Commercial Web Site Interface Language Components: Influence on Country of Origin Effect & Web-based Purchasing Decisions

Keywords: Internet marketing; Electronic commerce; Country of origin; Flow; Interface language; Java

ABSTRACT

Explosive growth in the popularity of the World Wide Web (the Web) has lead to nearly every MNC (Multinational Company) establishing a Web site. At the same time, small-scale firms and start-ups have aggressively embraced this new medium as a short cut to reach mass markets with little financial expenditure. The new economics of electronic commerce, specifically, Web-based selling and purchasing, has profound implications for established firms as the foundations of competition shift in the favor of small, technically astute firms with low overhead.

Web economics is sobering in that it describes a nearly perfect market, where consumers can search for a desired good around the world, compare prices and features from hundred of suppliers and make a purchase all in minutes from the comfort of the home. Such economic efficiency dictates a competition based solely on price with accompanying pressures on profit margins. Such a trend, while in the interest of some, clearly runs counter to the marketing efforts of MNCs today, which strive for product differentiation through such strategies as branding. However, the media penetration being achieved by the Web, opens opportunities for MNCs to reinforce their product differentiation efforts. Examples of this strategy exist with companies such as Procter & Gamble, which has reserved 110 Internet domain names that match specific products.

An MNC's web site needs to convey its message clearly. For sites that are product/brand oriented, this means creating a rich experience for the user. MNCs need to keep a consistent look and feel to their sites. Allowing every branch office to independently create its own version of the company's web site could confuse potential customers since they would have no way to know which site was the *real* site. This diversity could dilute the marketing message of the firm. An additional factor will be the obvious efficiency of controlling all web-based activity from a single site. Duplication of effort would drive up the cost of a system when the most important advantage of such a system is its low cost. Since the Web eliminates many product cues, the interface language is left to play a major role in sending signals to the consumer. While English probably cannot be eliminated completely, due to its international nature, is it possible that products highly related to certain nations will receive higher levels of consideration when the language of that country is included in the interface (even though the product being offered for sale was not manufactured in nor is it being sold from that specific country).

This study, through the use of laboratory simulations, explore the relationship of the Web interface language, users' flow experience, country of origin cues and final purchasing decisions. Results would help R.O.C. firms in designing more effective commercial Web sites as well as reducing cost presently incurred in duplication of effort when dual Web sites are maintained. MNCs can benefit from understanding how to use the Web to increase branding, rather than simply reduce Web competition to price only. Smaller, Web based firms, can benefit by understanding how to take advantage of the few product cues the Web supplies, in this case the interface language, in order to gain a competitive advantage.

Introduction

While the efficiency of maintaining a single Web site is clear, an important problem of maintaining a single Web site is the question of how to communicate to many nationalities. While the Internet technology allows near complete elimination of national boundaries when searching for a product, the question of language still remains. The assertion that English has become the lingua-franca of the Web, and international business in general, certainly is backed by strong trends. However, if we are to consider the most effective form of competition on the Web, it may not be the case that English is always the best language for the interface.

The language used in a Web site's interface may have important impact on the flow users experience (the feeling of involvement with and control over the interface) as well as sending certain cues about the product being searched for. Understanding the how these factors interact with purchasing decisions is relevant for MNCs and small Web start-ups alike. For MNCs, misunderstanding how to effectively send their marketing message over the Web will exclude a majority of the international customers they seek as the Web becomes a major media force. Do options that allow interaction for choosing translations increase the consumer's involvement (through Java programming), or does automatic selection of a consumer's native language improve willingness to make a purchase? The following six hypotheses are proposed for exploration in this research.

H1a: Interface language choice influences user's perception of product being sold on web site.

H1b: Languages linked to highly industrialized nations will increase sales of product being offered.

H1c: Languages linked to developing countries will decrease sales of product being offered.

H1d: Specialty products, traditionally linked to a single country, will increase sales when the language of that country is used.

H2: Increased understanding of interface language will improve user's flow experience.

H3: Ability to interact and select interface language will improve user's flow experience.

H4: Products and web sites that have no information about country of origin, will be judged as emanating from a country where the interface language is used.

Internet/Web Background

History

The Internet can now be seriously considered a marketplace mainly due to its distributed computing and its openness. Overwhelming acceptance of the World Wide Web, hereafter referred to as the web, has allowed a critical mass of providers and users to be reached. Previous business related networks, such as local area networks (LANs), wide area networks (WANs), value added networks (VANs), based on electronic data interchange (EDI) protocols, never allowed free entry of sellers and buyers and tended to lock out competition (Steinfeld et al. 1995). The web's open standard, using the TCP/IP protocol, is truly open as any personal computer using this protocol can enter the web and become a seller or a buyer.

Openness on the web is a result of over 30 years evolution. The Internet we know today started as ARPnet (Advanced Research Projects Agency of the U.S. Defense Department). From that time, the central philosophy has been to avoid any central control of the network, thus avoiding dependency and increasing robustness. No single group or computer is in charge of the Internet, but decisions concerning the network are instead made by volunteer groups such as the Internet Society and all their decisions are followed only by those who choose to do so. A result of this lax structure is a very high level of adherence to the philosophy of an open network that allows easy entry to the system.

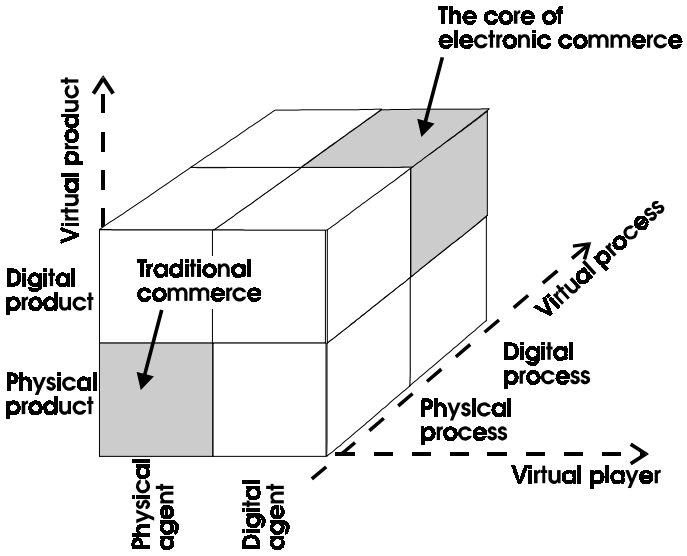
Recent growth in Internet use can be primarily attributed to the development of easy to use graphic interfaces. These friendly interfaces have been made possible by what we now call the World Wide Web. This development did not happen over night either and is part of an evolution of interfaces that moved from FTP (File Transfer Protocol), Gopher and finally to the web browsers we are familiar with today.

Electronic Commerce

A new economic environment has come into existence because of the success of the web (Choi, Stahl and Whinston 1997). Figure 1 shows how electronic commerce expands on the traditional commerce, which dealt only with physical products, physical agents and physical processes. The new area that include electronic elements are not simply extensions of traditional commerce, but have new features that are like no other we have previously experienced (Borenstein, et al. 1996). For example, consumers may shop in fundamentally different ways due to the ease with which they can move to view the products offered by hundreds of sellers in numerous countries (Benjamin and Wigand 1995). A shopper on the web could perform a search for a product and then compare the prices offered by competing sellers. If shoppers were to act in such a way, price could become the major competing factor in the marketplace (Steinfeld, Draut and Plummer 1995). All information about products could be efficiently searched for and decisions quickly made with little interference from issues such as service, brand, advertising, etc. In

other words, the web could create a market that is much closer to a perfect economic model than anything we are familiar with today.

Figure 1 (Choi, Stahl and Whinston 1997)



Web based home shopping is still in its infancy, but promises high rates of growth. By the year 2000, sales forecast predict total interactive home shopping to range from USD5 billion to USD300 billion (Reda 1995; Wilensky 1995). Present sales on the Internet have been estimated at USD500 million--less than 1% of all non-store shopping (Schiesel 1997). Combining all electronic based home shopping, the total market size is only 5% to 10% of retail sales.

Web Marketing Background

Competition Factors

Advertising that emphasizes information, such as prices and features, tend to lower the level of absolute prices and suppress market entry barriers as competition centers mainly on price (Bain 1956). Advertising that emphasizes brand recognition, persuasive advertising, helps firms raise prices and allows a firm's market power to increase (Eaton and Grossman 1986; Caves and Greene 1996; Grossman and Shapiro 1984; Lewis and Sappington 1994). For this reason, it is unlikely that most established MNCs will use the web as a way to simply concentrate on the most fundamental information units, such as price.

Much more likely is that established firms will see the web as an opportunity to get their message across to a world wide market, for no more cost than that spent on setting up a web site for the domestic market. In this way, firms can differentiate their products on the web in the exact same way they do in mainstream advertising (Grossman and Shapiro 1984). Products offered on the web present the special need to emphasis persuasion, since the consumer cannot physically touch the product or

examine it closely. This is even more true for digital products, which must send signals of quality and compensate for the lack of experience.

Global Branding

Language & Cultural Barriers

Developing a single Web site for a brand is more economical than developing numerous sites while also allowing control over the brand image. Internet users tend to explore the sites of familiar brands first. Traditional marketing efforts also combine with consistent Web sites to reinforce brand image and the all important trust factor (Quelch, John 1996). A major problem, however, of this single site approach, is that it does not take into account the fast growing international market and all the languages and cultural issues involved.

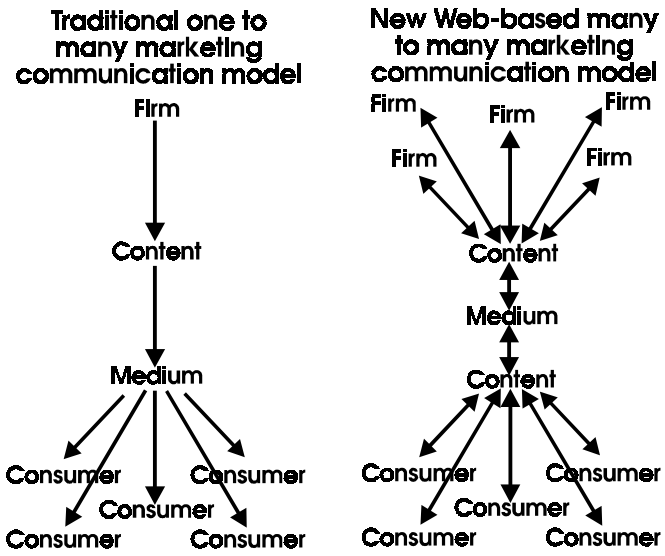
Flow Research

Flow (Csikszentmihalyi 1977; 1990) is a state of interaction between the consumer and the firm in a computer-mediated environment (in this case, the Web). Flow is positively correlated with perceived communication quantity and effectiveness

Many to Many Interactive Structure

The traditional model of mass media communication (see Figure 2) is based on a one-to-many formulation. No interaction is present in the traditional model (e.g. Kotler 1994, chapter 22). The right half of Figure 2 shows a communication model that describes computer-mediated communication (as outlined by Steuer 1992). Web-based communication is a two way process in which consumers can interact with the firm in real time (Laurel 1991; Rheingold 1991). Of central importance to both these models is the influence of the medium (Steuer 1992). In the case of the Web, the medium is a computer-mediated environment which includes the central component of language. Interactivity is central to the new communication technologies and are more than traditional mass media channels and yet are not completely interpersonal channels (Reardon and Rogers 1988). The role played by the most fundamental element of interaction, language, has yet to be explored.

Figure 2. Models of mass media and Web-based communications



Importance of Flow

The construct of flow has been described as central to personal interactions with computers (Csikszentmihalyi 1990; Ghani, Supnick and Rooney 1991; Trevino and Webster 1992; Webster, Trevino and Ryan 1993). Flow is a measure of:

a) the extent to which a user feels a sense of control over his/her interactions with the computer environment (Csikszentmihalyi 1975; Bowman 1982; Csikszentmihalyi and LeFevre 1989; Day 1981; Ellis 1973; Miller 1973).

b) the user's focus and attention on the interaction with the computer environment (Hoffman and Novak 1996).

c) the extent of enjoyment and satisfaction felt while interacting with the computer environment (Webster, Trevino and Ryan 1993).

When the flow state is high, a consumer's attention is entirely focused on the interaction with the computer interface. Concentration is intense and sense of time is distorted. This high flow state results in an extremely gratifying experience. In effect, flow is the "glue" that holds consumers in the computer mediated environment. Difficult to use, understand or access computer mediated environments can lead to low levels of flow. Interfaces that do not perform as the consumers would like, or that do not obtain the goals being sought can lead to frustration and dissatisfaction--signs of low flow states.

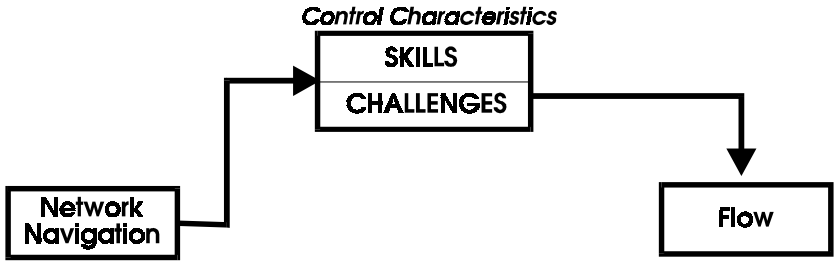
Match of Skill & Challenge Improves Flow

The model of network navigation in a computer mediated environment, adapted from Hoffman and Novak (1996) includes two antecedents of the flow state that we will concentrate on in this research. The first prerequisite for flow to occur is the

control part of the model, made up of skills and challenges. Flow may begin when the level of skill and challenges are equally low. Recent research has shown that improved flow can occur when skill and challenges exceed the level that is normal for the user in his/her daily experience (Ellis, Voelkl and Morris 1994). When skills and challenges of the experience are below the user's normal experience, the result is an apathy state and flow does not occur (Csikszentmihalyi and Csikszentmihalyi 1988). Obtaining a level of skill and challenges that is above the user's normal experience in order to reach a flow state is in line with theories related to optimal stimulation (Berlyne 1971; Holbrook and Gardner 1993; Raju 1980; Steenkamp and Baumgartner 1992).

Figure 3 shows the control characteristics part of the flow model adapted for this study. Skills and challenges make up the control part of the model with the understanding that skills and challenges must be at a level somewhat above the user's normal experience. What exact level is required, or even how to measure or understand the level, is presently under debate with no unified unit of measurement agreed upon.

Figure 3. The control characteristics in the flow model

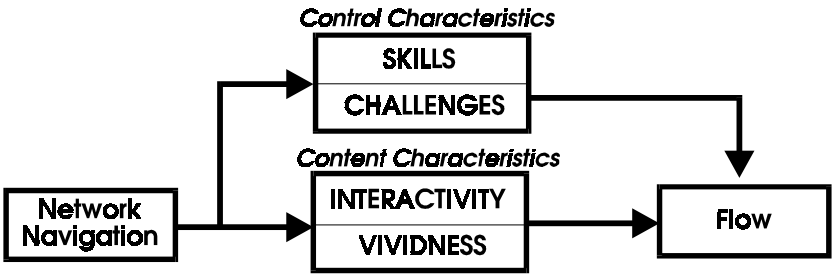


High Levels of Interactivity & Vividness Improve Flow

Figure 4 shows the addition of content characteristics to the flow model. This part of the model accounts for interactivity of the computer mediated environment. Interactivity is influenced by the naturalness of the interface as well as speed of reaction. Interactivity can be greatly influenced by factors such as hardware speed and quality as well as Internet connection quality and speed. Due to these factors, our research will be lab based, thus eliminating any questions of inconstancy amount test subjects.

The component of vividness relates to the perceived richness of the media (Daft and Lengel 1986; Daft, Lengel and Trevino 1987; Daft and Wiginton 1979). The quality, speed and bandwidth of the environment affect vividness, as they affect interactivity (Steuer 1992).

Figure 4. The content characteristics added to the flow model



Country of Origin Research

Country of origin effects are especially important for newly developed or developing countries (such as those in Eastern Europe and South East Asia) because consumers' preferences and attitudes for products from those countries are lower than for developed countries (Baughn and Yaprak 1993; Liefeld 1993; Wood and Darling 1993) and can even have a significant negative effect (Johansson 1994). A few studies have examined how country of origin effect can interact with pricing strategies (Johansson and Nebenzahl 1986; Nebenzah and Jaffe 1993; Speece et al. 1993; Stwewart and Chan 1993).

Hulland, Todino and Lecraw (1996) assert that country of origin is a feature that consumers are often willing to pay a price premium for. Other researchers (Baughn and Yaprak 1993; Erickson, Johansson and Chao 1984; Hong and Wyer 1989; Johansson, Douglas and Nonaka 1985; Liefeld 1993; Samiee 1994; Wall, Liefeld and Heslop 1991) argue that country of origin plays a very small role, if any, when other cues about the product are present.

General Country of Origin Effects

A positive relationship between the level of economic development and consumers' product evaluations has been described in numerous studies (Kaynak and Cavusgil 1983; Liefeld 1993; Wang and Lamb 1983; Cordell 1992; Johansson and Nebenzahl 1986; Roth and Romero 1992). This link is a rational response on the part of consumers as they consider the production capabilities of more economically advanced countries to be generally higher (Porter 1990).

Table 1. Summary of country of origin research in different countries

Study	Country	Sample	Finding
Schaefer (1997)	UK	English consumers	Product knowledge leads to increased reliance on country of origin if brand is not known
Bruning (1997)	Canada	Canadian consumers	Country attribute was second only to price when deciding on airline carrier with national loyalty playing a role.
Pullman, Granzin and Olsen (1997)	USA	US consumers	Emotion-based "buy domestic" appeals influence shopping strategies, but have little impact on actual purchasing decisions
Hulland, Todino and Lecraw (1996)	Philippines	Philippine markets (legal and illegal)	Country of origin can have a significant impact on the prices of identical products.
Johansson,	Russia	Russian farmers	Country of origin and risk attitudes influence

Ronkainen and Zinkota (1994)			**product evaluation**
Lin and Sternquist (1994)	**Taiwan**	**Taiwanese consumers**	**Country of origin affects quality perception but not price estimates and store prestige has no effect**
Varadarajjan, Bharadwaj (1994)	**India**	**Indian marketing and non-marketing managers**	**Skepticism and discontent with marketing practices**
Ettenson (1993)	**Russia, Poland and Hungary**	**Consumers of Russia, Poland and Hungary**	**Country of origin has differential influence, brand name plays a lesser role and interaction of country of origin and brand name has a minor role**
Roth and Romeo (1992)	**Ireland, Mexico and USA**	**Consumers in Ireland, Mexico and USA**	**The image of country of origin is related to product category dimensions**
Papadepoulos, Heslop and Beracs (1990)	**The Netherlands, France, West Germany, Greece, Hungary, Canada, USA and UK**	**Consumers of Canada, USA, UK, The Netherlands, France, West Germany, Greece and Hungary**	**Western and Eastern consumers have strong and positive attitudes about Japanese products. Western products are not viewed the same way**

Importance of Country of Origin Effect in Web Marketing

With very low barriers to entry, in the Web market place, manufacturers and marketers from any country can quickly obtain market presence through establishing a Web page. When accessed, the majority of Web surfers will not know the country of origin--thus leading to an even more level playing field for new entries. While Web addresses often end in a country code, e.g., TW for Taiwan, this code is not at all guaranteed to be related to the location of the company marketing the goods on the Web page. Often the country code is not included, replaced by numerical codes, or the Web page is placed on a site that lacks country codes. What language will lead to the greatest benefit upon new Web surfers entering the commercial site?

Lack of Brand

Previous country of origin research is often criticized, for its lack of generability, because of the unrealistic judging of a product with no other cues but country of origin. Researchers have responded to this criticism by describing the interaction of country or origin and brand effects. Results, however, have been mixed with some studies showing country of origin playing a more important role in purchasing decisions (Han and Terpstra 1988; Nes and Bilkey 1993; Tse and Gorn 1993; Wall et al. 1991) while other studies have shown brand to be more important (Cordell 1992; Ulgado and Lee 1993).

Schaefer (1997) found that when consumers are more concerned with country of origin when they are familiar with the brands and product line involved in a purchasing decision. Han (1990) contends that country of origin produces a "halo" from which consumers infer product attributes even when knowledge of the country and product is extensive.

Signals of Country of Origin

Not all country of origin signals are equal. Variations in the effect have been found based on economic development (stated above), ethnocentric (Han and

Terpstra 1988; Wang 1978), patriotic (Daser and Meric 1987), differing demographic characteristics of the consumers (Hester and Yuen 1987), product type (Lumpkin and Kim 1985; Nagashima 1970; Wall and Heslop 1986), and product familiarity (Heimbach et al. 1989; Johansson et al. 1985; Tse and Gorn 1993).

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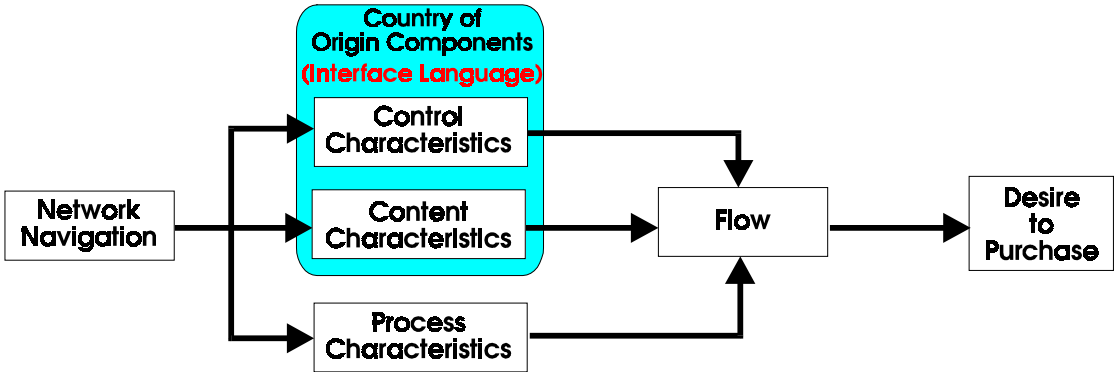
Research Design

Model

Examining the model of flow (adapted from Hoffman and Novak 1996), we can find that two of the three major inputs to the flow state can be influenced by the interface language employed as well as the level of choice or interaction supplied for choosing the interface language. Given a case where brand and production location are not known, the interface language supplies country of origin cues that may influence the level of flow obtained as well as purchasing decisions (see Figure 5).

Figure 5. Simplified flow model parts influenced interface language (Hoffman and Novak 1996)



Hypotheses

H1a: Interface language choice influences user's perception of product being sold on web site.

H1b: Languages linked to highly industrialized nations will increase sales of product being offered.

H1c: Languages linked to developing countries will decrease sales of product being offered.

H1d: Specialty products, traditionally linked to a single country, will increase sales when the language of that country is used.

H2: Increased understanding of interface language will improve user's flow experience.

H3: Ability to interact and select interface language will improve user's flow experience.

H4: Products and web sites that have no information about country of origin, will be judged as emanating from a country where the interface language is used.

Research Process

Sampling Methods

Numerous researchers have developed self-reported scales to measure the flow state (Csikszentmihalyi 1977; Csikszentmihalyi and Csikszentmihalyi 1988; Csikszentmihalyi and LeFevre 1989; Ellis, Voelkl and Morris 1994; Ghani and Deshpande 1994; Ghani, Supnick and Rooney 1991; Kimiecik and Stein 1992; Mannel, Zuzanek and Larson 1988; Webster, Trevino and Ryan 1993; Trevino and Webster 1992, Webster 1989). Likert type scales have been used in measuring flow by Ghani, Supnick and Rooney (1991) and Ghani and Deshpande (1994). Items commonly used include components of control, attention, focus, curiosity and intrinsic interest.

Another approach to measuring flow is the Experience Sampling Method (ESM) (Csikszentmihalyi and Csikszentmihalyi 1988; Csikszentmihalyi and LeFevre 1989; Ellis, Voelkl and Morris 1994; Kimiecik and Stein 1992; Mannell, Zuzanek and Larson 1988). The ESM method involves electronically paging respondents at random intervals throughout the day as they use the computer mediated environment. When paged, a respondents is asked to rate the experience he/she is currently engaged in. The ratings cover experiences of skills, arousal, motivation, concentration and creativity.

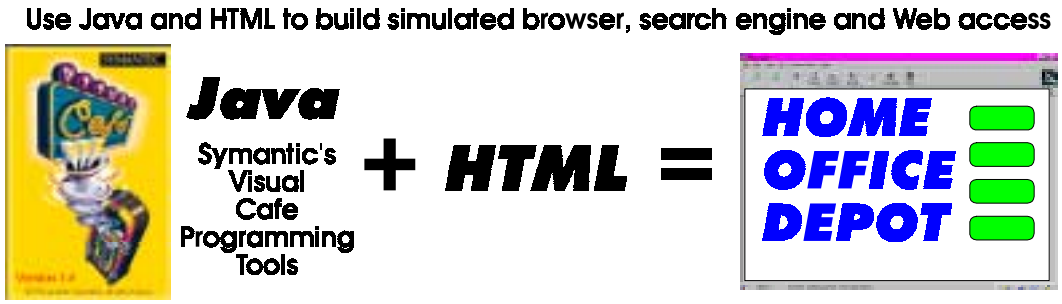
Collection of data in lab settings has been attempted by Payne, Bettman and Johnson (1993). This unobtrusive approach can measure exactly what users are performing in the computer mediated environment. Detailed data can be collected that may give clues as to flow states being experienced.

Lab Setting

In order to avoid any inconsistencies due to hardware specifications, Internet connections, browser types, etc., subjects will be tested in a laboratory setting. Subjects will be chosen randomly from the student body of Chaoyang University of Technology. Participants are given a cover story, that does not reveal the true purpose of the study, and rewards participants with a NT$100 remuneration for their time in the lab.

Before testing begins, the Java software language will be used to create a simulated Web browser that has the look and feel of the normally used major Web browsers (see Figure 6). Web storefronts will also be programmed using a combination of Java and HTML. Numerous simulated sites will be created and the Web store fronts will present numerous products and combinations for sale in order to give the illusion to the user that he/she is accessing a real Web-based store.

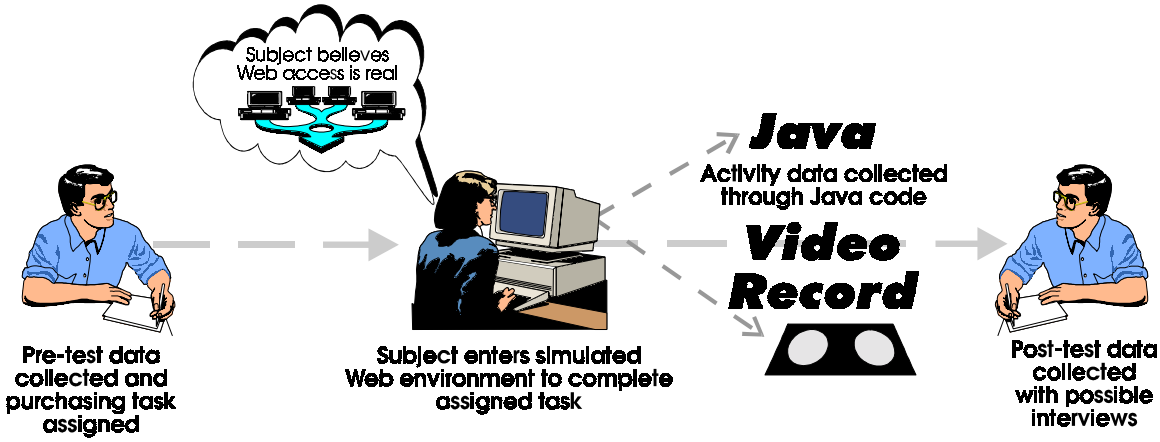
Figure 6. Simulated Web created for experiment



Built into the software will be monitoring code to record actions performed by the users as well as navigation paths. On screen activity will be video recorded (through the use of a video adapter PC VGA to NTSC) on 8mm video tape.

Personal/demographic data will be completed prior to task completion while a post-test will inquire into the users perceptions and rationales concerning the task completed (see Figure 7).

Figure 7. Steps in lab observation and data collection

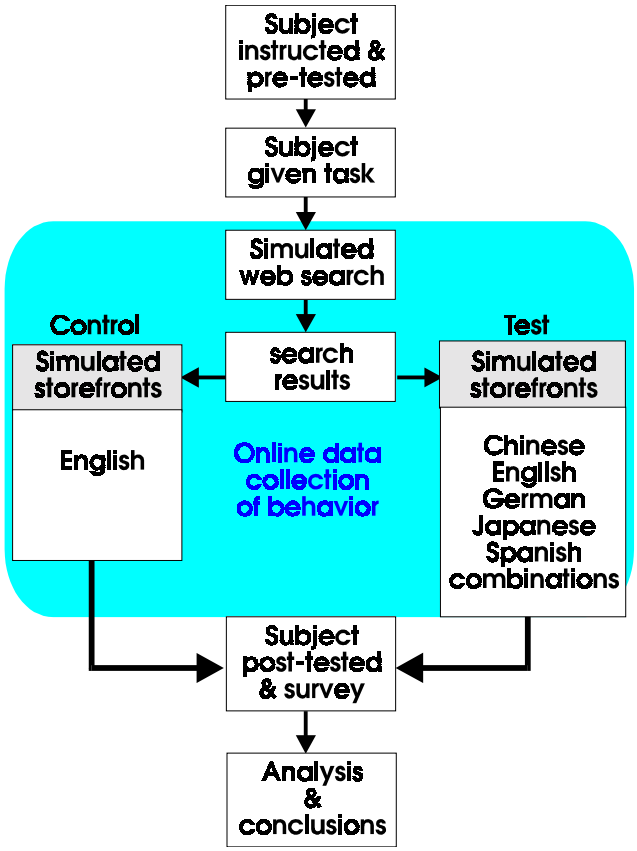


Task Completion

Subjects will be assigned purchasing tasks under the pretense of testing an in-school developed experimental new Web browser and Web search engine. In order to test these new Web access tools, the story goes, assistants are being asked to perform some purchasing tasks for the school through the new browser and search engine. The actual purpose of the experiment will be unknown to the participant.

Participants will be randomly assigned to test and control groups (see Figure 8). One hundred percent English interface will act as the control to the experiment. This control group will only be given search results and shopping opportunities in English interfaces. The control group participants will be exposed to numerous interface and shopping opportunities as well as some being allowed to use interactive interfaces that allow translations.

Figure 8. Research structure



Data Analysis

Data analysis opportunities are numerous as the experiment will be well controlled for internal consistency and validity (see Table 2). External validity will be based on the accuracy in reproducing the Web experience. This can be measured in the post-test survey and interview by inquiring how the browser functioned compared to normal Web access. In fact, inquiring about the simulated Web experience accuracy fits nicely with the experiments cover story of testing a newly developed browser. However, more difficult to overcome is the selected participants. While they will be randomly selected, drawing from a wider population would be desirable. Every opportunity will be sought to attract participants from a wider section of the population. One obvious approach would be to include night school students who are mostly professionals and cover a wider demographic range than day time university students.

Table 2. Statistical analysis techniques to be applied

Analysis Technique	Control Group (Within)	Between Groups	Test Group (Within)	Purpose
ANOVA	✓	✓	✓	Testing differences in interface, flow and purchase decisions
Partial Path Analysis	✓	Compare resulting models	✓	Building models of flow, interface and purchase decision relationships from resulting measurements
LISREL model testing	✓	Compare resulting models	✓	Testing validity of flow model and relationship to purchase decision
t-test (pre/post survey data)	✓	✓	✓	Testing differences in subjects' attitudes towards interfaces as well as attitudes towards the overall scenario
Video-tape analysis/scoring		✓		Observing differences in Web navigation behavior resulting from interface differences

Expected Results & Applications

Upon completion of this research, results will allow us to have a deeper understanding of the relationship of flow with interface language as well as the final impact on purchasing decisions. For firms in the R.O.C., attempting to use the Web as a marketing channel, this information could be put to immediate use. Presently, most R.O.C. firms maintain dual English and Chinese Web sites. However, visiting some of these sites quickly reveals that either the English or Chinese site is dominant and the information in the other site is quite out of date. This is simply due to the high amounts of time and money required to maintain dual parallel sites. If the advantages of one language over the other is proven, or at least the relationship quantified, more effective sites can be designed. It is also possible that controlling an MNC's brand image, by having a single Web site, is advantageous to sales, only when the specific product has a good fit with the interface language--possibly involving country of origin effects.

The new economics of the Internet allow Taiwan companies to improve branding while offering their products for sale around the world for little relative cost. Results from this study could be immediately put to work in improving the opportunities of those companies in the Internet marketing arena.

Table 3. Research results applications

Result	MNC	Small/ medium firm	Web-based firm	Possible Application
Interface language contains country of origin cues		✓	✓	Association of product with country of origin cues can give competitive advantages to Web-based products
Use of an interface language associated with a country well known for the product being sold leads to improvements in willingness to buy	✓	✓	✓	Products that are sold on Web may not need to be actually sold from or even produced in the country for which they are traditionally associated with, simply using bits of that country's language may give powerful cues and thus increase sales
Interface languages associated certain nations will give negative impressions	✓	✓	✓	Avoiding these interface languages will improve sales
Interface and native language of Web shopper will impact the flow state	✓	✓	✓	Matching language with nationality of international Web shoppers will increase sales opportunities
Supplying language choice through interaction will improve flow and willingness to buy	✓	✓	✓	By including multiple language choices interactively, Web site maintenance is significantly reduced