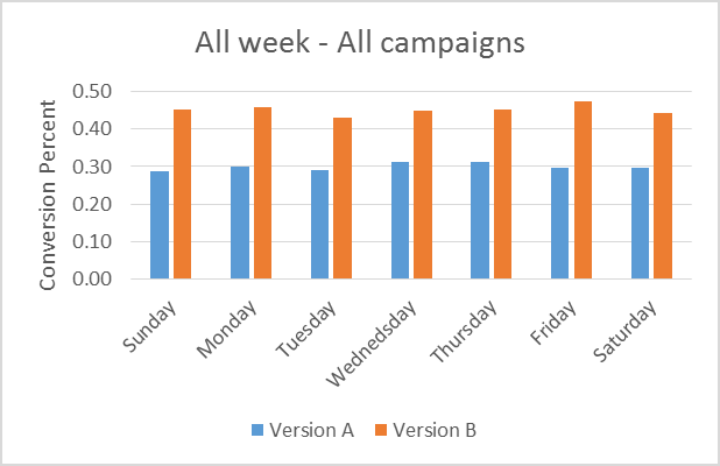


Figure 4. Conversion Percent for all campaigns together, all week long

Next, the hour of the visits was explored. Based the time-stamp the hour of the day was extracted. The time-stamp was originated in New-York time zone. New York, Atlanta, and Miami correspond to the same time zone. To calculate the hour for Los Angeles visits, the time was reduced to 3 hours. Thus, defining the "real" hour. The National campaign was omitted from this examination because the data was collected from all around the USA, with different time zones.

T-tests were performed to compare the "A" and "B" versions conversions for each hour. For all four campaigns together, for most of the hours, statistical differences were found between the campaigns.

Comparing each hour for the "A" version, between all four campaigns, there were no statistical differences in population behavior. The same result was observed for the "B" version.

The conversion rates between A and B versions across all 24 hours was examined. As can be seen in Figure 5 there were differences at the 5:00 and 22:00 times. These times can be associated with periods around waking up and going to bed.

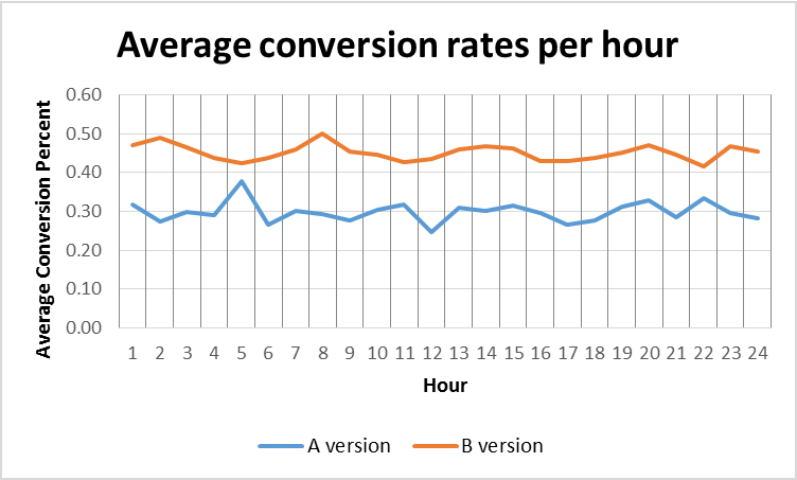


Figure 5. Average conversion rates for all campaigns together, per hour

Discussion

The findings across all the experiments demonstrate a negative correlation between the amount of information provided and users' conversions. The results show a significant advantage to the shorter pages: The short landing pages had higher conversion rates across all locations, days and hours, and consistently outperformed their longer equivalents. Surprisingly, users who had less information were more inclined to provide their personal data.

These results have a few interesting implications:

Information provision impact consumer behavior. First, an intuitive conclusion is that content is a crucial determinant of online consumer behavior. Since the research method allowed to control for intention and other variables, the amount of information provided was isolated as the only factor differentiating between the pages. The differences in the behavioral outcome show that consumer behavior, especially conversions, hinges on the nature of the content being consumed. This supports prior research suggesting that digital content play a significant role in influencing online consumer behavior (Jarvenpaa et al., 2006; Jennings, 2000; Lee & Turban, 2001; Wells et al., 2011).

Less information provision drive desired consumer behavior. The results significantly show that provision of less information elicits better behavioral outcomes (conversions). In all the experiments, the landing pages with less content had significantly greater percentages of users willing to sign-up by providing their e-mail address (the desired outcome(. This finding supports the research stream arguing for less content as a determinant of conversion.

Trust or ease-of-use? The results suggest an interesting insight on the determinants of online consumers behavior. As seen here, users that did not have any information on the service, its value or how their data will be used, still tended to convert more. By contrast, users who were provided with this information were less inclined to convert. This is in contradiction to previously discussed theories emphasizing the importance of trust, quality and perceived value in online consumer behavior.

The findings suggest that mitigating risks and conveying value are not always crucial determinants of consumers' willingness to take action in circumstances where such act makes them vulnerable to the seller.

While previous studies show that more content promotes trust (Gefen, 2000; Lee & Turban, 2001; Luhmann, 2000) and contributes to conversion (Cialdini, 2009; Fogg et al., 2002), this research shows otherwise. It supports prior work that suggests that increasing volume of content alienates users (Kahneman, 1973; Norton et al., 2007; Vishwanath, 2004).

Online decisions are not always pragmatic. The findings suggest that some online decisions, such as providing personal information on commercial web pages, are not always pragmatic. This behavior can even be described as irrational or paradoxical, as conventional wisdom suggests that commercial decisions are made under informed conditions. However, in the described experiments, the *less* users were informed the more they were willing to cooperate. It is, therefore, possible that individuals may make relatively 'uninformed' judgments based on a minimum of information, without engaging in any deep cognitive and conscious reflection.

The impact of location and time. Results also showed some variations in observed behavior (conversion) in relation to users' location and time of visit. While not statistically significant, the fact that the percentage of conversions differed between locations and times indicate that content and information provision are not the only factors influencing behavior.

A possible hypothesis is that users' behavior differed in locations because of demographics (age, gender), economic status or personal preferences. The time of day can also be a factor influencing the rate of conversion. For example, while not significant, it was found that at 5:00 AM, when the people wake up, and at 10:00 PM, at the end of the day, consumers tend to convert in the long version ("A") more than in other time of the day. This may suggest that users have more attention span in the early morning and at night, while during the day they prefer less content. This is a question worth further investigation.

Conclusion

These results provide empirical evidence on the extent to which content by itself determines consumers' behavior. This research also contributes to the ongoing discussion on the type of information necessary to encourage website users and potential customers to take action.

The findings add some controversy to the relationship between the volume of content and consumers' behavior as they partially counter other studies. They also contribute to the scholarly literature on landing pages and online behavior.

The conventional wisdom of the web suggests that more content elicit consumer knowledge and persuasion, which ultimately leads to more desirable behavioral goals. Previous studies suggested that web pages should display more content to generate trust, communicate value and signal quality (C.-W. Chen & Koufaris, 2015; Eisingerich & Kretschmer, 2008; Tversky & Kahneman, 1985); Yet, this study found the opposite, as less content was shown to be a positive determinant of consumer behavior. While not enough to establish a linear relationship, results suggest that "less is more" can go a long way in creating commercial value.

To the best of our knowledge, content volume and behavior on landing pages are rarely studied in isolation. This work falls within the broader vision of determining a method for effective communication on the web, which is of paramount importance in many theoretical and applied domains. Therefore, this research is unique and significant by focusing on the volume of content and landing pages, as the interplay between these factors is still highly debatable and under-explored.

This study makes a few theoretical and practical contributions. At the theoretical level, the findings provide evidence on the importance of informing consumers and the evolving importance of Informing Science. It provides progress in understanding how to maximize the effectiveness of the information provided to the client, which is integral to the definition of the Informing Science field (Cohen, 1999, 2009; Gill & Cohen, 2008). It also points out areas of research that need further exploration and the need for refinement of the Informing Science framework. The empirical evidence suggests that contrary to previous work, not all behavioral and psychological theories are effective online. At a practical level, the results provide empirical support in favor of less content as a determinant of desired consumer behavior. The findings are informative for website designers, content strategists and marketers and have implications for most businesses using the e-commerce or online marketing channels.

Limitations and Further Research

As in every behavioral study, a major limitation of this study is a difficulty to identify clear causation in human behavior. There are various factors that illicit cognitive and emotional responses of end-users; therefore, it is challenging to assess clear relationship due to the number of factors involved and possible competing hypotheses.

Also, the claim that "less is more" is grounded on the assumption of a linear relationship. However, one might suggest that this assumption might not be valid if the form is too short, making strong conclusions difficult.

Another limitation is that the results may not be generalized/applicable to other domains. The contested issue with regards to field experiments is their external validity. Given that field experiments necessarily take place in a specific geographic and political setting, the extent to which findings can be extrapolated to formulate a general theory regarding economic behavior is a concern.

It is important to remember that the findings presented here are limited and preliminary. There is a need to analyze additional data sets, as well as examine the influence of other variations in design elements and user demographics.

Using this research as a starting point, future research can examine the impact of content in other contexts. It is also interesting to explore other behavioral drivers beyond content, such as demographic data. It may be possible to do so in a two-stage design (a quantitative or qualitative study and then an experiment).

Finally, there is still no clear answer regarding which content features have the most influence on users, or what is the ideal volume of content. It will be valuable to explore other predictors, or identify specific content features that are more influential than others. Future work could also explore how to derive reliable and reusable metrics and methodologies that will inform the larger task of evaluating, developing and creating engaging content.

This study set the foundation for more exploration on how lack of knowledge paradoxically leads to higher conversions and overall user compliance. This research can argue in favor of the persuasive power of ambiguity and simplicity. The framework developed in this paper can serve as the basis for further studies on conversion and persuasion in online settings and other domains.

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