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Abstract

From prior research, the authors found that 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'. This paper seeks to produce a taxonomy of the type and nature of decision constructs encountered throughout on-line Business-to-Consumer (B2C) transactional processes. The findings presented herein make an incremental contribution in theorizing, identifying and analyzing new decision constructs alongside established ones.

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

1   Introduction

From prior research, the authors found that 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. There has long been an 'assumed' notion that information systems developers, using long-

established human computer interaction (HCI) principles, develop applications that are easy to use and make the user experience positively engaging and productive (Rogers et al., 2011; Shneiderman and Plaisant, 2010; Sklar, 2006). Such assumptions are questionable today as many points in commercial Business-to-Consumer (B2C) transactional processes are riddled with pitfalls and landmines that seem designed to slowdown, confuse or trick consumers (Barry and Torres, 2009). This paper sets out to produce a taxonomy of the type and nature of decision constructs encountered throughout on-line Business-to-Consumer (B2C) transactional processes. The findings presented herein make an incremental contribution in theorizing, identifying and categorizing some new decision constructs alongside established ones. Finally, an exploratory examination of some of the salient issues is conducted.

2   Research Focus - The Transactional Process

Central to the work presented here is a pedantic examination of the transactional process. Specifically, the authors are interested in the part of the interaction after which consumers become psychologically committed to purchase, for example when a user presses a 'BUY' button. This transactional 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. What sometimes happens from this point onwards is the user is presented with choices that do not seem central to the product or service being purchased and are difficult, if not impossible, to avoid because of the design. While many businesses do seek to offer a satisfying user experience and treat consumers fairly, not all firms are so minded. Whether through benign incompetence or wilful intent, some retailers pepper the transactional processes with elements that seem designed to force consumers to slow down, stop or 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.

For clarification, this study is not concerned with the decisions core to the actual product or service. Those decisions about quantity, shoe size or colour are fundamental to the acquisition of the product or service. 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 to make a selection. Early controls were radio buttons, checkboxes, drop-down lists, spinners and sliders. New technologies have meant, for example, icons as button or images, or interactive elements may be presented on-screen or in pop-ups or as widgets.

3   Regulatory Attention on Optional Charges and Pricing

Following a case taken to the European Court of Justice (eBookers Germany v BVV 2012), the European Union acted to bring some clarity to the definition of optional price supplements as specified in the regulations on the operation of air services (European Union, 2008). A key article (Article 23(1) of Regulation No. 1008/2008) 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 judgement in relation to this regulation has clarified the issue somewhat. It states that optional price supplements are not unavoidable and are neither compulsory nor necessary for the carriage of passengers or cargo. While the regulation only applies to airline websites, its reference to optional price supplements is clear and could be used to define optional price supplements on other e-commerce websites.

The European Union has introduced regulation in relation to other forms of distance and off-premises contracts, which would include e-commerce transactions. In 2011 they introduced a new directive on consumer rights (European Union, 2011) to protect the consumer in distance contracts. This directive states additional payments above and beyond the minimum cost of the transaction require the explicit consent of the consumer. The European Union recognises consumers need to be protected against unscrupulous practices that may result in inadvertent purchases. For airlines, they assert additional options may only be purchased on an 'opt-in' basis while for all other distance contracts, the consumer's express consent is required and the vendor may not use default options that require the consumer to reject the option. However, neither piece of legislation 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.

In the United Kingdom, the Office of Fair Trading carried out a study on the impact of pricing practices on consumer behaviour (Ahmetoglu et al., 2010). In this study, they described a process referred to as 'drip pricing'. This tactic is the practice of presenting the user with an element of the price up front and then presenting additional components as 'drips' throughout the buying process. The drips can be either compulsory, where they are inherent to 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.

4   The Presentation of Choice

The manner in which options are presented to consumers has been found to have a significant impact upon the choices that are made. Research, not necessarily 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 (McKenzie et al., 2006; Junghans et al., 2005; Johnson and Goldstein, 2003; Madrian and Shea, 2001). 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 (2003) also found there was little difference in acceptance rates between an opt-out and a must-opt (see section 6.4 for a full explanation and Table 1 for an illustration of a must-opt). The reasons identified for this negligible difference are participant inertia and a perception that the presentation of a default is a recommendation. McKenzie et al. (2006) take that conclusion further and maintain those presenting the choice are more likely to present it in a way that indicates their beliefs or attitudes towards the choice.

Belman et al. (2001) and Lai and Hui (2006) both 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 versus 'Do not notify about more health surveys' with the No button pre-selected).

5   Research Plan

The research plan is three-phase. Firstly, identify an exhaustive list of the various decision constructs users encounter when purchasing a product or service whilst on-line and then consider some of the more salient issues that surround the process. Secondly, a more intense analysis of the presentation of the decision constructs will be conducted, including an exploration of the juxtaposition between optionality and question framing. Thirdly, a framework will be constructed, and factor analysis conducted 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. The first phase of the study is the subject of this paper and it is in turn made up of two parts 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 7. Secondly, 145 decision constructs across 25 websites were examined in detail. Representative e-commerce B2C websites were identified from firms listed with Retail Ireland, Ireland's Small Firm's Association, and analysis from Google Analytics and Google Ad Planner. The decision constructs were encountered during typical B2C transactions on these websites.

6   Identifying Decision Constructs

6.1   Fundamental Decision Types

The transactional process on each website is normally made up of a number of sequential webpages that end in a payments page. 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 be chosen or declined. 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 that involve some element of optionality. Such decisions are 'essential' to obtaining the product or service (for example choosing between different payment methods). Thus, the first meta-category of decisions is whether they are essential or truly optional.

6.2 Optionality

Optionality proffers the proposition that an option presented to a user is a straightforward choice - you either wish to secure the option or not. The reality is that 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 (European Union 2008), stating "all optional price supplements should only be accepted by the consumer on an 'opt-in' basis". However, it did not define optionality or what constituted an opt-in. Some firms appear to have taken great care to reflect considerably on this concept. In seeking to define the notion of optionality, the following were identified:

- Merriam Webster (2013) define optional as 'involving an option**:** not compulsory'

- Geddes and Grosset (2004) define to opt as 'to choose or exercise an option'

- Merriam Webster (2013) have no definition for opt-in, but define opt-out as 'to choose not to participate in something'

- The Oxford English Dictionary (2013) define opt-in as 'to choose to participate in something and opt-out to 'choose not to participate in something'

A more nuanced consideration is found on wiktionary.org (2013) where the following distinction is made between opt-in and opt-out.

- 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.

A distinction is made here between opt-in and opt-out that deals more comprehensively with the idea of the outcome of the default option. Thus, most consumers purchasing on the internet are well aware an option is not always presented as an opt-in and at times they have to deliberately choose to opt-out, normally by de-selecting a checkbox or a radio button. Thus, the optional decision may be categorized as either opt-in or opt-out.

6.3 Un-selected and Pre-selected Constructs

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 checked 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 email newsletter', the action of ticking the

box means the user opts-in. The juxtaposition of pre-selection (something appears chosen) against negative framing (something is not being received) is counter-intuitive and is unlikely to be inadvertent poor design, given the most frequently encountered opt-in is un-selected with acceptance framing.

Opt-out decisions normally appear as a pre-selected tick in a checkbox with associated acceptance framing, e.g., 'I wish to receive email'. However, an opt-out construct can be designed so that it is un-selected, appearing like a 'normal' opt-in decision. This requires the decision be framed to imply rejection or a negation of the decision (e.g., an un-ticked checkbox accompanied by the text 'I do *not* want Collision Damage Waiver'). Again, this construct 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. Drawing attention to the option in this manner may result in the user giving the option more consideration than they would otherwise. The same juxtaposition can be applied to essential decisions. These may also be pre-selected (e.g., a fast delivery method) or more usually un-selected (e.g., choice of a payment method), see Table 1.

Decision Construct	Description	Illustration
Un-selected opt-in	Default: don't receive the option Normal presentation: un-ticked Framing: acceptance	☐ I want an extended warranty
Pre-selected opt-in	Default: don't receive the option Normal presentation: ticked Framing: rejection	☑ I do not want an extended warranty
Un-selected opt-out	Default: receive the option Normal presentation: un-ticked Framing: rejection	☐ 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	Default: receive the option Normal presentation: ticked Framing: acceptance	☑ Transit Insurance (optional) €0.75
Must-opt	Default: cannot proceed Normal presentation: multiple un-ticked Framing: normally acceptance	**Additional drivers:** ○ Yes ○ No
Un-selected essential decision	Default: cannot proceed Normal presentation: multiple un-ticked Framing: normally acceptance	○ Express delivery in 2 days (€5.00) ○ Fast delivery in 3-4 days (€2.00) ○ Free delivery in 5-7 days (free)
Pre-selected essential decision	Default: variant selected Normal presentation: ticked Framing: normally acceptance	○ FREE Super Saver Delivery (4-5 business days) ◉ Standard (3-4 business days) ○ Two-Day Delivery : get it on Monday, December 9

Table 1: A Taxonomy of Decision Constructs

6.4   The Must-opt Construct

From previous research, the authors identified and described a new decision construct, coined a '*must-opt*' decision, in online commercial transactions (Barry et al., 2011). It appears its use in the airline sector was an attempt to side step the 2008 EU directive mentioned earlier. 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. Various devices may be used to prohibit progression such as a pop-up window or highlighting in red missing responses. Thus, the user must go back and read and consider the option variants and choose one. It is illustrated in Table 1.

6.5   Distinguishing Essential from Optional Decisions

A casual examination of a must-opt and an un-selected essential decision might suggest they are the same. Although they may look similar they are fundamentally different. In the examples shown in Table 1, both decision constructs consist of a number of un-selected radio buttons. However, the must-opt allows the user to select or decline the option of adding additional drivers. In contrast, the un-selected essential decision requires the user to choose between a number of delivery options, one of which must be chosen. Hence, the must-opt deals with an optional extra that can be declined whereas the un-selected essential decision offers a choice between different variants but cannot be declined.

6.6   A Taxonomy of Decision Constructs

From the discussion above a taxonomy may be proposed made up of seven decision constructs, described and illustrated in Table 1. While 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.

7   Descriptive Analysis

Thus far the authors have theorized on the existence of these decision constructs. 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 used in practice; (b) determine whether any additional decision constructs need to be added to the list; and (c) examine the constructs in terms of factors such as opacity, clarity and frustration. A total of 25 websites were examined. The websites represented a number of different categories: Travel, Consumer Products, Financial Services, Accommodation, and Entertainment and Recreation with between 2 and 9 websites selected from each category.

A single representative task was chosen for each website (e.g., purchase a book) and each decision point encountered during that transaction was recorded. All decision constructs were examined in order to determine whether they could be categorized according to the construct types identified above. Some websites had multiple decision

constructs, while others had very few. For example, the travel websites had a total of 65 decisions based on 6 websites whereas consumer products had 27 decisions based on 9 websites.
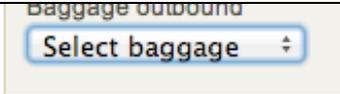
As can be seen in Table 2 the most commonly encountered decision construct is the un-selected opt-in with 69 instances, followed by the un-selected essential decision with 26 instances. Each construct encountered was assessed in terms of: clarity - that is, whether the type of construct would be clear to the user; clarity of the optionality of the decision; clarity of the available options; the level of opacity for the decision construct; and the level of frustration experienced when the construct was encountered. Each of these, other than frustration, was measured on a 5-point Likert scale. Frustration was measured on a 3-point scale. On each scale, the more negative measure was at the low end of the scale (e.g., very unclear) and the more positive measure was at the high end of the scale (e.g., very transparent).

Type of Decision Structure	Measure									
	Clarity of decision structure 1-5, 1= v unclear, 5 = v clear		Clarity of optionality 1-5, 1= v unclear, 5 = v clear		Clarity of available options 1-5, 1= v unclear, 5 = v clear		Level of opacity 1-5, 1= v opaque, 5 = v transparent		Level of frustration 1-3, 1= v frustrated, 3 = not frustrated	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pre-selected opt-in (n=6)	3.50	.84	4.33	.82	4.83	.41	4.00	1.10	2.83	.41
Un-selected opt-in (n=69)	3.91	.95	4.18	.94	4.17	1.03	4.00	.96	2.86	.43
Pre-selected opt-out (n=9)	3.33	.71	3.88	.64	3.89	.60	3.22	.67	3.00	.00
Un-selected opt-out (n=5)	2.00	.00	2.80	1.64	2.80	1.10	2.40	.89	2.60	.55
Pre-selected essential decision (n=15)	4.00	.76	N/A	N/A	4.47	.52	4.40	.63	3.00	.00
Un-selected essential decision (n=26)	4.40	.58	N/A	N/A	4.14	1.15	4.08	.85	2.88	.43
Must-opt (n=15)	2.33	.82	3.50	1.09	3.73	1.03	3.40	.91	2.27	.46

Table 2: Analysis of Decision Constructs

The mean values for each of the constructs were calculated. Due to the small numbers in certain categories, no detailed statistical analysis was conducted. As can be seen, the

mean values for the must-opt and the un-selected opt-out were lower than the other mean values in the majority of the measures reported above. This finding suggests: the type of construct encountered was less obvious; it was less obvious that the option encountered was optional (this does not apply to essential decisions as they are not optional decisions); the choices available to the user were less clear; the constructs were more opaque; and the use of the construct led to higher levels of frustration than did the other construct types. However, the pre-selected opt-out had a higher level of opacity than the must-opt and was only slightly better in terms of clarity of optionality and clarity of the available options. This finding is not unexpected as the pre-selected opt-out can easily result in the user inadvertently choosing an option if they do not take action to decline it and is, therefore, generally an opaque option. In contrast, even though a must-opt may initially be opaque to the user, the fact that the user is informed that they must make a choice before they can move on to the next page removes some of the ambiguity and opacity in relation to this form of construct. However, as the pre-selected opt-out is the more commonly encountered form of opt-out, the user is more likely to react to this form of decision structure and decline the option than they would for an un-selected opt-out. This finding would suggest it is likely to be clearer and less opaque than the must-opt or the un-selected opt-out, both of which are 'newer', and therefore less familiar, ways of presenting options.

Presentation	Illustration
(a) Must-opt using radio buttons	
(b) Must-opt using a drop-down menu	
(c) Must-opt drop-down menu once clicked on	

Figure 1: Presentation of Must-opts Construct

The opt-ins and the essential decisions had higher mean values for all measures, suggesting: it was more obvious what type of structure was encountered; the choices were clearer; the constructs were less opaque; the use of the constructs led to less frustration; and in the case of the opt-ins, it was clearer that the decision was optional. As can be seen from Table 2, the number of opt-outs, both pre-selected and un-selected is quite small (9 and 5 respectively). Opt-outs are most probably being used less frequently as a result of legislation currently in place, as discussed previously (European Union, 2011). The lead in to the introduction of this legislation may have led to the use of the must-opt as a way to force the user to make a decision regarding an option.

The must-opts were generally presented in 2 different formats: radio buttons with none of the options pre-selected and a drop-down menu where the user selected one of the options (see Figure 1). Of the 15 must-opts identified, 11 were radio buttons and 4 were

drop-down menus. The small number of drop-down menus means it was not possible to compare means in a meaningful way.

A user could be easily forgiven for mistaking the must-opts in Figure 1(a) and (b) for un-selected opt-ins, as there is no indication the user must take action in order to make a decision. In the case of the radio buttons, while it is normal to have one radio button selected, it would be reasonable for the user to presume they were not required to consider the options unless they wished to add a driver. In the case of the drop-down 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 (see Figure 1(c)), 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 action is required until they attempt to proceed to the next page. At this point they will be informed they must specify whether they wish to add additional drivers or whether they wish to have hand baggage only or checked-in baggage.

The un-selected opt-out also fared poorly in the evaluation. They were all presented using checkboxes and all used rejection framing in the wording (see discussion earlier in section 4 and Figure 2(a) below).

Presentation	Illustration
(a) Un-selected opt-out	☐ 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.
(b) Un-selected opt-in	☐ I need wheelchair assistance for this booking

Figure 2: Presentation of Un-selected Constructs

As can be seen, the user is required to tick the box if they do not desire the option presented. The user could easily mistake this for an un-selected opt-in (see Figure 2(b)). The main difference in the two constructs is the way in which the option is phrased. The un-selected opt-out uses rejection framing that requires the user to take action if they do not want the option whereas the un-selected opt-in uses acceptance framing that only requires action if the user wants the option. As the un-selected opt-in is by far the most commonly encountered construct, a hurried user could easily presume that an un-selected checkbox is an un-selected opt-in, resulting in the inadvertent selection of the option.

8   Conclusions

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 European Union 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.

This study set out to theorize all possible ways in which essential and optional decision constructs can be presented to a user in an on-line transactional process. From this exercise seven mutually exclusive decision constructs were identified and organized into a taxonomy. The study 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 second part of the research successfully identified the use of all the proposed constructs across multiple websites and B2C sectors. No constructs were encountered that were not captured by the taxonomy. The results of this study indicate firms, in most cases, are using obvious and appropriate decision constructs that allow the user to make a quick decision that requires little deliberation, leading to a useable and productive user experience. However, there are a small number of firms using more complex constructs such as the must-opt, the un-selected opt-out or pre-selected opt-in, possibly in order to increase the likelihood of the user selecting the option. These interactions would appear to be counter-intuitive to good user experience design. Additionally, each of the constructs was examined in terms of factors such as opacity, clarity and frustration. While common constructs such as un-selected opt-ins and essential decisions fared well, the must-opt and the un-selected opt-out constructs tended to be more problematic in on-line transactional processes.

Therefore, on certain websites, consumers needs to pay close attention to all decisions encountered if they are to successfully negotiate obstacles placed in their path through the course of a transaction. With the must-opt and other ambiguously presented decisions, it is clear that European Union regulations deal with the notion of optionality inadequately. Some 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 (1957) is a resilient one as firms, in this case, are using new technologies to shape user behaviour in their favour - researchers and regulators take note.

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