Determination of consumer context in an online transaction process for a high risk purchase

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Abstract
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Keywords
Determination, consumer, context, online, transaction, process, for, high, risk, purchase

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ABSTRACT

This paper showcases/discusses a method of analyzing consumer website behavior that enables real-time purchase context identification. Such analysis will enable online vendors to serve content that is relevant to the consumer’s needs, addressing the apparent utility deficit that websites have for complex product transactions. The use of communication theory is a key component of a value co-creation process that leverages the data derived from website interactivity by analyzing the meaning of consumer activity on a website. Such an approach offers insights into the effect of information accessed by consumers in real time, enabling a responsive system for serving information in real time. In particular it offers the ability to deal with the complexity of consumer needs at the point of sale by avoiding unworkable traditional factor based modeling practices. In addition to communication theory, this approach requires a detailed classification of website content and databases connecting to primary research into consumer information utility.
INTRODUCTION

The success of selling standardized search products online such as Amazon.com’s book sales (Fonerbooks.com, 2009) does not seem to have been replicated with higher involvement complex products. Grant, Clarke and Kyriazis’ review (2010 b) points to the failure of both practitioners and academics to account for the complexity of consumer needs associated with purchasing complex products online. They suggest that the surprising lack of website online purchase utility for complex products may at least in part result from failure to address the complexity of an individual consumer’s needs. Their review suggests a range of consumer needs in the typically multidimensional areas of utility, functionality, reassurance, hedonic indulgence and perceived risk management. To deal with this complexity, the consumer’s activity or behavior has to be analyzed so that individual situational context may be construed and associated needs identified.

This requires treating communication as an exchange of meaning rather than simply making information available and perhaps simply hoping for the best. Notwithstanding the selective attention, perception and retention that ensure different communication effects for individuals, such variances need to be understood for effective information serving. Such effects or results can only be derived from observing consumer reactions in the form of their subsequent behavior or activity. Such reactions will typically be related to the effects of prior information offered on the website as well as information that the consumer may have garnered between visits to the website. Online, this requires the application of a value co-creation process where consumer data is used in the manner proposed by Grant, Clarke and Kyriazis (2010 a). The use of behavior or activity data for value co-creation supplants the need for determination of personal and product factors that have typically been used for analysis of consumer choice and perceived risk management.
The benefits of doing this are primarily a good understanding of complex consumer needs in real time that enables deployment of information that satisfies individual needs in real time. As a result the surprising lack of utility of websites for purchasing complex products identified by Grant, Clarke and Kyriazis (2010b) may be improved in a number of ways. First, information utility in what is essentially a process based on information exchanges will be greatly improved in the areas of both convenience and process utility. The responsiveness of such a system may even mitigate negative perceptions of the impersonal nature of the internet which are a major factor in the apparent lack of utility. Second, functionality for both purchase facilitation services and service delivery are likely to improve with individual consumer needs being understood. Third, the greater understanding of context will enable better service in areas associated with complex product purchase such as needs for reassurance and hedonic indulgence from engagement on a subject of great personal importance. In doing so it is likely that websites may achieve higher levels of cognitive lock-in (Murray and Häubl, 2007) and associated loyalty from consumers that is a crucial element of website operational success.

This paper showcases the use of communications theory for behavioral or activity analysis of complex behavior to construe individual subjective needs systematically in real time. For this theory to be applied however, an online vendor will have to conduct specific research and organise resources to support the system’s operations. The paper therefore concludes with a review of the research and resources required for implementing such a system on a vendor’s website.
The importance of context determination is apparent in Grant, Clarke and Kyriazis’ (2010 b) review of purchase value for complex products online. They propose online purchase value for complex products as a trade-off between convenience and process utility and the price charged by competing vendors for a common product. The problem in determining utility is the large number of dynamic needs and associated activities, including an apparently overarching need to manage perceived risks, which a vendor has to address. Simply offering a lower price than a competing vendor is likely to achieve less than proactive engagement with the consumer in their online interactions. The consumer’s need for both functional and process utility in their purchase process is not likely to be lightly traded off in favor of a lower price which may compromise the transaction. Value co-creation through such a process requires insights into the consumer’s real-time context to enable offering resources that relate to their current needs and activities. This paper proposes the use of communications theory to achieve this goal.

The following subsection of the paper will firstly introduce communication theory with an overview of the key elements of texts, situation context or register and cultural context or genre. Following this introduction, each of these elements will be reviewed in greater detail in relevant subsections before a closing summary subsection.

**Introduction to communication theory**

Communication theory has been used in management research to analyze processes within organisations based on analysis of communication patterns and content using social semiotics and linguistics. Such workplace process analysis has been used to diagnose problems and design more efficient and effective work practices (Halliday and Hasan 1985; Martin 1992;
Clarke 2006). The analysis is based on the socio-semiotics of communicative acts in workplace processes that are both interactive and social, using the meaning derived from workplace symbols, activities and language. This paper proposes that consumer purchase process activity may be studied based on their communications as work practices or processes within organizations are. To do this, purchase related activities have to be theorized as *texts* based on the social exchange of meanings between social subjects in the process.

The key to using communication theory for defining consumer context is determining the meaning of activities, actions and expression in a purchase process. Meanings of the consumer’s activity (selecting content, clicking on hyperlinks, conducting searches or peer-to-peer interactions in discussion forums) are derived from analyzing patterns of these activities taking the activities as communicative acts. While marketing theory focuses primarily on situational context, communication theory enables identification of a further dimension of cultural context. This additional insight is derived from definition of the *genre* (cultural context) derived from *register* (situational context) of communication based on structural functional linguistics (Halliday 1978). This ability fulfils a major objective of the research in defining context as a precursor to determining the consumer’s related information utility without engaging the vast array of complex factors identified by traditional market research.

Situational context analysis is done by examining the field (what is being done), tenor (by whom and to whom) and mode (characteristics of the communication medium) of the communication characterized by the consumer’s activity. Where all elements of situational context align, the common grouping of *register* is classified as a *genre* or cultural context representing a common approach or “way things are done” between the parties. Identification of genres by a vendor provides valuable insights into what the consumer is engaged with and
therefore what their information needs are likely to be. The material used for analysis is referred to as a “text” which is a completed act of communication, implying that meaning has been both sent and received. Such meaning can be derived from not only language but also images, performances and acts where meaning is realized differently to a transcript of language in ways that must be accounted for in analysis. Texts have the characteristics of a product in the form of a transcript of language, catalogue of images or symbols and/or descriptions of interactions in a process. As such they have a structure which can be analyzed on the basis of content, sequence and the roles of individuals or entities engaged in the process. The meaning embedded in texts is extracted or determined by using the theory of selective contextualization in systemic semiotics to analyze the signs in a text based on a common language or culture of participants.

The following subsection will outline the nature of texts which are the units of analysis to determine consumer context. In communication theory cultural and situational context are co-dependent, effectively describing the same phenomenon in different ways and a situation may be approached from either perspective. This paper will follow the approach of Hasan (1985) who uses an analysis of register or situational context to classify genres based on common situational elements. Following discussion of texts in the following subsection therefore, following subsections will discuss analysis to determine aspects of the register, and definition of genre in a complex consumer purchase process.

**Texts**

The most familiar examples of texts would be transcripts of conversations, or the texts of letters or of e-mails. A far wider range of communication acts may however be considered as texts if communication theory’s definition of a text as a “completed act of communication in
any medium” (Kress, 1988, p 185) is used. A completed act of communication is where a message has been both sent or exposed to and received or processed by another person(s). Such a message may take the form of a visual image based on the meaning that is created for the recipient dependent on the content, medium, relationship and cultural context between the recipient and the person sending the image. In the same way, a consumer clicking on a link to a website page is communicating a request for the content specified by the link and when the relevant file(s) are served to their computer screen another communication act is completed in the form of a response.

Different responses to a common set of stimuli indicate different effects or meaning derived from the content offered on a website page by an individual. The unique nature of such effects or meaning typically reflects purchase behavior contextual factors such as the task definition and personal factors identified by Grant, Clarke and Kyriazis (2010 a). The focus of communication theory however is on the meaning or effect of communication rather than the vast range of factors, using patterns of communication activity to determine the effect of stimuli or information offered. Text analysis takes the structure of the text into account as well as using selective contextualization theories of social semiotics to interpret the “signs” used in the communication process.

The key to understanding the meaning associated with behavior on a website includes aspects such as the meaning of clicks on links given the utility of what Ylikoski (2005) terms “heuristic” search activity for complex behavior. The extraction of meaning from clicks is however different in communication theory to clickstream analysis (Chatterjee et al 2003; Moe 2003; Johnson et al 2004; Park and Fader 2004) which focuses on predicting the probability of a consumer continuing to purchase of a product or service. Extracting meaning
requires determining for example whether a click away from a web page 10 seconds after it has loaded suggests efficient information need satisfaction or frustration with irrelevance of the web page content. This requires consideration of their prior activity as well as the content of the link that the consumer has selected as their next destination page within or beyond the website. The first step in doing this is determining the register of communication which is discussed in the following subsection.

Register determination

Register is determined by the situational context based on (a) the task at hand, (b) the nature of the relationship between social subjects and (c) the characteristics of the communication method. In communication theory “field” defines the task, “tenor” defines the relationship between social subjects and “mode” the communication method. The basis of the communication field, tenor and mode definition is outlined in this subsection as a precursor to discussing how common groupings of such variables are used to define communication genres for their customer interactions.

Field: Determination of a consumer’s online purchase activity related to need satisfaction may be based on the value co-creation process proposed by Grant, Clarke and Kyriazis (2010 a). Their paper suggests that task or activity specification may in part be based on the consumer’s navigation trend within a website and/or the content of website pages selected. The content of selected pages will differ greatly between a consumer seeking convenience utility and another seeking hedonic indulgence or reassurance regarding their choice of product. Beyond navigation patterns however, Grant, Clarke and Kyriazis (2010 b) suggest situations where a consumer may require an extended information exchange; for example when seeking clarification on aspects of their purchase. In such instances there may be a
“conversational” exchange of instant messaging, e-mails or website messages which generate written texts which can be linguistically analyzed. By programming the computer to identify “indexical lexical items” or words that are characteristic of defined activities, deeper insights into the consumer’s situation may be derived. Such words may be jargon or technical terms which in common use are typically limited to the situation that they effectively define through their use. The way in which such words are used provides further insights into the key variables of consumer product knowledge or experience and involvement which greatly influence information needs.

For example, a consumer seeking reassurance regarding their selection of a defined holiday product will likely exhibit different behavior to one seeking hedonic indulgence. Reassurance seeking may manifest as queries directed to expert online vendor staff for opinions or visiting online forums or communities where discussion of the product of interest is taking place. On the other hand, a consumer seeking hedonic indulgence may seek discussion rather than posing queries and their participation in online forums may be more active than passive. The focus difference between the two activities may be determined online by either the links which a consumer clicks on and/or the linguistics of queries or online forum contributions.

**Tenor:** Beyond task definition the consumer’s situation is further defined by their relationship with the information source of interest. Multiple prior successful exchanges with a given website (for example during information search and evaluation processes preceding purchase) may lead to higher levels of trust and faster movement through elements of the process based on experience. This reflects the beneficial effects of the power law of learning manifested in cognitive lock-in (Murray and Häubl, 2007) which results in higher levels of loyalty to a website. On the other hand, a first time visitor to the same website may require more time to
consider their options and possibly also further information to help establish the website’s bona fides. Another major factor in the nature of interaction between a consumer and an online vendor is likely to be the number of alternative vendors available to the consumer or the degree to which the consumer is reliant on the vendor. A dominant vendor (based on expert power or cost leadership) for a specified option may have more leverage than one of a range of scarcely differentiated vendors competing for the consumer’s business. Such dynamics in an industry will be reasonably obvious to the competitors based on their understanding of relative positioning and differentiation. For example a consumer from a distant market wishing to purchase a travel package to London that includes tickets the Wimbledon Tennis Championship finals may find limited availability and rigid terms. Such unfavorable terms reflect the scarcity of ticket availability and high levels of demand, compounded by the All England Tennis Club’s strict controls on non-ballot ticket sales.

Definition of communication tenor is based on analysis of the power relationships between social subjects as well as their level of affective involvement and the nature of contact between them. The nature of power relationships is defined on a continuum ranging from extreme hierarchical power such as a master and servant type of relationship to an equal relationship between peers with equal capability and social standing. In the situation where a consumer is dealing with a vendor, the locus of power may be determined by the degree of availability relative to the demand for the product or service in question. The tenor of communication with independent information suppliers and peers may on the other hand be determined by a different range of factors. An independent information source’s perceived authority on a subject may lead to a higher level of reliance by the consumer on that source with resultant differences in the way that they communicate with the information source.
Another group of social subjects important for the satisfaction of complex consumer purchase needs are peers in online forums and discussion groups (Grant, Clarke and Kyriazis, 2010 b). Such peer to peer communications are moderated by a combination of affective involvement between social subjects and the apparent level of expertise or authority of the subject from whom information is being sought on the topic of interest. Affective involvement ranges from high in situations where people are closely linked, such as a member of immediate family or a lifelong friend to low where social subjects may be linked by an involuntary need to perform some necessary task. Such exchanges online are likely to take the form of language in online forums and may also be influenced by the consumer’s involvement in the relevant product or service. Such language is an ideal part of a text that may be systematically analyzed for clues regarding the nature of the relationship between interlocutors. High involvement with a hedonic product or service may lead to positive affect in the consumer’s engagement which may be a source of gratification leading up to the eventual purchase. On the other hand utilitarian products such as insurance may result in negative affect and a desire to terminate the engagement as quickly as possible. Such affects may differ between consumers for a common product based on motivation for purchase, for example the positive affect experienced by a consumer engaged in the purchase of recreational travel may differ from the affect associated with purchasing travel for an involuntary business trip.

Finally the nature of contact is defined by the frequency of contact between social subjects ranging from frequent and repetitive contact to infrequent or occasional contacts. Again this may be related to motivation for purchase and the type of involvement that the consumer has with the product or service.
These dimensions of communication tenor may help define the level of formality or informality between social subjects based on what are typically very clear linguistic markers. For example, the use of objective language, polite use of phatic elements and an absence of attitude expression may characterize formal situations. Such formal situations are more likely to involve hierarchical power and low levels of affective involvement between social subjects. On the other hand, use of slang in expressing subjective opinions and attitudes may indicate a closer relationship between people of equal standing.

**Mode:** Beyond the task at hand and the nature of the relationship between social subjects in a communication exchange, the means of communication chosen by a social subject further informs understanding of their situational context. Communication mode is analyzed based on the spatial or interpersonal distance between social subjects and the experiential distance between them. These dimensions of communication mode will be discussed in the following two paragraphs.

Spatial or interpersonal distance is based on whether aural and visual contact is made during the communication and the potential for immediate feedback from one social subject to another. The closest level of spatial distance may be a conversation where the communication is both visual (allowing subconscious communication through facial expression and body language) and aural (adding further meaning through vocal inflection and tone of voice) with the potential for immediate feedback or response to questions posed or statements made by either of the social subjects. Such an effect may be achieved online by the use of Skype or other video conferencing applications that offer direct audio visual interpersonal contact. At the other extreme may be text descriptions of a product or aspects of its attributes and no direct interactivity to seek clarification or offer feedback on the description provided. In the
mid range may be a range of options such as text-based real time interaction using instant messaging or podcasts of video or audio descriptions that can be supported by sound effects in support of the words used but lack the interactive capabilities.

Experiential distance on the other hand is based on the level of personal engagement associated with the communication being used to define the work practice. At its closest, the communication is described as “language in action” where a social process accompanies or is part of the social process between social subjects. An example of this may be the interaction between two individuals using an online chatroom or forum to discuss a specialized topic of mutual interest. At it’s furthest, communication’s experiential distance may be described as language as reflection where the communication is at its most objective and uninvolved. For a consumer engaged in a buying process, an entirely disinterested consumer group (if such a thing exists) may offer such reflective communication. The midrange of experiential distance may be characterized by impersonal but perhaps somewhat subjective reportage of experience with the product of interest by a highly involved newspaper columnist who allows personal tastes to influence their descriptions. The closest experiential distance may be represented by the opinions of a very strong advocate for a product and the way that they express the product’s merits in a chatroom or online forum. The online presentation of a product by its producer will likely be at the closer proximity of experiential distance given their motive and rationale for communication.

**Summary of register definition:** When dealing with online consumer behavior the only data available in real time is the consumer’s activity on the website. Such activity is likely to consist of both clicks on links to content as well as possibly text based enquiries through e-
mail or instant messaging applications. The factors which contribute to understanding the consumer's situational context based on this activity are summarized in figure 1.

<table>
<thead>
<tr>
<th>Field</th>
<th>Tenor</th>
<th>Mode</th>
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<tbody>
<tr>
<td>Variables</td>
<td>Variables</td>
<td>Variables</td>
</tr>
<tr>
<td>• Navigation patterns</td>
<td>• Interaction with</td>
<td>• Website interaction type</td>
</tr>
<tr>
<td>• Web page content sought</td>
<td>o P2P</td>
<td>o Web page content</td>
</tr>
<tr>
<td>• Text entry linguistics</td>
<td>o Vendor staff</td>
<td>o Search function</td>
</tr>
<tr>
<td></td>
<td>• Navigation patterns</td>
<td>o A/V podcast access</td>
</tr>
<tr>
<td>Dependent on</td>
<td>• Text entry linguistics</td>
<td>o E-Mail</td>
</tr>
<tr>
<td>• Consumer task or activity engagement</td>
<td>• Cumulative time on site</td>
<td>o Instant messaging</td>
</tr>
<tr>
<td></td>
<td>• Product experience</td>
<td>o Skype</td>
</tr>
<tr>
<td></td>
<td>• Technology capability</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Affect dynamics between</td>
<td>Dependent on</td>
</tr>
<tr>
<td></td>
<td>social subjects</td>
<td>• Communication needs</td>
</tr>
</tbody>
</table>

Fig 1. Situational context or register definition

With the range of variables involved, the description of situational context requires some level of aggregation for greater workability. This is done by aggregating situational contexts with similar field, tenor and mode into a higher level variable called a genre. Genres offer greater functionality than aggregation and the contribution they make to consumer need determination is detailed in the following sub-section.

**Genre definition**

In the context of this paper’s investigation of consumer behavior and activity in a complex purchase process, genre is defined by common groupings of situational context. The resulting cultural context definition offers the basis for investigating relative information source and format utility as suggested by Grant, Clarke and Kyriazis (2010 a). The research required for doing this is outlined in the following section of this paper. Most importantly, this behavioral definition offers requisite insights into consumers’ needs to enable a responsive information
service. Notably this is done without the need to engage in discovery of the many complex variables associated with behavior drivers such as perceived risk management (Conchar et al., 2004) and contingent decision making (Bettman, Johnson and Payne, 1991). These important theories are not irrelevant as they offer insights that are likely to assist in determining relative information source and format utilities as discussed in the following section of this paper. The final benefit of genre definition is the high probability of behavior sequences being replicated and therefore offering the ability to offer limited but relevant information or link options to a consumer to facilitate their process.

At the highest level, communication theory identifies the socio-cultural context as genres of communication which reflect common practices or behavior indicating a transcendent practice or behavioral culture. This typology is derived from common registers or situational contexts which define what is happening on each side of the information exchange or communication. Each genre or defined situational context may consist of a variety of different activities which are represented by a directional graph in communication theory. The behavior that defines a specific genre may have both obligatory and optional elements which allows for differences in individual situations or needs such as bypassing tasks like registration which may have been completed in a prior interaction. Another important feature of such activity-based analysis is the insight it offers by defining activities that initiate and conclude genres. This enables understanding of when a new genre may be initiated with or without the completion of the prior genre.

For example, research may indicate that one of the consistent groupings of field, tenor and mode (register or situational context) is associated with the consumer’s validation of vendor bona fides. A number of different activities may be involved in this as the consumer evaluates
the vendor’s services, pricing, specializations and possibly testimonials. Each of these activities represents a different genre as while the tenor and mode may be constant (reflecting website information exchange between a consumer and the vendor), the field by definition will differ. As pointed out in the previous subsection, field may be differentiated by the content of website pages selected or search terms used relating to the consumer’s objectives for each of the activities. Mode may also vary from information access from a web page to information exchange using text applications such as e-mail or instant messaging. Such applications may be important for consumers seeking an exchange of non-standard information to evaluate the vendor’s depth of knowledge in an important specialist area. The importance of these activities in determining genre is evident when one considers Martin’s (1992) self evident proposition that communication is a way of getting things done!

No activity is likely to stand in isolation as it will typically have antecedents and consequent actions resulting from the effects of prior activity. Knowledge of such antecedents greatly improves understanding of meaning associated with changes in genre and whether a change of genre indicates a process fracture or a logical continuation of productive activity. Based on that understanding of meaning, the consumer’s subsequent information needs can be far better predicted. In the event of continuing with productive activity, understanding the likely genres which follow the prior activity will indicate the consumer’s information needs. In the event of moving to a problem solving genre because of frustration, the activity following genre termination offers a diagnostic appraisal of the nature of the process fracture for serving remedial content.

The relationships between genres are typically represented by a genre assemblage that graphically depicts the nature of relationships between genres in a consumer process. An
example of a genre assemblage for notional activities associated with vendor validation as suggested earlier in this sub section is presented in fig.2. Assemblages also detail related

![Figure 2: Relevant Genre Assemblage diagram where ovals indicate genres and rectangles indicate actors or stakeholders. The diagram assumes that these genres involve written text, but in this case they may also involve spoken text.]

resources such as published terms and conditions of trade as a mediating variable between pricing and services offered, even though consumers may elect not to read such material. Naturally the full complexity of consumer needs for complex product purchase online would include genres associated with a range of other activities identified by Grant, Clarke and Kyriazis (2010 b). Such activities may include vendor aspects such as search and screening, price and availability investigations, complexity or options management, price negotiation, selection validation or reassurance, communication for product optimization and ancillary service delivery. A notable feature of the genre assemblage is that it recognizes the consumer’s process as potentially involving multiple entities including independent experts
and competitors. Many, if not all, of these alternative contacts will be external to the vendor’s website so the content cannot possibly be known. However, by recognizing that they exist, research may identify the likely differences in activity on return to a website and enable predictive capability for their following information needs based on understood meaning.

**Summary of genre definition:** As well as offering a consolidation of situational context, genre, offers the possibility of understanding the effects of other aspects of the consumer’s behavior. A consumer’s activity on return to a website following investigation of alternative vendor pricing and/or terms and conditions will differ based on the relative advantage or disadvantage, offering insights into the effect of other information on the consumer. This, together with the expected sequence of genres on the vendor’s website may be linked to information preferences as discussed in the following section of this paper.

**RESEARCH AND RESOURCES FOR SYSTEM IMPLEMENTATION**

The application of this theory requires more than the logic behind the theory as explained in this section. For systemic deployment behind a website, research and resources are required and the nature of these is discussed in the following subsections.

**Research for system implementation**

The essence of the research required for defining a consumer’s register and genre and associated information needs is a naturalistic study of a range of consumers engaged in a relevant purchase process. A good example of this is Ericson and Simons’ (1993) practice of *Protocol Analysis* for information elicitation which enables the treatment of qualitative or “soft” data as hard data for analysis. The use of thinking out loud protocols with no prompting by the researcher, for example, offers the required insights into process sequence, motivation
for activity and relative utility of information types and sources for activities undertaken. The only prompts offered to research subjects are typically reminders to express what they wish to achieve by any activity and why they select any particular resource in their process. To illustrate this, the following paragraphs will detail the required practices to identify register or the components of field, tenor and mode for consumers. In doing so it is important to bear in mind that understanding the meaning of activities and language is central to the study.

To determine differentiating behavior and language which points to the consumer’s activity or the field component of register, attention is required to the consumer’s activity and expressed motivation for undertaking the activity. In particular the consumer’s choice of website page content and other activities such as text exchanges online and other offline interaction sequences and the language used should be captured. Of particular interest for field definition is the selection of resources and the expressed objective related to each and the specific language used in text-based interactions with the vendor. This data may then be analyzed to identify patterns of content related to the various activities identified as well as lexical indexical terms associated with each activity. Such research may well result in the discovery of additional aspects of the consumer’s activity beyond the theory based activities proposed by Grant, Clarke and Kyriazis (2010 b). No such research seems to have been done for consumer purchase processes so it may well be that additional complexity may be discovered in this process.

Determination of the tenor of communication or communicative acts is considerably more complex as while drawing on the same data as field, different aspects are of interest. Patterns of content search, selection and duration of time on particular website pages are expected to be helpful in defining the relative closeness between social subjects. In particular, the variance
in interaction with different personnel within the vendor’s operations and peers fulfilling different roles in forums needs to be studied and understood. Behavior in forums is expected to be an area of particular insight given the potential for deep insights which Kozinets (2002) in particular has identified. Further there is a dynamic component as behavior is expected to evolve with experience and knowledge development so the differences in such aspects may be noted. Also as noted in the subsection dealing with register earlier in this paper, tenor is likely to be affected by the dynamics of the product in the industry in a specified market. This latter point is necessary to account for power variance based on relative concentration effects for supply and demand. For a full appreciation of the dynamics of interactions the relative experience and knowledge of research subjects will be required as well as behavior analysis based on keystrokes and mouse clicks but also video of the subject to identify any body language and verbal indicators of effects.

Determination of the effects of different modes of communication is also based on research subjects’ expression of their experience as they move through as naturalistic as possible a process. In particular their sentiments regarding the effects of different media based on source and formats of information offers insights into information source utility within a situational context. Conventional marketing theory may be highly relevant in the understanding it offers of consumer needs based on perceived risk management and constructive consumer choice processes. Of critical importance is the ability to bypass the unworkable complexity of factors associated with these major drivers of consumer purchasing behavior as defined by Conchar et al. (2004) and Bettman, Johnson and Payne (1991).

Analysis should also pay attention to the relative distance of information source and format types in relation to the sentiments expressed by research subjects to develop the appropriate
insights for information source and format types. A key factor in this area will be the development of an information source typology that covers all information source types and formats such as the example that is proposed as a part of the system requirements to enable responsive information service in the following subsection.

Where these three aspects of situation register are in alignment, the analyst then needs to detail the activities within each of the genres that are so defined as the basis for digraphs of each genre. Such digraphs may be represented in computer coding to enable programmatic definition of a consumer’s genre with the ability to determine whether the genre is complete or incomplete. Combined with insights into information source and format utility, the analyst is then able to program information serving with a very high probability of contextual relevance. Importantly, given the ability to study the sequence of genres under different situational contexts, this predictive information serving also works across changes in genre. The system requirements to enable deployment of such insights in a real-time responsive information service on a website is outlined in the following subsection.

**Resources for system implementation**

Given the insights delivered from the research proposed, there are a number of information system requirements to enable the systemic use of such insights. These fall into three distinct areas of (a) database capability, (b) information source, format and content classification and (c) a dynamic information serving system on the website. This system assumes identification of unique consumers visiting the website either through cookie identification or username and password site access.
The database is required to store data derived from the research activity outlined in the previous subsection to enable systemic classification of a website visitor’s situational context. Individual consumers’ activity on the site may then be tracked using individual records of consumer activity within and between genres. Their situation then defines their likely information source and format needs which may then be satisfied based on databased records of information sources identified by the research. A partial example of such an information typology is provided in table 1.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Source type</th>
<th>Source sub type</th>
<th>Communication format</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Commercial</td>
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<td>1.1.1.2 Online forum / blog</td>
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<td>1.1.1.3 e-Mail</td>
<td>1.1.1.4 Instant messaging</td>
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<td>1.1.1.5 Search function</td>
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<td>1.1.2.2 Online forum / blog</td>
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<td>producer’s agent</td>
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<td>1.2.3.1 Website pages</td>
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Table 1. Online information source classification.
This typology is characterized as partial as a further level of classification is required to detail the content of website pages to assist with identifying navigational trend to breadth or depth as part of field definition. Note that the classification includes independent information sources as well as upstream and downstream supply chain partners which are likely to be served by links to 3rd party websites rather than information from the vendor’s database. The importance and value of such independent information sources in online operations was identified by Kelly (1997) in his insightful analysis of the value potentials of electronic networks. In addition, with the complementarity of online and offline information sources identified in Grant, Clarke and Kyriazis’ (2010 b) review, similar typologies for offline interactions are likely to assist development of customer value. Operationally this mandates a requirement for offline contact points either through alliance structures or through a common entity that enables both online and offline service delivery.

The final system requirement is the ability for dynamic serving of information from the website’s own information resources and the range of independent online or offline touch points contingent on the individual’s systemically identified cultural context or genre.

**SUMMARY**

This paper proposes a process analysis approach to defining online context and related needs for a consumer engaged in complex behavior associated with high involvement products of great personal importance. Identification of personal context in real time enables responsive serving of information that is likely to result in better consumer outcomes and possibly address the poor online purchase value for consumers making complex purchases. In doing so it may address the apparent fracture in online process for consumers moving from information search (where there is considerable information utility) to purchase. Such responsiveness may
approach the real-time capabilities of a perceptive salesperson, able to interpret non-verbal communications from a customer and address their personal needs. An online vendor applying such context based responsiveness from initial contact, potentially in the information search stage of a purchase process, is likely to generate cognitive lock-in (Murray and Häubl 2007) with positive associated outcomes.

The contribution made by this paper is the prospect of understanding individual needs by studying real time activity rather than the traditional marketing approach of studying the wide range of personal factors associated with consumer behavior. By studying the communicative meaning of a consumer’s mouse-click activity, text interactions and sequences of activity on a website the consumer’s situational context may be defined. Common situational contexts define cultural contexts which have defined needs for information or interaction associated with them. The cultural context in turn offers insights into process fracture and continuity, regardless of whether this is based on material from the website or elsewhere, and the broader spectrum of the consumer’s purchase process. Importantly, such data may be coded to enable the use of automated systems for serving relevant information based on defined consumer needs.

REFERENCES


