



ARTICLE

Online customer
relations tools

The effectiveness of online customer relations tools

Comparing the perspectives of organizations and customers

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Abstract

Purpose – The purpose of this paper is to examine the differences in how customers and organizations perceive online customer relations (OCR) tools – the online communication tools at the interface between organizations and customers – and how the different perceptions affect the implementation, use, and effectiveness of these tools.

Design/methodology/approach – The research model is tested empirically in three separate studies that explore the organizations' perspective of OCR tools, the customers' perspective of OCR tools, and the actual implementation and use of these tools.

Findings – The findings in this paper vary across the six OCR tools examined. The findings for the “contact form” suggest that the misalignment in the perspectives of organizations and customers can drive less effective online relationships. Conversely, the findings for the “order-tracking system” illustrate the potential of the alternative situation, when the attitudes of organizations and customers are aligned.

Practical implications – This paper identifies two potential barriers to effective OCRs: misalignment between the attitudes of organizations and customers, and inconsistency between attitude and behavior on the part of organizations. The findings suggest ways for organizations to improve the effectiveness of their online strategy.

Originality/value – The research model emphasizes the implementation and use of tools that support relationships rather than commercial transactions, and assumes the availability of a portfolio of OCR tools rather than concentrating on an individual tool. This study contributes by developing and testing a research model that includes the distinct perceptions and behaviors of both organizations and customers.

Keywords Customer relations, Customer satisfaction, Online operations, Worldwide web, Electronic commerce

Paper type Research paper



Introduction

The importance of the web as a channel for business organizations to distribute information, services, and products has increased considerably in recent years. Whether organizations use this electronic channel as their only medium of interaction

with their suppliers, partners, and customers or use it to complement their physical channels, they are constantly examining ways to extend their web presence. Often, these efforts are targeted at managing a more effective relationship between organizations and their customers, by harnessing the ubiquity, global reach, and interactivity of the web. The increasing motivation of organizations to take part in web-based social networks is an indicator of the importance they attribute to fostering online customer relationships.

The organization-customer interaction is typically enhanced through a web site that provides a suite of online tools, which are positioned to offer more and better services to web site users. Web site providers benefit from more exposure to their potential customer base, and web site users benefit from more services and information. A “configurator”, for instance, is an online tool that allows customers to customize products and services to fit their needs and requirements. This tool gives organizations a front-end, mass customization capability, while providing an added-value service for customers. Thus, organizations and customers take part in an online relationship, which is considered effective when the interests of both parties are satisfied. However, as with other types of relationships, the interests of the parties involved may conflict and the relationship may become dysfunctional. While the parties may have similar views of what makes a successful relationship, their conflicting interests and preferences can limit the chances of success.

Our study employs this line of reasoning to examine the effectiveness of online customer relations (OCR) tools by focusing on how organizations and customers perceive and employ these tools. The study proposes that organizations implement OCR tools to strengthen their online relationships with customers, and that customers use OCR tools to strengthen their online relationships with organizations. In particular, we are concerned that organizations and customers may differ in their perceptions of the utility of OCR tools because of their conflicting objectives and information needs. The organization tends to implement those OCR tools that it perceives to have higher utility to itself while customers tend to use those tools they perceive to have higher utility to themselves. If both organizations and customers act upon their own preferences, then customers may be faced with tools they do not want to use, while the tools they would like to use will not be available to them. This state will lead to poor organization-customer relations.

This study is therefore motivated by the following research questions:

RQ1. Do organizations and customers differ in their preferences for OCR tools?

RQ2. What is the relationship between OCR tool preferences, OCR tool implementation and use, and web site effectiveness?

The orientation of the study is descriptive and exploratory. First, it does not aim at presenting a “recipe” for effective OCR management through the web, but rather attempts to portray the current state of affairs, as a platform for organizations to improve their strategy for establishing online relationships with their customers. Second, given the lack of research in this area, this study emphasizes the collection and post-hoc analysis of empirical data more than elaborate formulation of research hypotheses. The study develops a general research model and focuses on examining the main effects hypothesized (see Figure 1).

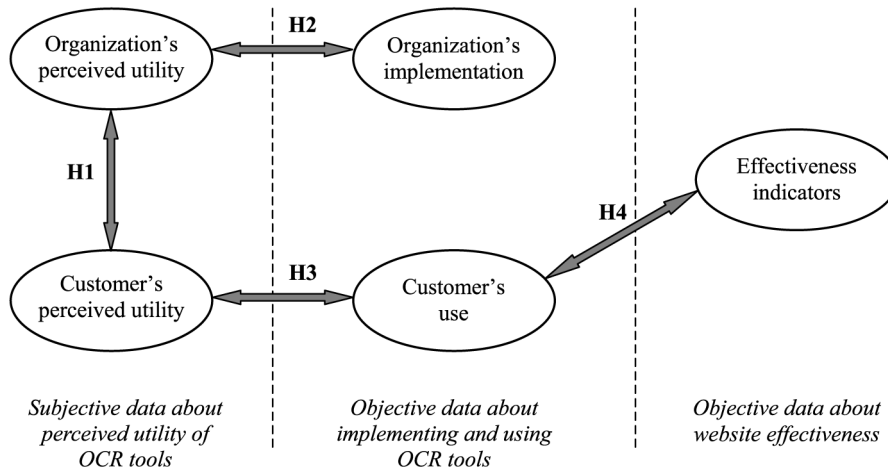


Figure 1. Research model

Theoretical background

Online tools facilitate the communication between an organization and its customers, and can support the organization's online marketing strategy (Kassaye, 1999). Previous research has acknowledged the importance of managing customer relations as a key success factor in electronic commerce (El Sawy and Bowles, 1997; Feinberg and Kadam, 2002; Schoder and Madeja, 2004). In recent years, there has been a growing stream of research exploring the success of OCRs. However, the existing literature is limited in its ability to offer a comprehensive and systematic view of what makes such an online relationship successful. Research in this area is still in its infancy, and so far has largely been either descriptive or theoretical/speculative (Eid and Trueman, 2004). While researchers have stressed the need for tools that facilitate online relationships, as well as effective strategies to implement and manage them (Hoffman and Novak, 2000; Kassaye, 1999), empirical studies have focused on particular tools (e.g. Bauer and Colgan, 2001; Marcolin *et al.*, 2005; Pereira, 2001). Most organizational web sites are not designed to perform any sales, but rather to present the organization's goals and tighten its relations with customers (Ranchhod, 2004). Therefore, it is surprising to find that research on OCRs has focused on transactional activities.

Recent research has explored three sets of factors as possible determinants of web site effectiveness: design characteristics (e.g. Montoya-Weiss *et al.*, 2003; Palmer, 2002; Song and Zahedi, 2005), trust and privacy issues (e.g. Floh and Treiblmaier, 2006; Gefen *et al.*, 2003; Salam *et al.*, 2005), and personalization capabilities (Adomavicius and Tuzhilin, 2005; Tam and Ho, 2005). The present study explores how web site effectiveness in promoting relationships is influenced by the way OCR tools are perceived, and consequently implemented and used. Such an investigation should rest on an understanding of customers' and organizations' perceptions but also on an understanding of human-computer interaction (Heldal *et al.*, 2004).

Our research model builds on the previous studies but emphasizes the implementation and use of tools that support relationships rather than commercial transactions. Moreover, it attempts to model the behavior of organizations and

customers, assuming the availability of a portfolio of OCR tools rather than concentrating on an individual tool. As our interest lies in the possible conflict between organizations and customers, our model includes the distinct perceptions and behaviors of both organizations and customers. The model depicted in Figure 1 is developed gradually below.

We broadly define an OCR as a connection established between an organization and a customer when a customer contacts an organization through its web site. OCR tools are designed to attain web site effectiveness by facilitating and sustaining such relationships. Kobsa *et al.* (2001) argue that web-based customer relations software offers a number of key advantages at reasonable cost, compared to traditional channels. Particularly, it facilitates the collection of customer information, enables a global around-the-clock presence, and offers the opportunity for dynamic creation of content and presentation formats for narrowly targeted or personalized information delivery.

We suggest that organizations and customers have different needs, objectives, and expectations from an OCR tool and that a specific tool is usually designed to satisfy primarily either the organization's needs or the customer's needs but rarely both. Organizations, on the one hand, typically want their online customers to provide as much information about themselves as possible, in order to extend their customer database and maximize the potential benefits of their web site. Customers, on the other hand, want to extract as much information as possible from the organization and obtain informational services. These conflicting information needs may result in different perceptions of an OCR tool's utility for organizations and customers.

To get customers to interact more intensively with their web sites, and subsequently increase web site effectiveness, organizations use several OCR tools, such as a newsletter, a contact form, an order-tracking system, or a configurator. However, these tools differ significantly in their ability to satisfy organizational versus customer information needs. A contact form, for example, may be favored by organizations that prioritize the collection of customer information. Customers, by contrast, may perceive filling out online forms as a waste of their time, not to mention the potential intrusion into their privacy, and prefer tools that directly address their immediate information needs, such as an order-tracking system. The contradicting agendas of organizations and customers, each wanting to draw more information from the other, may lead them to perceive different OCR tools differently.

Perceived utility of computerized (online) tools is influenced not only by their information content but also by the quality of the human-computer interaction, for example, ease of use and interactivity (Davis *et al.*, 1989; Te'eni *et al.*, 2007). While there is no reason to assume a-priori meaningful differences between organizations and customers on most aspects of human-computer interaction, one aspect stands out clearly, namely, who has control over the use of the tool. Customers will rate the quality of the interface higher when they sense that they are in control of the system (e.g. Porteous *et al.*, 1993). Thus, the perceived utility of OCR tools will, in addition to the primary determinant of information content to the organization or customer, also be affected by the customer's sense of control over the system. The organization typically manages the OCR tools and specifies the options but in some cases the customers can adapt the tool to their own needs. The extent to which the user can determine such parameters as content, timing and format will determine the user's sense of control. And the users' perceptions of control will in turn affect their perceived utility.

H1. Organizations and customers perceive different utilities of OCR tools.

H1a. Organizations value tools that gather customer information while customers value tools that extract information from the organization.

H1b. Customers value tools that enable at least partial user control.

However, organizations' preferences for OCR tools are important only if they act upon their preferences. In practice, we expect organizations to implement their preferred OCR tools more extensively. Likewise, customers' preferences for OCR tools are important only if they act upon them and use their preferred OCR tools more extensively. It may be that the subjective preferences reported by managers and customers in attitude surveys do not reflect their actual online strategy and online behavior. Managers may display attitudes in favor of the implementation of certain OCR tools, because of their desire to appear technologically savvy, though they may refrain from implementing such tools because of financial considerations. Customers may display attitudes against the use of OCR tools oriented toward collecting customer information, though they may frequently use them to establish relationships with organizations they value. This study, nevertheless, hypothesizes that organizations and customers act upon their preferences for OCR tools.

On the organizational side, the cost of implementing an OCR tool is small in relation to other information systems. Therefore, it is expected that managers' attitudes toward OCR tools, rather than financial or social considerations, will guide decisions to implement them. The consistency between attitudes and behavior should also exist on the customer side. The theory of reasoned action (TRA) describes an intention model from social psychology (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975) that has been extensively applied to explore the relationship between attitudes toward information technology and its actual use (e.g. Davis *et al.*, 1989; Karahanna *et al.*, 1999). TRA argues that the attitude toward the behavior and the subjective norm (the attitudes of people in the individual's social environment toward the behavior) influence the behavioral intention, which in turn influences the behavior itself. In the context of customers' use of OCR tools, the importance of the subjective norm should be relatively low. When customers interact with OCR tools such as newsletters and contact forms, they do not usually consider the attitudes of people in their social environment toward them. Therefore, the customers' own attitudes ought to have more weight in shaping their behavioral intentions and their actual behavior. This reasoning suggests that the attitude-behavior correlation is positive for the implementation and use of OCR tools.

H2. Organizations tend to implement OCR tools that they perceive to be of high utility to them.

H3. Customers tend to use OCR tools that they perceive to be of high utility to them.

Organizations implement OCR tools to strengthen their online relationships with customers, assuming that the use of OCR tools is positively associated with web site effectiveness. In web sites that are not designed to facilitate electronic transactions of selling products or services, web site effectiveness cannot be estimated as a function of transaction volume. However, the ability of web servers to automatically collect a wide

range of data that track online customer behavior allows organizations to use various web site effectiveness indicators. The number of visits by new or returning customers, the average visit duration, and the number of pages viewed in a visit are common examples of indicators used by organizations to evaluate web site effectiveness. All of these indicators reflect a successful OCR – the customer visits the web site, spends considerable time examining its content, views numerous pages, registers to get information, performs a transaction, and returns to the same web site frequently. We therefore expect to find a positive correlation between the use of OCR tools and web site effectiveness.

H4. The use of OCR tools is positively associated with web site effectiveness.

Research methodology

To test our hypotheses empirically, we conducted three separate studies that explored the organizations' perspective of OCR tools (Study I), the customers' perspective of OCR tools (Study II), and the actual implementation and use of OCR tools (Study III). The collected data encompassed the attitudes of web site managers, attitudes of web site customers, and log file data from actual web usage. The use of three independent sources enables a more valid assessment of the research hypotheses. Prior to describing the three studies conducted, we present the OCR tools explored in these studies.

OCR tools

The literature review and numerous interviews conducted with practitioners involved in the management of web sites highlighted six OCR tools commonly used on web sites. These OCR tools are described in Table I. Although we initially presented a larger number of tools to our interviewees, the final list was shorter because certain tools were considered as having unique characteristics that might interfere with the interpretation of the results. For example, an online chat with an organizational representative was included in the initial list of OCR tools. However, the high cost involved in maintaining this tool, because of the human resources involved, differentiate it from the rest of the tools, which do not require direct human labor.

The three authors independently evaluated each tool for the relevance of its information content to both the organization and the customer and for the user control it afforded. As discussed above, we believe these are the two primary determinants of the tool's perceived utility to the organization and to the customer. The independent evaluations of the authors were consistent, and their integration resulted in the values for information and control presented in Table I.

Study I. The organizations' perspective

Study I was designed to assess the organizations' perspective of the OCR tools listed in Table I. To this end, we targeted managers who were seriously involved in the design and maintenance of their organizational web sites and whose organizations complied with the following criteria, based on Eid and Trueman (2004):

- the organization's OCR activities were important to the accomplishment of organizational goals;
- the organization had a web site to support OCR activities with at least two OCR tools;

OCR tool	Description	Information		Customer control
		Org.	Customer	
T1	Configurator	High	Medium	High
T2	Newsletter	Low	High	Low
T3	New information notification	Low	High	Medium
T4	Contact form	High	Low	Low
T5	Added-value information	Low	High	Medium
T6	Order-tracking system	Medium	High	Medium

Table I.
Description of OCR tools

- the web site had, on average, more than a thousand unique visitors per month; and
- the organization was involved in international activities.

The questionnaire instrument for managers included three parts. The first part presented the list of OCR tools in Table I, and asked respondents to evaluate the perceived utility of each OCR tool on a seven-point scale, anchored at the ends by “very high” (7) and “very low” (1). The second part asked respondents to list the OCR tools implemented on their organizational web site. The third part collected background information about the respondent and the organization.

During a major Internet Society Conference in Israel, we randomly surveyed 158 web site managers, most of whom worked in marketing (others were mainly from the knowledge management or information systems functions). In total, 66 managers (41.8 per cent) came from organizations that complied with our organizational criteria. Of those, 39 (59.1 per cent) came from service organizations, 25 (37.9 per cent) came from manufacturing organizations, and two (3.0 per cent) came from organizations that were unidentified. The average number of employees in those organizations was 124.09: nine (13.6 per cent) had below 20 employees, 20 (30.3 per cent) had between 20 and 49 employees, 15 (22.7 per cent) had between 50 and 99 employees, 20 (30.3 per cent) had above 100 employees, and two (3.0 per cent) did not provide this information.

Study II. The customers' perspective

Study II was designed to assess the customers' perspective of the same OCR tools. Accordingly, we targeted users who frequently interacted with organizations via the web. Customers were asked about the extent to which they use each of the OCR tools in Table I to interact with organizations. The evaluation of the same OCR tools with the same evaluation scale – a seven-point scale anchored at the ends by “very high” (7) and “very low” (1) – was designed to allow a direct comparison of the organizations' and the customers' perspectives. We collected data from web site customers by randomly sampling students at Tel Aviv University. Out of the 100 customers surveyed, 74 fully completed the questionnaire. Customers were surveyed face-to-face and not via the web, in order not to create modality differences between Study I and Study II.

Study III. Effectiveness measured by customers' behavior

Study III was designed to collect data about the actual implementation, use, and effectiveness of OCR tools. Data tracking the behavior of users is automatically collected by log files on web servers. To test our hypotheses, we were interested in three types of data. First, we required data about the implementation of OCR tools – the extent to which each OCR tool is implemented. Second, we needed data about the use of OCR tools – the number of times each OCR tool was used relative to the number of web site visits. Third, we required data about web site effectiveness indicators. Based on the literature and the initial interviews conducted with practitioners, three web site effectiveness indicators, commonly used by organizations to track the behavior of their online customers, were selected. These web site effectiveness indicators are described in Table II.

For data collection, we targeted web sites of international companies, most of which were headquartered in North America and Europe. Altogether, we reviewed the log files of 230 web sites for which we had access to the statistical system. We did not

include web sites that had less than 200 unique visitors per month, on average in the previous 12 months, or web sites that had less than two OCR tools from the list in Table I. Furthermore, we only included web sites for which we had complete data for a whole year. These rigorous criteria led to the inclusion of only 83 web sites, which still represented a satisfactory sample. Of the final 83 web sites, 52 (62.7 per cent) were managed by service organizations and 31 (37.3 per cent) by manufacturing organizations. On average, the web sites used 2.76 (standard deviation of 0.91) OCR tools out of the six in Table I, and had 5,052 unique visitors per month, 97.86 per cent of whom visited the web site more than once during the month. The average duration of customers' visits was 1.65 minutes. Study III was conducted independently of Study I, and there was no intentional relationship between the managers in Study I and the web sites in Study III.

Results

The data collected in the three studies reflect the attitudes of web site managers, the attitudes of web site customers, and the behavior of organizations and web site customers. Table III presents the perceived utility results for web site managers (the organizations' perspective) and web site customers, and the results of *t*-tests that compare both perspectives. The managers and customers who participated in this study represent two independent samples. The key assumption that should be tested prior to using independent-samples *t*-tests is the assumption of homogeneity of variance – the assumption that the two samples have approximately equal variance on the dependent variable. The Levene test is typically used to test this assumption. The results of the Levene test show that the samples of managers and customers have approximately equal variance for all six OCR tools: T1 (Levene statistic = 0.406,

	Web site effectiveness indicators	Description
I1	Repeat visits	Percentage of repeat visits in a month (annual average)
I2	Visit growth	Growth in number of visits (three-month average of unique visits divided by the annual average)
I3	Visit duration	Average duration of visits in minutes (annual average)

Table II.
Description of web site effectiveness indicators

OCR tool	Org. perceived utility <i>n</i> = 66	Customers' perceived utility <i>n</i> = 74	<i>t</i>	<i>p</i>	
T1	Configurator	4.98	5.34	-1.199	0.233
T2	Newsletter	4.97	4.99	-0.055	0.957
T3	New information notification	5.14	4.96	0.612	0.542
T4	Contact form	5.79	3.76	6.469	0.000
T5	Added-value information	4.98	4.97	0.035	0.972
T6	Order-tracking system	5.42	5.59	-0.578	0.564

Table III.
A comparison of the organizations' and the customers' perspectives

Notes: Org. perceived utility – the mean of web site managers' evaluations; Customers' perceived utility – the mean of web site customers' evaluations; *t* and *p*-values are the results of *t*-test comparisons of those means

$p = 0.525$); T2 (Levene statistic = 0.045, $p = 0.833$); T3 (Levene statistic = 0.020, $p = 0.888$); T4 (Levene statistic = 2.858, $p = 0.093$); T5 (Levene statistic = 1.129, $p = 0.290$); T6 (Levene statistic = 0.538, $p = 0.465$).

Table III shows that managers value the contact form (5.79) and the order-tracking system (5.42) more than they value the other OCR tools. Customers provide higher evaluations for the order-tracking system (5.59) and the configurator (5.34) and lower evaluations for the contact form (3.76). The t -tests indicate that, contrary to *H1*, managers and customers relate similarly to most OCR tools. This is not the case, however, for the contact form, which customers evaluate significantly lower ($t = 6.469, p < 0.001$) than managers.

The use of multiple comparison procedures raises the concern that some differences may be significant by chance alone. A common way to deal with this concern is to use a more stringent test of significance by adjusting the significance level for acceptance downward. The Bonferroni adjustment deflates the probability of α (type I error) applied to each comparison, so the overall error rate remains at 0.05. The Bonferroni adjusted significance level is equal to $1 - (1 - \alpha)^{1/n}$ (often approximated by α/n), where n is the number of repeated comparisons. Because we conduct six comparisons, the Bonferroni adjusted significance level for this study is 0.0085. Even after applying this more stringent test of significance, the difference between managers and customers for the contact form remains significant.

To compare the assessments of managers and customers across all the OCR tools, we performed a multivariate test (multivariate general linear model) with respondent type (managers versus customers) as the factor and all OCR tool evaluations as the dependent variables. The results show that the differences for the contact form are so significant that they generate a significant multivariate effect of respondent type on the perceived utility of OCR tools ($F = 7.572, p < 0.001$).

H1a and *H1b* relate to the two primary determinants of a tool's perceived utility to the organization and to the customer. Given the descriptive and exploratory orientation of this study, we do not apply statistical methods to test these two hypotheses. Instead, we seek to identify agreement between the expected and observed results. *H1a*, which relates to the dimension of information content, is supported only for the contact form and the order-tracking system. The contact form addresses the information needs of organizations considerably more than it addresses those of customers. This difference is reflected in the higher utility perceptions by managers (5.79) compared to customers (3.76). Conversely, the order-tracking system addresses the information needs of both organizations and customers. Therefore, its utility is valued by both managers (5.42) and customers (5.59). *H1b*, which relates to the dimension of customer control, is supported only for the contact form, the order-tracking system, and the configurator. Customer control is low for the contact form and medium-high for the order-tracking system and the configurator. Customers' utility perceptions, presented in Table III, reflect these differences in customer control.

Table IV presents the full results for web site managers – the descriptive statistics, the percentage of organizations that implement each OCR tool, and the t -tests that compare the assessments from organizations that implement and do not implement each tool. The results show that managers give the highest evaluations to the contact form (5.79), which is far more frequently implemented in organizational web sites (93.9 per cent) than the other OCR tools (between 24.2 and 43.9 per cent). The t -test results

OCR tool	Perceived utility (Mean)	Perceived utility (STD)	Per cent impl.	Impl.	Not impl.	<i>t</i>	<i>p</i>
T1 Configurator	4.98	1.78	24.2	6.44	4.52	4.217	0.000
T2 Newsletter	4.97	1.82	43.9	6.41	3.84	7.993	0.000
T3 New information notification	5.14	1.68	31.8	5.95	4.76	2.835	0.006
T4 Contact form	5.79	1.67	93.9	5.84	5.00	0.974	0.334
T5 Added-value information	4.98	2.12	37.9	6.52	4.05	5.563	0.000
T6 Order-tracking system	5.42	1.80	30.3	6.00	5.17	1.742	0.086

Notes: Perceived utility (Mean) – the mean of web site managers’ evaluations; Perceived utility (STD) – the standard deviation of web site managers’ evaluations; Per cent impl. – the percentage of respondents who indicated that their organizational web site implemented the OCR tool; Impl. – the mean for respondents who indicated implementing the OCR tool; Not impl. – the mean for respondents who indicated not implementing the OCR tool; *t* and *p*-values are the results of *t*-test comparisons of the means for tools implemented and not implemented

Table IV.
The organizations’ perspective

provide evidence to support *H2*. The results clearly show the attitude-behavior consistency in the organizations’ perspective, in the sense that managers evaluate the OCR tools they implement higher than the OCR tools they do not. While this is true for all six OCR tools investigated, the differences are statistically significant only for the configurator, newsletter, new information notification, and added-value information. It is important to note, here, that because our data are correlational, we cannot be conclusive about the direction of causality. It may also be that the direction of causality is opposite and that the positive attitudes of managers toward OCR tools are formed in the post-implementation phase. In other words, managers may come to value the OCR tools they implement. The cognitive dissonance theory would support such a counter-argument.

Tables V and VI present the results for organizations’ and customers’ behavior, based on the data collected from log files. Table V shows the descriptive statistics for organizations’ implementation and customers’ use of OCR tools. The first finding in Table V, about the extent to which the different OCR tools are being implemented by organizations, strengthens the reliability and validity of the subjective data collected in Study I from web site managers. In terms of OCR tool implementation in organizational web sites, the subjective data reported in Study I and the objective data collected in

OCR tool	<i>n</i>	(% impl.)	Mean	STD	Min.	Max.
T1 Configurator	31	(37.3)	0.097	0.084	0.004	0.357
T2 Newsletter	26	(31.3)	0.051	0.053	0.006	0.172
T3 New information notification	21	(25.3)	0.055	0.055	0.003	0.226
T4 Contact form	77	(92.8)	0.061	0.065	0.001	0.323
T5 Added-value information	48	(57.8)	0.135	0.121	0.002	0.671
T6 Order-tracking system	24	(28.9)	0.106	0.203	0.004	1.005

Notes: *n* (% Impl.) – the number of web sites (and percentage) that implement the OCR tool; the values for Mean, STD, Min, and Max represent the ratio between the number of times the OCR tool was used and the number of web site visitors

Table V.
Organizations’ and customers’ behavior – descriptives

Table VI.
Correlations for OCR tool
implementation, use, and
effectiveness

Variable	T1	T2	T3	T4	T5	T6	NU	I1	I2	I3	EF
T1 Configurator											
T2 Newsletter	-0.09										
T3 New information notification	0.55	-0.27									
T4 Contact form	-0.19	0.09	-0.19								
T5 Added-value information	0.12	0.55*	-0.19	0.36*							
T6 Order-tracking system	-0.19	0.02	0.56	-0.02	0.18						
NU Number of OCR tools implemented	0.07	0.60***	0.18	-0.27*	0.51***	0.30					
I1 Repeat visits	0.16	0.34	0.11	-0.15	-0.03	0.20	0.28*				
I2 Visit growth	-0.104	0.17	0.47*	0.07	0.11	0.01	0.13	0.27*			
I3 Visit duration	0.11	0.50**	0.27	-0.31**	0.12	0.77***	0.40***	0.26**	0.01		
EF Web site effectiveness	0.08	0.52***	0.45*	-0.15	0.08	0.63***	0.39***	0.83***	0.59***	0.59***	

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Number of OCR tools implemented – the number of OCR tools implemented out of the six OCR tools; web site effectiveness – a factor of repeat visits, visit growth, and visit duration (described in Table II)

Study III are very consistent. The contact form is indeed implemented more extensively (92.8 per cent) than the other OCR tools (between 25.3 and 57.8 per cent). Concerning the actual use of OCR tools by web site customers, the data show that the proportion of OCR tool use (relative to the number of web site visitors) is between 0.051 and 0.106. While the relatively high variations in the use of OCR tools make it difficult to interpret the results, it seems that the added-value information, the order-tracking system, and the configurator are more extensively used by customers than the newsletter, the new information notification, and the contact form. Therefore, we conclude that our data provide partial support for *H3*. Customers evaluate the contact form relatively low and the order-tracking system and configurator relatively high, and they indeed use the contact form less than they use the order-tracking system and the configurator. This attitude-behavior consistency is not found, however, for the other three OCR tools (the newsletter, new information notification, and added-value information).

Table VI shows the correlations for the actual implementation, use, and effectiveness of the OCR tools. The table includes two variables that have not been presented thus far. The first variable, number of OCR tools implemented, measures the number of OCR tools implemented in each web site out of the six OCR tools in Table I. The data show that only one web site (1.2 per cent) had all six OCR tools, three web sites (3.6 per cent) had five tools, 11 web sites (13.3 per cent) had four tools, 28 web sites (33.7 per cent) had three tools, and 40 web sites (48.2 per cent) had two tools (web sites with less than two OCR tools were dropped). The second variable, web site effectiveness, is actually a factor of the three web site effectiveness indicators – repeat visits, visit growth, and visit duration. A principal components factor analysis extracted a single component (eigenvalue above 1) for the three effectiveness indicators, allowing the calculation of a weighted effectiveness score for each web site. The weights are represented in Table VI as the correlations between the effectiveness indicators and the effectiveness factor.

As can be seen in Table VI, the number of OCR tools implemented is significantly correlated with the web site effectiveness score ($r = 0.39, p < 0.001$). This means that web site effectiveness is related to the number of OCR tools a web site implements. As for the correlations between OCR tool use and web site effectiveness, the order-tracking system ($r = 0.63, p < 0.001$), newsletter ($r = 0.52, p < 0.01$), and new information notification ($r = 0.45, p < 0.05$) are significantly correlated with the web site effectiveness score. We therefore conclude that *H4* is supported only for these three OCR tools. Among the three effectiveness indicators, the one that has the more significant relationships with OCR tool use is visit duration. Interestingly, we found a significant negative correlation between this effectiveness indicator and the use of the contact form ($r = -0.31, p < 0.01$).

Discussion

This study is an exploratory investigation of the attitude and behavior of organizations and customers toward OCR tools. It develops research hypotheses that predict inconsistencies between the organization's and customer's perceived utility of OCR tools (*H1*), based on the dimensions of information content and customer control (*H1a* and *H1b*). It also develops hypotheses that predict positive relationships between attitude, behavior, and effectiveness (*H2*, *H3*, and *H4*). The hypotheses are empirically

tested observing six OCR tools which are representative of the tools available to organizations for strengthening their relationships with customers. Observing six different OCR tools rather than one increases the difficulty involved in concluding whether or not the research hypotheses are supported. This is mainly because of the variation of effects across the different OCR tools. Table VII summarizes the results of hypothesis testing and demonstrates how the effects vary across the six tools. The table shows that the hypotheses are generally supported for the contact form and the order-tracking system, and partly supported for the other four OCR tools. While *H2* is supported for all six OCR tools, the other hypotheses are supported only for specific tools. This section tries to “connect the dots” by highlighting the key findings and discussing their practical and theoretical implications. We then discuss the limitations of this study and offer avenues for future research.

The research model in Figure 1 suggests that behavior is consistent with attitude for organizations and for customers. Furthermore, web site effectiveness is affected by customers’ use of the OCR tools. It is therefore reasonable to expect that customers’ attitudes will be positively associated with the effectiveness of online relationships. However, the same cannot be argued for organizations’ attitudes, because they may be different from customers’ attitudes and may thus give rise to less effective organizational online behavior. Among the six OCR tools explored in this study, the data for the contact form best support the research model. The findings show that the contact form is perceived as the most valuable OCR tool by managers and as the least valuable tool by customers. This difference in the contact form’s perceived utility is attributed to its information content asymmetry and to the low customer control it provides. Consistent with organizations’ attitudes, the contact form is by far the OCR tool they implement the most. Consistent with customers’ attitudes, the contact form is in the group of the less used OCR tools. The findings show that use of the contact form is uncorrelated with web site effectiveness. It even correlates negatively with the duration of web site visits. The integration of findings for the contact form suggests that the misalignment in the perspectives of organizations and customers can drive less effective online relationships.

In our view, the contact form is an excellent example of contradicting information needs. It is an OCR tool that serves organizational needs for customer information and contact more than it serves the specific and immediate information needs of customers. Because the contact form is implemented by the great majority of organizations, the practical implications of our findings are significant. The findings suggest that

	OCR tool	Information		Customer control	Hypothesis					
		Org.	Customer		H1	H1a	H1b	H2	H3	H4
T1	Configurator	High	Medium	High			+	+	+	
T2	Newsletter	Low	High	Low				+		+
T3	New information notification	Low	High	Medium				+		+
T4	Contact form	High	Low	Low	+	+	+	+	+	
T5	Added-value information	Low	High	Medium				+		
T6	Order-tracking system	Medium	High	Medium		+	+	+	+	+

Table VII.
Summary of hypothesis testing results

organizations will be able to improve the effectiveness of their online strategy by more seriously considering the needs of customers and the OCR tools that best address those needs. In particular, organizations will have to come up with creative ways of satisfying their own need for contact information that also adopt a user-centered approach. For instance, they can provide input mechanisms that are easy to use and controllable such as letting the user choose the means of input (e.g. voice input) or they can use readily available information (a virtual business card such as contact information in Outlook).

The findings for the order-tracking system illustrate the potential of the alternative situation, when the attitudes of organizations and customers are aligned. Both organizations and customers value the order-tracking system highly. We suggest that this is the result of the tool's information content symmetry and of the customer control it provides. The order-tracking system is in the group of the OCR tools used more often and it has the strongest correlation with web site effectiveness. The only puzzle is the finding that organizations do not implement it more than other tools. Hence, this study identifies two potential barriers to effective OCRs: first, misalignment between the attitudes of organizations and customers (as is the case for the contact form), and second, inconsistency between attitude and behavior on the part of organizations (as is the case for the order-tracking system). If the latter barrier is the product of conservativeness more than of resource constraints or organizational relevance, then again organizations are in a position to improve web site effectiveness. The findings of this study encourage the implementation of OCR tools for which the preferences of organizations and customers are aligned.

Another interesting finding is the strong correlation between the number of OCR tools implemented and web site effectiveness. This finding supports an OCR strategy of "more is better" when it comes to the implementation of OCR tools. In the methodology section, we noted that numerous OCR tools were dropped from the list in Table I at the initial interviewing stage, because they were considered to have unique characteristics. This does not mean that the six OCR tools explored in this study are homogenous in their characteristics – each tool serves different needs, based on a different process, using different resources. This heterogeneity is probably the main reason for the variance in effects across the different OCR tools. It is, nevertheless, probably also the main reason for the appeal of the "more is better" OCR strategy, because increasing the number of OCR tools implemented increases the chances that the customer will find an OCR tool that meets his or her needs.

The main theoretical implication of this study is that further investigation is warranted into the mechanisms that underlie successful OCRs. Such investigations should take into account the role OCR tools play in facilitating online relationships, the alignment between organizations' and customers' perspectives, and the dynamics between attitude, behavior, and effectiveness. The present study demonstrates the importance of these three elements by showing that different mechanisms underlie the ways in which organizations implement their OCR tools and the ways the customers use these tools, and that both are critical for the success of online relationships.

Limitations and future research directions

The present study has limitations due to its exploratory nature. The main conceptual limitation comes from the broad definitions of the OCRs and OCR tools employed in this study. An OCR is defined as a connection established between an organization and

a customer when a customer contacts an organization through its web site, and an OCR tool is defined as an online tool designed to facilitate and sustain such relationships. We acknowledge that a higher level of rigor may warrant more elaborate definitions that consider additional characteristics of the organization-customer interaction, such as its duration and intensity, the initiator of the contact, and whether or not a transaction is involved. We also acknowledge that a typology of OCR tools is needed to better understand the existing tools and the differences among them. Nevertheless, given the lack of literature in this area and the growing implementation of OCR tools, the exploratory orientation of this study and the broad definitions employed have allowed us to more extensively tap the way OCR tools contribute to OCRs. They have also allowed us to directly compare the perspectives of organizations and customers and directly relate behavior to attitudes. Future research should take a more focused approach to extend the conceptualizations of this study. Definitions of OCRs and OCR tools that are more elaborate would serve this purpose well.

The main methodological concern is the representativeness of the data collected. We do not claim that the samples of web site managers in Study I, web site customers in Study II, and web site log files in Study III represent the respective populations. The findings of this study should therefore be interpreted with caution. However, the consistencies in the data collected across the three studies, despite the independence of the sources, provide evidence to support the validity of our conclusions. One such example is the similarity in the distribution of OCR tools reported by managers in Study I and found in log files in Study III.

Another methodological concern arises from not using the same sample of web sites across the three studies. A key assumption underlying our approach is that the web site context in which an OCR tool is implemented has a minor effect on the OCR tool preferences of organizations and customers. In other words, we assume that the interaction effect of OCR tools and web site characteristics on OCR tool preferences is not significant. We acknowledge that this simplifying assumption should be tested in future research, preferably one adopting a contingency perspective. Nonetheless, on the basis of this assumption, our research design uses the OCR tool, not the web site that utilizes it, as the common frame of reference and as the unit of analysis, and plays down the importance of using the same sample of web sites across all three studies.

Finally, while it may be argued that the variance in effects across the different OCR tools weakens the results of this study, because the research hypotheses are only partially supported, we perceive it as a strength and an opportunity for future research. As suggested earlier in this section, additional variables are needed to better classify the existing OCR tools and understand the implications of implementing and using them. For instance, the data collected in this study suggest that the six OCR tools should be classified into two groups – the newsletter, new information notification, and contact form in one group and the configurator, added-value information, and order-tracking system in the other group. The key difference between the groups is the party in control of maintaining the relationship. While the former group includes OCR tools in which the organization is responsible for keeping in touch with the customer, the latter group includes tools in which the customer does not relinquish this responsibility to the organization. Future research can make use of this classification, as well as others, to better understand the contribution of OCR tools to web site effectiveness and the impact of misaligned perspectives on this contribution.

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