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Title	Confirming a taxonomy of decision constructs in business-to-consumer commercial transactions
Author(s)	Barry, Chris; Hogan, Mairéad; Torres, Ann M.
Publication Date	2014
Publication Information	Barry, C., Hogan, M. and Torres, A. (2014) Confirming a taxonomy of decision constructs in business-to-consumer commercial transactions 23rd International Conference on Information Systems Development
Item record	http://hdl.handle.net/10379/5468

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Confirming a Taxonomy of Decision Constructs in Business-to-Consumer Commercial Transactions

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Abstract

One might assume information systems (IS) are developed so systems enhance the user experience and facilitate a satisfying, productive interaction. From prior research, the authors established this assumption was not safe and certain design features amongst some online retailers were atypical of 'good' design elsewhere. It was apparent the transactional process was being used to present consumers with optional extras (and other decisions) that not only slowed the process down, but also stressed and agitated users. The research identified some new and unusual decision constructs such as the 'must-opt'. The objective of the research presented herein is two-fold: to make an incremental contribution in first theorizing and then identifying and categorizing into a taxonomy some new decision constructs alongside established ones encountered throughout on-line Business-to-Consumer (B2C) transactional processes followed by a preliminary study confirming their existence.

Keywords: IS development, User experience, Website design, Must-opt, Decision constructs.

1. Introduction

Many consumers are now experienced in purchasing goods and services online. It may be reasonable to assume they are quite familiar with the transactional process and able to navigate comfortably toward the final payments page. From prior research [2], [17], the authors established this assumption was unsafe and consumers exhibited significant levels of frustration and confusion. The transactional process was being used to present consumers with optional extras (and other decisions) that not only slowed the process down, but also stressed and agitated users through the use of atypical design features.

This paper is concerned with Business-to-Consumer (B2C) purchasing transactions. The non-transactional aspect is the browsing interaction that consumers engage in as they peruse and explore websites. Consumers may add items to a basket or shopping trolley but nothing is really psychologically committed until they complete their product selection and head for the checkout. Thereafter, they have passed the 'committal point' and begin the transactional process, the part of the interaction that interests the authors. This process between a business and a consumer is comprised of a number of decisions, typically across a number of pages, until payment is made and the process concluded. The critical importance of the user and their interaction with information systems is generally recognised and there is a universal supposition that a central objective of systems development is to maximise usability and deliver a satisfying user experience [14, 15, 16]. It is expected IS/IT practitioners employ good web design practices and consider the user in the development of interactions that are usable, useful and, often, enjoyable. In practice, most businesses seek to offer a satisfying

user experience, are honest brokers of their product and treat consumers fairly. Not all firms, however, are so benign – whether through neglect or clear intent. The transactional processes of some are peppered with elements that seem designed to force consumers to slow down, sometimes stop and perhaps accidentally select options they did not intend. To understand why consumers are experiencing these intermittent junctures, it was first necessary to categorize the types and the nature of decisions encountered in the transactional process.

The study is not concerned with decisions core to the actual product or service, such as quantity, shoe size or colour. It is the decisions that involve some element of optionality that are of more interest in this paper. Each decision point presents some form of a decision ‘construct’. A construct is a graphical user interface (GUI) control or mechanism that allows a user, in this case, to make a selection. Early controls were radio buttons, checkboxes, drop-down lists, spinners and sliders. New technologies have meant, for example, icons as buttons or images, or interactive elements may be presented on-screen or in pop-ups or as widgets. The authors, by means of theorizing and analysing websites have proposed an exhaustive taxonomy of decision constructs, which is laid out in Section 4 and followed by a study presented in Section 5 confirming their existence.

Another dimension of decision constructs is question framing. Questions may be framed in terms of acceptance (e.g., I would like to receive e-mail) or rejection (e.g., I would not like to receive e-mail). Alternatively, Lai and Hui [10] described these as ‘choice’ and ‘rejection’ frames, where positive phrasing corresponds with choice and negative phrasing corresponds with rejection of an option. This framing is discussed in detail in Section 2.2.

2. Regulations and Studies on Optional Charges and Pricing

2.1. Regulatory Attention

The Office of Fair Trading in the UK [1] carried out a study on the impact of pricing practices on consumer behaviour. In this study, they described a process referred to as ‘drip pricing’. The tactic is to present the user with an element of the price up front and then present additional components as ‘drips’ throughout the buying process. The drips can be either compulsory, where they are inherent to the price of the product (e.g., shipping cost) or optional, where they are generally add-ons (e.g., an optional warranty). These ‘drips’ can be presented in a variety of ways including opt-ins and opt-outs.

The European Union (EU) has addressed the notion of optionality in a number of regulations. Direct marketing email messages may be sent only to subscribers who have given their prior consent (‘opt-in’) [5]. The notion of ‘opt-in’ was further considered for optional price supplements for the airline industry [6]. Article 23(1) of this regulation states “optional price supplements shall be communicated in a clear, transparent and unambiguous way at the start of any booking process and their acceptance by the customer shall be on an ‘opt-in’ basis”. The concept of optional price supplements was further clarified by European Court of Justice [4] who, in a judgement, stated optional price supplements are not unavoidable and are neither compulsory nor necessary for the carriage of passengers or cargo. This distinction informs our presentation of essential and optional constructs in Section 4. While the regulation only applies to airlines, its reference to optional price supplements is clear and could be used to define optional price supplements on other e-commerce sites.

The EU has introduced a new directive on consumer rights [7] whose intent is to protect the consumer in distance contracts, including e-commerce transactions. This directive states additional payments above and beyond the minimum cost of the transaction require the explicit consent of the consumer. They also recognise consumers need to be protected against unscrupulous practices that may result in an inadvertent purchase that is not a necessary part of the transaction. However, neither piece of legislation described above defines what is meant by an ‘opt-in’ or what type of constructs are allowed where the consumer must make a decision on an optional extra. It is therefore at the discretion of the vendor to determine the most suitable method of obtaining the consent.

2.2. Research on Option Framing

Much research, albeit not in the area of e-commerce, has been carried out to determine whether users are more likely to participate when an option is framed as an opt-out rather than an opt-in [8, 9], [11, 12]. They generally conclude an individual is more likely to retain the default option than to change it even if the decision is detrimental to them. That is, they are more likely to participate if an option is presented as an opt-out, rather than an opt-in. Johnson and Goldstein [8] also found there was little difference in acceptance rates between an opt-out and a must-opt (see Section 4.4 for a full explanation and Table 1 for an illustration). The reasons identified for this negligible difference are participant inertia and a perception that the presentation of a default is a recommendation.

Previous studies [3], [10] have examined the impact of question framing on user decisions. They found users were more likely to accept an option when the language was expressed in an acceptance format rather than a rejection format for both opt-in (e.g., ‘Please send me newsletters’ with the checkbox un-ticked versus ‘Please do not send me newsletters’ with the checkbox ticked) and opt-out (e.g., ‘Notify me about more health surveys’ with the Yes button pre-selected).

3. Research Approach

It is necessary, in as far as possible, to identify an exhaustive list of the various decision constructs users encounter when purchasing a product or service whilst on-line and to consider some of the more salient factors that surround the process. As outlined earlier, the authors had noted a number of decision constructs that did not conform to typical design patterns in user interactions in the airline industry [2]. Thus, a study was conducted to examine e-commerce transactions to identify and categorize various forms of decision constructs. It was comprised of two parts as outlined below.

Initially the authors, by means of theorizing and analysing websites, proposed an exhaustive taxonomy of decision constructs. The methodology involved identifying the highest-level meta-categories and sub-dividing each logically until a series of mutually exclusive constructs were identified. A large number of retailers’ websites were explored and on some, several products or services were studied. This discussion is laid out in Section 4. Secondly, 195 decision constructs during typical B2C encounters across 25 representative B2C websites were examined in detail. The study is presented in Section 5.

4. Identifying Decision Constructs

4.1. Essential versus Optional Decisions

The transactional process on each website is normally made up of a number of sequential webpages that end in a payments page. During the process, and after the core product or service has been selected, the user is presented with various decisions points. Most of these decision points relate to real ‘options’ that may or may not be chosen. The customer will be able to complete the purchase without choosing the option, such as an extended warranty. It is an ancillary aspect of the product or service usually at an extra cost. However, there are also common decisions that must be made involving some element of choice. Such decisions are ‘essential’ to obtaining the product or service. Examples of these would be choosing a delivery method or choosing between different payment methods. Thus, the first meta-category of decisions is whether they are essential or truly optional.

4.2. Opt-in versus Opt-out

Optionality proffers the proposition that an option presented to a user is a straightforward choice - you either wish to secure the option or not. In reality, optionality is far more complex. When the European Union recognized particular problems within the airline

industry in how they dealt with the presentation of an optional extra or charge, they produced a directive [6], stating “all optional price supplements should only be accepted by the consumer on an ‘opt-in’ basis”. However, it did not define what is meant by an opt-in. Some firms appear to have taken great care to reflect considerably on this concept. In seeking to clarify this, various dictionaries were consulted. While they were broadly similar, the most relevant, pertinent definitions were found in Wiktionary.org [18]:

- To opt-in - of a selection, the property of having to choose explicitly to join or permit something; a decision having the default option being exclusion or avoidance.
- To opt-out - of a selection, the property of having to choose explicitly to avoid or forbid something; a decision having the default option being inclusion or permission.

4.3. Un-selected versus Pre-selected

In exploring various decision constructs it soon became clear that some opt-in, opt-out and essential decisions were sometimes un-selected and sometimes pre-selected. Some ways in which the decision is presented are quite peculiar. Opt-in decisions normally involve explicitly choosing one of a number of options, thus, an *un-selected opt-in*. However, a *pre-selected opt-in* is more ambiguous. A ticked check box, for example, is suggestive of something having been pre-selected for the user. However, using rejection framing such as ‘I do *not* want an extended warranty’, the action of un-ticking the box means the user opts-in. The juxtaposition of pre-selection (something appears chosen) against negative framing (something not being received) is counter-intuitive and is likely to be deliberate design.

Table 1: Taxonomy of transactional decision constructs

Decision Construct	Description	Illustration
Un-selected opt-in	<ul style="list-style-type: none"> • Default: don't receive the option • Normal presentation: un-ticked • Framing: acceptance 	<input type="checkbox"/> I want an extended warranty
Pre-selected opt-in	<ul style="list-style-type: none"> • Default: don't receive the option • Normal presentation: ticked • Framing: rejection 	<input checked="" type="checkbox"/> I do not want an extended warranty
Un-selected opt-out	<ul style="list-style-type: none"> • Default: receive the option • Normal presentation: un-ticked • Framing: rejection 	<input type="checkbox"/> Quote valid for 30 days. We would like to email you reminders over this period. If you don't wish to receive these emails please tick here.
Pre-selected opt-out	<ul style="list-style-type: none"> • Default: receive the option • Normal presentation: ticked • Framing: acceptance 	<input checked="" type="checkbox"/> Transit Insurance (optional) €0.75
Must-opt	<ul style="list-style-type: none"> • Default: cannot proceed • Normal presentation: multiple option variants, one of which allows the option to be declined, all un-ticked • Framing: normally acceptance 	Additional drivers: <input type="radio"/> Yes <input type="radio"/> No
Un-selected essential decision	<ul style="list-style-type: none"> • Default: cannot proceed • Normal presentation: multiple decision variants, all un-ticked • Framing: normally acceptance 	<input type="radio"/> Express delivery in 2 days (€5.00) <input type="radio"/> Fast delivery in 3-4 days (€2.00) <input type="radio"/> Free delivery in 5-7 days (free)
Pre-selected essential decision	<ul style="list-style-type: none"> • Default: variant selected • Normal presentation: multiple decision variants, one ticked • Framing: normally acceptance 	<input type="radio"/> FREE Super Saver Delivery (4-5 business days) <input checked="" type="radio"/> Standard (3-4 business days) <input type="radio"/> Two-Day Delivery : get it on Monday, December 9

Opt-out decisions normally appear as a pre-selected tick in a checkbox with associated acceptance framing, e.g., ‘I want an extended warranty’. However, an opt-out construct can

be designed so that it is un-selected, appearing like a ‘normal’ opt-in decision. This construct requires the decision be framed to imply rejection or a negation of the decision (e.g., an unticked checkbox accompanied by the text ‘I do *not* want Collision Damage Waiver’). which is unconventional and extraordinarily confusing. Conventionally, a user might safely overlook an un-selected option, assuming it to be opt-in. However, the un-selected opt-out construct is designed so a user must tick a box to reverse out of the decision which may result in the user giving the option more consideration than otherwise. The same juxtaposition can be applied to essential decisions that may be pre-selected (e.g., a fast delivery method) or, more usually, un-selected (e.g., choice of a payment method), see Table 1.

4.4. Must-opt - Neither Opt-in or Opt-out

Previously, the authors identified and described a new decision construct (a ‘*must-opt*’ decision) in online transactions [2]. It appears its use in the airline sector was an attempt to side step the 2008 EU Directive [6]. A must-opt decision occurs when an optional extra is presented with no option selected, ostensibly an opt-in decision. However, it is not truly an opt-in since it is impossible to progress to the next webpage until the user explicitly accepts or rejects the option – thus, they must-opt. The normal presentation of a must-opt is multiple option variants, one of which allows the option to be declined (see Table 1).

4.5. A Taxonomy of Decision Constructs

From the discussion above, a taxonomy made up of seven decision constructs is proposed (see Table 1). While the authors believe they have identified all decision construct types in use across a range of sectors and commercial transactions, in time the number may increase as firms choose increasingly inventive ways of presenting users with optional extras.

5. Descriptive Analysis

A descriptive analysis of a number of websites accessible to Irish consumers was conducted in order to: (a) determine whether the decision constructs identified are, in fact, used in practice; and (b) determine whether any additional decision constructs need to be added to the list. A total of 25 websites were examined. The websites represented a number of different industry categories: Travel, Consumer Products, Financial Services, Accommodation, and Entertainment and Recreation with between 2 and 9 websites selected from each category.

Table 2. Illustrations of transactional decision constructs

Type of Decision Structure	Encounters by Sector				
	Financial Service (3 websites)	Travel (6 websites)	Consumer Products (9 websites)	Accommodation (2 websites)	Entertainment and Recreation (5 websites)
Pre-selected opt-in (n=6)	4	2	0	0	0
Un-selected opt-in (n=112)	20	57	7	18	10
Pre-selected opt-out (n=9)	1	1	4	2	1
Un-selected opt-out (n=5)	3	2	0	0	0
Pre-selected essential decision (n=15)	2	3	6	3	1
Un-selected essential decision (n=30)	3	5	9	2	13
Must-opt (n=18)	2	14	0	0	0
Total (n=195)	35	84	26	25	25
Mean number of decisions per transaction	11.67	14	2.89	12.5	5

A single representative task was chosen for each website (e.g., rent a car) and each decision point encountered during that transaction was recorded and examined in order to determine whether they could be categorised according to the construct types identified above. Some websites had multiple decision points, while others had very few (e.g., the Travel websites had a total of 84 decisions based on 6 websites whereas consumer products had 26 decisions based on 9 websites).

For the Travel, Accommodation and Financial Services websites, the mean number of decisions encountered per transaction was considerably higher than for Consumer Products and Entertainment & Recreation (see Table 2). The high number of decision points on both the Travel and the Financial Services websites is due to product deconstruction, now common in both sectors. This approach was also apparent in the Accommodation websites, with hotels offering multiple options, often at additional charge (e.g., flowers or wine in the room). However, Accommodation websites tended to offer the options in a simple un-selected opt-in format, whereas Financial Services and Travel websites used more complex structures such as pre-selected opt-ins, un-selected opt-outs and must-opt. The difference in approach meant while there were many options presented on the accommodation websites, a user could easily traverse the website without paying too much attention to the options. Ignoring the options meant the user simply purchased the base product without additional options.

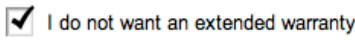
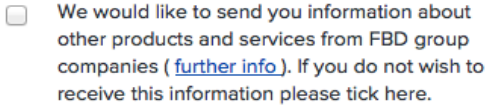
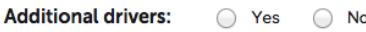
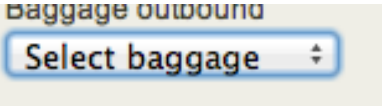

Presentation	Illustration
Pre-selected opt-in	
Un-selected opt-out	
Must-opt using radio buttons	
Must-opt using a dropdown menu	
Must-opt dropdown menu once clicked on	

Fig 1. Presentation of non-standard transactional decision constructs

In contrast, the more complicated decision constructs used by Financial Services and Travel websites made traversal of those websites more complicated, requiring careful scrutiny of the options offered in order to avoid inadvertent purchase. These included:

- Pre-selected opt-ins, where the user needs to do nothing in order to avoid purchase (see Figure 1). This construct requires more attention by the user as they may assume that a ticked box is an opt-out. If the user proceeds under this assumption and quickly de-selects without reading the text closely, they would inadvertently choose the option. This construct is made even more complex by the necessary use of negative framing that requires careful attention in order to fully grasp the meaning of the text.
- Un-selected opt-outs, where the user needs to ‘tick the box’ in order to avoid the purchase (see Figure 1). This construct is complex for similar reasons to the pre-

selected opt-in as it is a non-standard format. The normal format for an opt-out is a pre-selected opt-out where the user deselects in order to indicate they do not wish to select an option. A hurried user could easily presume that an un-selected checkbox is, in fact, an un-selected opt-in, resulting in inadvertent selection of the option. The negative framing also requires considered attention to fully understand the option.

- Must-opts, where the user must, for example, tick a box, indicating whether they wish to choose an option or not in order to continue with the transaction. While this format is less likely to result in inadvertent selection of an option, it does require that the user consider the option and then indicate whether they wish to select it or not.

A user could be easily forgiven for mistaking the must-opts in Figure 1 for un-selected opt-ins as there is no indication that the user must take action in order to make a decision. In the case of the radio buttons it would be reasonable for the user to presume that they were not required to consider the options unless they wished to add a driver. In the case of the dropdown menu, the user could also reasonably presume that no action is required unless they intend bringing carry-on luggage. Once the user clicks on the menu, it is more apparent that action is required. However, if the user has continued with the interaction without engaging with either of these must-opts, they will have no indication that action is required until they attempt to proceed to the next page. At this point they will be informed that they must specify whether they wish to add additional drivers or whether they wish to bring check-in baggage.

In addition to the use of non-standard formats, some of the websites use a variety of constructs for options. For example, an un-selected opt-in might be presented just before an un-selected opt-out, with the user having to pay close attention to ensure they fully understand the options. The travel websites also managed to introduce additional potential confusion by presenting the must-opts in multiple ways during a single transaction. For example, one must-opt could be presented as a drop-down menu, with the next must-opt presented using radio buttons arranged horizontally, and a third must-opt presented using radio buttons arranged vertically. This design requires the user to pay attention to all options, as they can never be sure what type of construct they have encountered until it has been examined carefully and the consequences of action or inaction considered.

6. Conclusions

This study set out to identify all possible ways in which essential and optional decision constructs can be presented to a user in on-line transactional processes and then proceeded to examine whether the constructs are used in practice and to identify any additional constructs that had been missed in the initial process. The genesis for the research question was to explore whether firms were acting in good faith in relation to consumer protection regulations. As noted earlier, the EU has recognised that programming constructs are being used to nudge consumers to behave in a way that airlines wish and have recently enacted additional legislation that applies to all distance contracts. It would appear these constructs are being used in many sectors. Furthermore, with the must-opt and other ambiguously presented decisions, it is clear EU regulations deal with the notion of optionality inadequately.

Based on this study, the authors believe they have captured all decision constructs presently in use. It is evident from the results of this study that firms, in most cases, are using obvious decision constructs that allow the user to make quick decisions that require little deliberation or thought. However, there are a small number of firms using more complex constructs such as the must-opt, the un-selected opt-out or the pre-selected opt-in for certain options, presumably in order to increase the likelihood of the user selecting the option. It would appear, in certain instances, the consumer needs to pay close attention to all decisions encountered if they are to successfully negotiate the obstacle course placed in their path throughout the course of a transaction.

It is likely firms will continue to behave inventively as they seek ways of attracting users attention to various ancillary products and services. The theory of cultural lag identified by Ogburn [13] is a resilient one in this case; firms are using new technologies to shape user behaviour in their favour - researchers and regulators take note.

7. Further Research

A number of issues emerged that will contribute to further research. Some of the constructs were encountered infrequently, while others were more prevalent. The number of websites examined will need to be expanded considerably in order to carry out statistical analysis on the results. Furthermore, subjective responses from consumers will form part of the proposed research framework. Factor analysis will be carried out in order to determine the nature of the relationships between independent variables such as industry category and decision constructs; and factors such as ease of use, level of persuasion, clarity and trust. Additionally, a more intense analysis of the presentation of the decision constructs will be conducted.

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