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The Impact of Intra-Transaction Communication on Customer Purchase Behaviour in E-Commerce Context

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Abstract

Online shopping has progressed from having customers passively browse through product pages to have them proactively engage in communication dialogs with product sellers via Live-Chat. Customers indicated that communication with seller is an important type of salesperson service, which begins with their information search and ends with their purchase decision. Building on Content and Style (C&S) framework, this study seeks to understand how the intra-transaction communication influences the customers' purchase behaviour in the environment of e-commerce. By collecting 1234 communication sessions and their following purchase orders, we have a preliminary test of the proposed conceptual hypotheses, and results indicated that informativeness, conversation topic, and emotional expression had significant positive impact on the likelihood of customers' purchase. This study presents a theoretical-driven and empirically validated proposition to improve the intra-communication to aid customers' online shopping.

Keywords

E-Commerce, content-and-style framework, Live-Chat, online purchase.

INTRODUCTION

A widely reported problem with electronic commerce is the issue of information asymmetry between sellers and buyers resulting in customers' hesitation to make a purchase decision. Live-Chat is a shopping website-embedded communication tool that facilitates buyers to engage in synchronous text-based one-to-one communication with a designated seller to obtain product and service information that may not be readily available on a product description web page (Jiang et al. 2010). The Live-Chat medium is typically placed on the product-listing page, which can be clicked by consumers when they are confused about specific features of the products or have doubts about other related services. Now, many famous e-commerce websites adopt Live-Chat applications to serve their clients, including Amazon (United States) and "Taobao" (Mainland China).

Current research has confirmed that Live-Chat communication influenced users' perception in the e-commerce context. For instance, Ou et al. (2008) found this communication could influence customers perception in the online shopping process, such as enhancing their perception of interactivity and presence. The reciprocal communication also has an impact on users' cognitive involvement and affective involvement, which in turn influences their purchase intention (Jiang et al. 2010). Qiu and Benbasat (2005) examined the design of the Live-Chat medium could have an impact on trust development. However, none of the studies answer the research question that how this communication influences the actual purchase decision. Consumer decision is separated as five stages, including problem-recognition, evoked and consideration set formation, pre-purchase evaluation, acquisition and use, and post-use evaluation (Mittal 2002). Communication tasks are different at different stages. In the e-commerce transaction process, we are interested in the communication happened in pre-purchase

evaluation stage. In this stage, customers need to gain the necessary information from sellers to make a purchase decision. The phenomenon of interest in this study is how this computer-mediated salesperson-customer communication has an effect on buyers' purchase decision. Specially, how the communication style and content influence their purchase behaviour, which has been missing in the context of e-commerce research.

Marketing research has long noted the content and style (C&S) of offline salesperson-consumer communication could have impact on consumer purchase decision and satisfaction (Ahearne et al. 2007; Williams and Spiro 1985; Williams et al. 1990). The retail salesperson's most basic activity during the purchase process is to have communication with consumers (Dion and Notarantonio 1992), and the interpersonal communication significantly influences the results of selling. Williams and Spiro (1985) found that the communication styles of customers and salespeople (e.g. task oriented, interaction oriented, or self-oriented) determined the success of the sales interaction. In the traditional marketplace, communication style includes the use of voice, language, eye contact, body movement, quality of listening, as well as overall communication skills (Pace 1962). However, most of the aspects are missing in the online communication. Our research fills this gap by identifying how the content and style of online communication have an impact on customers' purchase behaviour in e-commerce environment. Through a series of C&S variables we model the dimensions of online consumer-to-seller communication as the basic mechanisms through which consumers could have a direct contact with sellers, and subsequently make their purchase decision. Although there may be other variables play a role in the effectiveness of the Live-Chat usage, it seems clear that the communication, represented by its content and style, should be central importance (Adjei et al. 2010; Keeling et al. 2010; Kim et al. 2011).

By addressing the issue of how intra-transaction communication has an impact on consumers' purchase behaviour in the context of e-commerce, this research claims three major contributions. First, we extend the content and style framework to explain by explicitly considering different aspects of online synchronized communication. We propose that the identified content and style variables of the intra-transaction communication will have an impact on customers' online purchase decision. Second, though prior research has already explored how the consumer-seller communication played a major role in the traditional marketplace, we have little knowledge about the effect of this online communication in e-commerce transaction. This research deepens our understanding of information exchange in customers' purchase decision process. Third, the results of this study will give managerial guidance for practitioners about how to effectively use the communication medium in e-commerce websites.

CONTENT AND STYLE FRAMEWORK

This study places emphasis on the interpersonal communication between customers and sale representatives. Relationship literature have already found that the relationship between buyer and seller is significantly influenced by the information communication (Agnihotri et al. 2009), which is defined as "amount, frequency, and quality of information shared between exchange partners" (Palmatier et al. 2006, p. 138). Communication develops stronger relationships in an exchange by helping resolve disputes, align goals, and reveal new value-creating opportunities (Morgan and Hunt 1994). As one of the most effective relationship-building strategies, it could positively enhance customers' satisfaction, commitment, trust, and relationship quality (Ahearne et al. 2007; Palmatier et al. 2006). Compared to the traditional face-to-face transaction, consumers have limited ability to get direct contact to sellers because of their physical isolation. Live-Chat facilitates information disclosure and improves customer perceptions of seller-representative. For instance, communication enhances perception of interactivity in e-commerce transaction (Jiang et al. 2010); while, salesperson who have higher ability to communicate with their customers will have better relationships with them (Parsons 2002). Thus, intra-transaction communication through Live-Chat becomes an important step before customers make purchase decision. The effectiveness and efficiency of intra-transaction communication through Live-Chat could be crucial for buyers' participation in the transaction.

In order to understand the role of communication in marketing channels, Mohr and Nevin (1990) proposed an integrated communication model, which argued the effectiveness and efficiency of communication strategy played a vital role in channel functioning. Their model divides the communication strategy into two parts, namely content and style. Communication content focuses upon what is said as well as communication style emphasizes on how it is said (Dion and Notarantonio 1992). Extending the model to personal selling, the communication between seller and buyer is found to have a direct effect on customer satisfaction (Agnihotri et al. 2009). The information exchange process enables consumers to augment knowledge by getting highly relevant and readily unavailable information about the product and its use, which have a direct effect on consumers' purchase decision. As two important aspects of communication, content and style of communication contribute to the outcomes of customer-seller interactions (Ahearne et al. 2007; Mohr and Nevin 1990; Williams and Spiro 1985; Williams et al. 1990). This research has focused on relationships between the communication attributes and interpersonal consequences, specifically, the customers' purchase decision.

Content of communication, as an important facet of communication strategies, refers to “message that is transmitted – or what is said” (Mohr and Nevin 1990, p. 39). It is regarded as an essential antecedent of consumers’ perception in online communication context (Song and Zinkhan 2008). Song and Zinkhan (2008) found that the personalized message content could enhance consumers’ interactivity perception, which suggested that the content of the intra-communication might have an effect on online purchase behaviour. In our interested scenario, buyers engage in a personalized communication with sellers because the bidirectional communication is the process of active information disclosure. We are interested in how different types of personalized topics in the dialogue influence or powerfully predict customers’ online purchase decision. In addition, some specific content, such as emotional icons and emotional words, are also studied in our investigation.

The way information is disclosed in the communication process as important as the content of information that is revealed (Williams and Spiro 1985; Williams et al. 1990). Communication style refers to “representing the format, ritual and mannerism which the buyer and seller adopt in their interaction” (Sheth 1976). Williams and Spiro (1985) assumed that communication style has three dimensions, including task-orientation, self-orientation, and interaction orientation. In e-commerce context, consumers exchange information with sellers about a specific transaction, which is highly goal oriented and purposeful (i.e. task-oriented). The effectiveness of the sales interaction is determined by the actions of both salesperson and customers. Mohr and Nevin’s (1990) theoretical model provides some critical insights into the buyer-seller communication process. In their model, frequency, direction, and modality as the representation of communication style are regarded to significantly influence the interaction outcomes. Prior research suggests a role for communication style in sales outcome. By conducting the field study and experimental investigation, Dion and Notarantonio (1992) found precise communication style contributed to improving sales performance. Interesting, they also found friendliness of communication contributed to enhancing the positive impact of precise communication style on sales performance of salespersons.

We have sufficient reasons to believe that our extension of Content and Style framework could contribute to empirically understanding how the proposed content and style variables influence consumers’ purchase decision in the online context. In the following section, we will propose our conceptual hypotheses based on the framework and prior literature.

HYPOTHESES DEVELOPMENT

Communication Style: Informativeness and Interaction Speed

We focus on the nature of communication flow and evaluate how its various aspects influence consumers’ purchase decision. The nature of communication flows forms the basis for the interaction parties to evaluate or judge the communication. Weiss et al. (2008) adapt media richness theory to examine the richness of the communication flow. There may be different in the richness of communication with different communication sessions of the same medium. Media richness is constrained by three important aspects of the communication, namely (1) the speed of the interaction, (2) the frequency of the contact, and (3) the amount of information they exchange. The frequency of the contact is missing in the e-commerce environment, where customers contact only once with the seller during the purchase process. Therefore, we are more interested in how the speed of the interaction and the amount of exchanged information influence consumers’ purchase decision.

Informativeness and response speed as two important aspects of communication style could present the communication effectiveness and efficiency, which measure the performance of the communication (Lee et al. 2009). Informativeness refers to the ability to effectively provide sufficient relevant information that users desire for (Negash et al. 2003; Teo et al. 2003). Informativeness, as the representation of the amount of contact between two engaged parties, reflects how much information they exchange (Mohr and Sohi 1995). Elevated level of informativeness reduces customers’ uncertainty through greater information. By adopting the avatar sales agent in the e-commerce website, Holzwarth et al. (2006) found that consumers’ informativeness perception improved their satisfaction with the retailer, attitude about the product, and purchase intention. If sellers make their provided information seem more relevant and rich, buyers’ positive attitude toward the retailer and its product will be enhanced.

Though a high amount of information in the communication could cause information overload in some context and lower consumers’ willingness to transact, the mechanism of online communication could contribute to reducing the effect of information overload. Buyers as the initiator of the communication control information exchange. Sellers need to provide them with necessary information based on the raised questions. Customers could stop the communication process when they do not receive more information. Thus, the negative impact of information overload may not be a threat in the research context. The back-and-forth dialogue makes the buyers believe that they have the opportunity to raise their concerned questions and get a response. In the communication session, customers may raise some questions followed by the concerned ones, and the follow-up questions help to reduce information ambiguity. Thus, we have the following assumption,

H1: The likelihood of customers' purchase will be increased if informativeness is increased in the interaction.

Response speed refers to how quickly the engaged parties response to each other in the communication process. Based on the nature, fast response speed is another aspect of the communication effectiveness, which influences consumers' perception of service quality. Prior research found that communication effectiveness had a positive effect on relationship commitment (Sharma and Patterson 1999). Timely response influences customers' perception of sellers' responsiveness, which is regarded as a major service attribute (Yang et al. 2003). Due to the high involvement nature of e-commerce transaction, a sales representative has to be effective in communicating with clients to instill confidence and reduce risk perceptions. The effective communication could enhance buyers' perception of social presence in the transaction process. Compared to the face-to-face communication, response speed of typing is much slower and asynchronous in an online context. In the goal-oriented context, customers initiate the communication in order to make the purchase. If sellers quickly response to their question, buyers will perceive that sellers highly engage in this transaction and provide their wanted information. Meanwhile, customers' fast response speed also indicates their relationship commitment to this transaction, which is related to their purchase after the communication. Both of these could increase customers' satisfaction with the transaction, and lead them to make a purchase decision.

Speed is regarded as key interactive feature, which presents the amount of time transmitting and taking messages. According to telepresence theory, Song and Zinkhan (2008) predicted that customers' perception of interactivity in the online chatting context will be enhanced when they quickly get the response from the medium. This positive perception enhanced customers' intention to make the purchase. In our research context, we adopt response time to represent interaction speed, which is regarded as how quickly engaged parties receive a reply of their questions. When customers send messages to the sales representative, they need to wait for their response. The fast reply increases their positive attitude towards the seller and the specific transaction. Thus, we expect that sales representative's quick response could enhance the probability of customers' purchase. Therefore, we propose

H2: The likelihood of customers' purchase will be increased if interaction speed is increased in the interaction.

Communication Content: Conversation Topic and Friendliness

Content of communication is regarded as "the substantive aspects of the purposes for which the two parties have got together" (Sheth 1976, p. 382). It refers to the message which is delivered through the communication medium. In this study, we are interested in the conversation topic and the emotional content which are represented in the online shopping process. Conversation topic could be categorized from various perspectives. For instance, the conversation topic of offline communication is classified into five categories, namely physical inventory, promotional activity, product characteristics, pricing structures, and market conditions (Mohr and Nevin 1990). In addition, five utilities are identified to represent content, including functional utility, social-organizational utility, situational utility, emotional utility, and curiosity utility (Anderson 1972). Consumers' concern about the utilities has a direct effect on their purchase decision. Live-Chat serves as an important tool which facilitates consumers for collecting the information about the utilities of the product and service. In the interaction process, consumers raise the questions about the utilities when they have uncertainty about different aspects of the utility. And then, the uncertainty is reduced with the specific questions are raised and answered. Except for the utilities of the product or service, the conversation topic also contains several other aspects, such as bargaining with sellers and consultation about related service. All of these topics help customers have a better prediction towards the purchase results, which enhances their intention to purchase. In our research the content analysis is adopted to categorize the conversation topics of the communication sessions. This method is widely adopted to understand how the communication content influences consumers' purchase behavior (Kassarjian 1977). We expect that conversation topics as important representation of communication content are related to consumers' online purchase behaviour. Therefore, we hypothesize the following.

H3: The likelihood of customers' purchase will be increased if more various conversation topics are covered in the communication.

Emotional expression, as a specific part of communication content, is widely discussed in CMC literature. As a lean communication channel (Daft et al. 1987), the exchange of emotion is more difficult in the CMC than in face-to-face (F2F) communication (Byron 2008). The mediated communication is lack of emotional content, primarily because of the missing of nonverbal cues which could deliver emotional information, such as facial expression, vocal inflection and body movement. An alternative view proposes that people also could deliver their emotion in CMC by adapting their expression (Hancock et al. 2007). Walther (1991) proposed the social information processing (SIP) theory and argued that communication parties adapted existing communicative cues, within the constraints of language and textual display, to enhance the process of relational management. SIP

suggests that verbal cues carry a large proportion of relational information in CMC condition, which expresses users' emotion. Online communication parties use the emotional words and emoticons which could represent their emotion in the online communication process (Riva 2002). Kotler (1973) defined shopping atmosphere as "a space which creates a positive buying environment to produce particular emotional effects among consumers in order to enhance consumer purchase intention." Thus, development of emotional environment may significantly contribute to increasing consumers' purchase intention. Especially in the online transaction process, the consumers and sellers need to build an enthusiastic environment with the help of emotional expression.

Emotion communication is regarded as the recognition, expression and sharing of emotions or moods among communication parties (Byron 2008; Derks et al. 2008). Though non-verbal cues are lack in the CMC context, the Live-Chat has its own alternative way for non-verbal expression, namely emoticons (i.e. emotion icons), which is created with ASCII glyphs that resemble facial expressions and show an emotional state in plain text messages (Derks et al. 2008; Riva 2002). Emoticons could contribute to accentuating or emphasizing a tone or meaning during message creation and interpretation. For instance, :) is adopted to represent users' emotional status of happy. Derks et al. (2008) found that emotional communication online was similar to F2F and emoticons and emotional words contributed to the expression of emotions online. Prior studies have examined the impact of emoticons to the development of users' enjoyment and found that emoticons could help to express feelings, strengthen the intensity of verbal messages, and make individuals perceived personalized in the online interaction (Huang et al. 2008). The use of emoticons is found to be correlated with the development of online friendships. Especially in the context of online customer service chat, Zhang et al. (2011) found that the use of emotional text has a positive impact on consumers' perception of sellers' sociability, which suggested that the emotional text might contribute to building the connection between sellers and consumers.

Emotional words, as another type of emotional text, also provide cues about speakers' emotion. In the western culture, Internet acronyms such as "lol" (laugh out loud) and "imho" (in my humble opinion) provide shortcuts of participants' feelings (Zhang et al. 2011). In Asian culture, some emotional words are adopted to deliver users' specific emotion. For instance, various prevalent cyberspeaks are developed in Chinese e-commerce websites, such as Taobao Style and Vancl Style. These styles combine some emotional words to express the degree of specific emotional status and enable people to have a sense of fashion and happy. For instance, sales representatives in "Taobao" website use "Qin" (亲) to represent their friendliness to their customers. It is appropriate for the fashionable, energetic and lively sellers to get close to their target customers. Accordingly, we hypothesize the following.

H4: The likelihood of customers' purchase will be increased if more emotional icons and words are used in the communication.

RESEARCH DESIGN

Mainland China's largest national customer-to-customer e-commerce website, Taobao (www.taobao.com), was selected as the research website. This website provides an embedded Live-Chat tool, called WangWang, to facilitate communication between sales representatives and buyers, which makes buyers feel active during the transaction process. WangWang has all the functions that general Instant Messaging (IM) tools have. Buyers are able to get detailed products information from sellers via WangWang, sellers inform buyers about the characteristics of the products via WangWang as well. The communication is conducted by text typing. Ou and Davison (2009) confirmed that most customers would like to use WangWang to chat with sellers during their transaction process on the Taobao website.

We need two parts of data to validate our proposed research hypotheses. The first part is the text communication logs (see a sample in Appendix 1), which represent the interaction process between buyers and sellers. Time, content, the consumer's name, and the sellers' name, were recorded in the log. The second part is the purchase record that contains the information of buyers' orders, such as the purchased items, order time, the amount of money. To recruit participants, we posted the recruitment notice on forums of online shopping, which is related to Taobao. These forums allow consumers to share their shopping experience with each other. If buyers are interested in our study, researchers would personally get contact with them. Researchers would help them to export their WangWang communication log and purchase records in the past year. Purchase records were accessed from their Taobao account, and communication log is exported with the functions provided by WangWang. Totally, 120 customers engaged in our research and provided our required information. Then, researchers filter the collected data sample based on the following rules. First, communication log should contain at least one pre-transaction communication session between buyer and seller. Second, buyers need to provide all purchase records in the past year. Third, the communication log should lead to only one purchase order¹. Finally, 85 participants' response is adopted in our research to validate our research hypotheses.

¹ In our dataset, 58 communication sessions are followed with more than one purchase orders. All of them

We performed the following steps in our analysis. First, the communication sessions are linked to the related purchase orders by matching time and seller's name under each consumer's account. The communication sessions were separated into two groups: Group A, containing 692 communication sessions which lead to successful purchases; Group B, containing 542 communication sessions which resulted in no purchase. Then, obtained communication log was then converted into quantitative data based on definitions of various faces of communication. Detailed information could be accessed in Appendix A.

Frequency and words count are adopted to measure the informativeness of the communication session. Customers' and sellers' informativeness is separately evaluated. Frequency is the number of lines that both communication parties post in one communication session. We also calculated the total number of words (Chinese words) that sellers and consumers type in the interaction process. Words count varies independently from the frequency. For instance, a seller might provide 100 words of information in 5 lines, but another one might do so in one line. Both of frequency and words count could present how much information they exchanged in the communication session (Weiss et al. 2008).

Table 1. Independent Variables and Operationalization

		Variables	Measurements
Style	Informativeness	Frequency	Seller [1] Number of seller's answer lines (seller)
			Customer [2] Number of consumer's question lines (consumer)
		Words count	Seller [3] Length (words count) of answer (seller)
			Customer [4] Length (words count) of question (consumer)
	Interaction speed	Timeliness of sellers' response provided [5] The average time interval from question raised to answer provided (seller)	
		Speed of follow-up question raised [6] The average time interval from answer given to question asked (consumer)	
Content	Conversation Topic [7] Times of each conversation topic they mentioned in the communication process (consumer) ²		
	Emotional Icons	Seller [8] Number of emotional icons in seller's answer	
		Customer [9] Number of emotional icons in consumer's question	
	Friendliness	Seller [10] Number of emotional words in seller's answer	
		Customer [11] Number of emotional words in consumer's question	

Note: Communication sessions are separated into two groups. Group A: communication sessions leading to purchases. Group B: communication sessions which do not end with any purchase.

Interaction speed is also being measured from the perspectives of both customers and seller. We calculated seller's response speed as the difference (in seconds) between the time the customer posted a question and the seller's response divided by the amount of times that the seller answered customer's request. Higher numbers indicate slower speed. The speed of a follow-up question raised represented how fast customer further raised their concerned questions after they got the answer from the seller. It is measured as the time interval from the answer given to the new question asked divided by the amount of times consumers raised follow-up questions.

In order to code the conversation topics, a start list is developed, which covers as many conversation topics as possible. Then, two experienced customers are employed to take the line by line coding to identify which conversation topics and how many times they are raised in one communication session. The number of each conversation topic is calculated by how many lines customers mention this topic. Finally, six main conversation topics are identified in this study, namely the enquiry of product availability, enquiry of product quality, enquiry of product feature, bargaining, enquiry of return policy, and enquiry of delivery policy.

The number of emotional icons is measured by how many emotional icons that sellers and customers use in the communication session. For emotional words, we calculated how many times they speak "Qin" (亲) in the interaction process. As stated prior, "Qin" is a very specific word in "Taobao" website, which represented a strong emotional feeling of the speakers.

Participants' demographic information is collected through a short survey in the data collection process. The variables are regarded as the control variable, such as gender, age, and online shopping experience.

are removed in the following analysis

² In the pre-transaction conversation, consumers raise their concerned questions to sellers, and then sellers answer their questions. Thus, the conversation topic is proposed by customers.

PRELIMINARY RESULTS

Table 2. Logistic Regression

		M1 ^c	M1	M2 ^c	M2	M3 ^c	M3
Intercept			0.27***		0.36***		0.36***
Frequency	1. Seller ^a	1.36***	1.20***			0.24	0.42
	2. Customer ^a			1.08***	0.73***	1.16**	0.53*
Words Count	3. Seller ^a	-0.01	-0.03			0.00	-0.05
	4. Customer ^a			-0.29	0.05	-0.31	0.07
Interaction Speed	5. Timeliness of sellers' response provided ^b	0.43***	0.40***			0.30***	0.26***
	6. Speed of follow-up question raised ^b			0.40***	0.40***	0.40***	0.39***
Conversation Topic	7.1 Product Availability ^b			-0.17	-0.12	-0.21	-0.16
	7.2 Product quality ^b			0.49**	0.18	0.46**	0.17
	7.3 Product feature ^b			-0.00	-0.04	-0.03	-0.06
	7.4 Bargaining ^b			0.40***	0.28**	0.36***	0.25**
	7.5 Return policy ^b			0.15	0.19	0.12	0.20
	7.6 Delivery policy ^b			0.85***	0.75***	0.79***	0.71**
Emotional Icons	8. Seller ^a	0.34**	0.42***			0.35*	0.45***
	9. Customer ^a			0.40	0.26	0.36	0.18
Emotional Words	10.Seller ^a	-0.12	-0.09			-0.15	-0.12
	11.Customer ^a			1.28***	0.46*	1.27***	0.46*
Log-likelihood		-568.82	-722.70	-472.93	-680.61	-462.66	-665.95
χ^2 (d.f.)		137.63(5)	147.00(5)	328.09(11)	331.18(11)	349.95(16)	360.51(16)
Pseudo R ²			0.09		0.20		0.21
McFadden R ²		0.11		0.26		0.27	
Nagelkerke R ²		0.17		0.37		0.39	

Notes: Unstandardized coefficients are reported. Because all control variables are not significant, they are removed in the analysis.

Except for the conversation topic, all variables are transferred with the natural logarithm.

^aThe centering-residual values are used. ^bThe centering values are used. ^cThe fixed effect model

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

To address the issue of endogeneity, we conduct the analysis with communication duration as an instrumental variable, on 8 endogenous variables, including frequency, words count, emotional icons, and emotional words³. In the following analysis, we separated regress frequency, words count, emotional icons, and emotional words on communication duration and used the residuals from those regressions instead of raw values, thus using only the incremental information that is not explained by communication duration. For instance, frequency of seller is calculated in the following form:

$$\text{Frequency of seller} = \text{constant} + \beta * (\text{communication duration});$$

The residuals of this regression model are adopted to represent frequency of seller.

This procedure controls for endogeneity by accounting for established structural relationships between these variables and communication duration and reduces multicollinearity. Interaction speed and conversation variables were directly used to conduct the analysis.

Because the dependent variable is the binary indicator, binary logistic regression models were used to test the hypotheses. The dependent variable is set to 1 if the purchase took place after communication and 0 if otherwise. The estimation results are presented in Table 2. Considering that multiple communication sessions can be the same consumer, we also tried a fixed-effect model in our analysis. The fixed-effect model accounts for the consumer-level idiosyncrasy affecting all the communication sessions with the same consumer. We could find that the results of the fixed-effect model are qualitatively consistent with the outcome of normal logistics regression. The results are interpreted according to the analysis of the fixed-effect model. The analysis was conducted by separating the consumer related IVs and seller related IVs because of the correlation among their behaviours in the same communication session. Preliminary results are represented in Table 2.

CONCLUSION AND CURRENT STATUS OF THE PROJECT

Results of logit analyses showed that there was a relationship between the communication frequency and consumer's purchase decision. From M1^c and M2^c, we could find that both frequency of seller ($p < 0.001$) and frequency of consumer ($p < 0.001$) are positive and strongly significant with consumer's purchase decision. Number of words they typed in the communication session mattered less than the frequency. A likely explanation

³ Variable [1],[2],[3],[4],[8],[9],[10],[11]

is that the same amount of information could be represented with various numbers of words in Chinese. For instance, a consumer may raise a question with only several Chinese words, while others may need to type a very long sentence to express the same meaning. Compared with the number of words, the frequency could be better to represent the amount of information. Each line may express one point in the interaction process. Thus, one major limitation of this study is that we use the work count to represent the informativeness. In future, this issue will be solved by reconsidering how to measure the informativeness from the communication log. Contradictory to our prepositions, we found interaction speed has a negative impact on the likelihood of customers' purchase. The major potential reason is that fast response makes consumers perceive that sellers do not carefully consider their questions. This reduces their trust and positive attitudes towards the sellers. Three conversation topics are positively related to purchase decision. It represented that the frequency that consumers consulted sellers about product quality ($p < 0.01$) and delivery policy ($p < 0.001$), or bargained with sellers ($p < 0.001$), had a positive effect on consumers' purchase decision. Interestingly, we found that the effect of emotional words and icons may depend on the speakers. For sellers, the number of used emotional icons ($p < 0.01$) has a positively effect on the purchase likelihood, while the number of used emotional words ($p > 0.05$) is not significant. For consumers, the results were reversed. The number of used emotional icons ($p > 0.05$) has no effect on the purchase likelihood, however the number of used emotional words ($p < 0.01$) is positive related to it. From the way in which a question is phrased or the conversation message from the consumer is written, the emotional words could subconsciously express a pleasant gesture, inclination to make such a purchase. However, when emotional icons are used by the consumers, it may simply indicate a polite way of expressing friendliness to the retailer. Seller's replies are usually expressed in polite forms, and thus a consumer may not explicitly experience further closeness resulting from the inoculation of emotional words by sellers. Sellers' typed emotional icons make such emotional gesture evidently displayed. To sum up, H1, H3, and H4 are supported by the data, while, H2 is rejected.

In this manuscript, we conducted an empirical research to examine how intra-communication influences customers' purchase decision from content and style framework. To do so, customers' communication sessions and purchase orders are collected to validate our proposed conceptual hypotheses. The current data analysis is preliminary and not completed. In future, we could revise this paper from two major perspectives. On one hand, we will search for more theories to understand the communication log. On the other hand, the measurement of the constructs will be further improved. We hope the research results can be better updated on the comments from this conference.

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APPENDIX 1

Sample Communication Session and Coding

The consumer's name is "tipol25", and the seller's name is "zrs2046". The communication session sample was translated from Chinese to English.

2010-12-05

2010-12-05 18:46:59 tipol25: /:)

2010-12-05 18:47:19 tipol25: Hello.

2010-12-05 18:47:30 tipol25: Does the delivery cost me 6 yuan?

2010-12-05 18:47:57 zrs2046: Yes.

2010-12-05 18:48:15 tipol25: OK. /:^^ When could you deliver it if I made a purchase?

2010-12-05 18:48:27 zrs2046: Tomorrow.

2010-12-05 18:49:15 tipol25: OK. Are you sure that the 14.1-inch computer can be put into a bag?

2010-12-05 18:49:44 zrs2046: The 14-inch computer can be put in a bag.

2010-12-05 18:50:03 tipol25: How about the 14.1-inch computer? /:^^

2010-12-05 18:50:13 zrs2046: It's OK. /:_^

2010-12-05 18:54:47 tipol25: That's great. Could you deliver it as soon as possible?

2010-12-05 18:55:36 zrs2046: /:U*U Sure!

Informativeness

Frequency

Based on the definitions put forth in this study, the lines which are posted by both consumer and seller are adopted to measure the informativeness of the communication session. In the sample message thread, [1] is 5 and [2] is 7.

Words count

How many words said in the communication session was operationalized to assess the informativeness. [3] and [4] is based on the Chinese word count.

Interaction Speed

Timeliness of sellers' response provided

Timeliness of sellers' response provided was measured as the time elapsed between consumer's first post among the paragraph and sellers' following first response. For instance, consumer firstly typed three lines and then seller replied. The response time is 58 seconds (2010-12-05 18:47:57 - 2010-12-05 18:46:59). In the communication session above, this measurement was 158/5, which is calculated as following:

$$(2010-12-05\ 18:47:57 - 2010-12-05\ 18:46:59) + (2010-12-05\ 18:48:27 - 2010-12-05\ 18:48:15) + \\ (2010-12-05\ 18:49:44 - 2010-12-05\ 18:49:15) + (2010-12-05\ 18:50:13 - 2010-12-05\ 18:50:03) + \\ (2010-12-05\ 18:55:36 - 2010-12-05\ 18:54:47) = 158\ \text{seconds. Then, the result was } 158/5.$$

Speed of follow-up question raised

It represented how fast consumer raised their question in the communication session. In the communication session above, consumer raised her first follow-up question at 2010-12-05 18:48:15. The time interval of this follow-up question is 18 seconds (2010-12-05 18:48:15-2010-12-05 18:47:57). The speed of follow-up question raised was 359/4, which is calculated as following:

$$(2010-12-05\ 18:48:15 - 2010-12-05\ 18:47:57) + (2010-12-05\ 18:49:15 - 2010-12-05\ 18:48:27) + \\ (2010-12-05\ 18:50:03 - 2010-12-05\ 18:49:44) + (2010-12-05\ 18:54:47 - 2010-12-05\ 18:50:13) = 359.$$

Then, the result was 359/4.

Conversation Topic

In this sample communication session, the consumer raised her questions about the delivery policy in 3 lines. She also consulted the product feature twice. Thus, consumers cover two conversation topics in this session. The coding result is:

Delivery policy: 3; Product feature: 2.

Friendliness

Emotional Icons.

In the sample communication session, seller typed 1 emotional icon (i.e. [8]) and consumer posted 3 emotional icons (i.e. [9]).

Emotional Words.

In the sample communication session, "Qin" is not typed by both customers and sellers. Thus, both of variables are 0 in this sample.

Other Variables

Communication Duration.

It represents how long this communication session lasts. It is (2010-12-05 18:55:36 - 2010-12-05 18:46:59) = 383 seconds in this sample session.

Note: Except for the conversation topic, all variables are transferred with the natural logarithm in the following analysis.

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